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TANAP

(TRANS ANATOLIAN NATURAL GAS PIPELINE PROJECT)



BIODIVERSITY Action Plan





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ABBREVIATIONS

Ann	Annex
BAP	Biodiversity Action Plan
BMWP	The Biological Monitoring Working Party
CH	Critical Habitat
cm	Centimeter
CPUE	Catch Per Unit Effort
CR	Critically Endangered
DD	Data Deficient
E	Endemic
EIA	Environmental Impact Assessment
EN	Endangered
End.	Endemism
EPCM	Engineering, Procurement, Construction Management
EUNIS	The European Nature Information System
gr	Gram
H	High
IBA	Important Bird Area
IFC	International Finance Corporation
IPA	Important Plant Area
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
KP	Kilometer Point
L	Low
LC	Least Concern



LSA	Local Study Area
M	Medium
m	Meter
mm	Millimeter
NT	Near Threatened
PBA	Prime Butterfly Area
R	Regional Endemic
RBBT	Red Book of Butterflies in Turkey
RDBP	Red Data Book of Turkish Plants
RDBT	Red Data Book of Turkish Birds
ROW	Right Of Way
SCC	Species of Conservation Concern
SCP	South Caucasian Pipeline
TANAP	Trans Anatolian Natural Gas Pipeline
TAP	Trans Adriatic Pipeline
VU	Vulnerable
W	Widespread Endemic
WDA	Wildlife Development Area



1. INTRODUCTION



1.1.TANAP PROJECT OVERVIEW

Trans-Anatolian Natural Gas Pipeline (TANAP) Project is part of the Southern Gas Corridor, which aims to transport the Azeri Natural Gas from Shah Deniz 2 Gas Field and other fields in the South Caspian Sea to Turkey and Europe¹.

The Southern Gas Corridor comprises the South Caucasus Pipeline (SCP), TANAP and the Trans-Adriatic Pipeline (TAP) as shown in Figure 1.1.1.

The TANAP corridor starts from the Georgia/Turkey border at Türközü/Posof/Ardahan where it connects to SCP and ends at the Turkey/Greece border in Ipsala/Edirne, where it feeds into the TAP Pipeline. There is an off-take station at Eskişehir, Turkey, and another one at Thrace, Turkey to connect to the Turkish natural gas distribution network.



Figure 1.1.1. The site location map showing the southern gas corridor the South Caucasus Pipeline (SCP), TANAP and the Trans-Adriatic Pipeline (TAP)

TANAP is planned to begin from the Georgia/Turkey border and go through the provincial borders of Ardahan, Kars, Erzurum, Erzincan, Bayburt, Gümüşhane, Giresun, Sivas, Yozgat, Kırşehir, Kırıkkale, Ankara, Eskişehir, Bilecik, Kütahya, Bursa, Balıkesir, Çanakkale, Tekirdağ and Edirne (Figure 1.1.2).

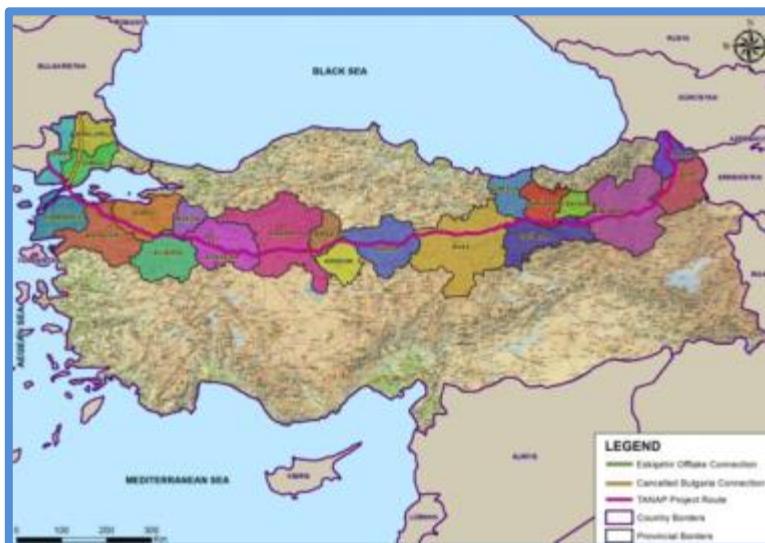


Figure 1.1.2. TANAP Project Route

¹ TRANS ANATOLIAN NATURAL GAS PIPELINE PROJECT EIA REPORT, 2014, Çınar Engineering & Consultancy Co.



1.2. OBJECTIVE

Biodiversity is a concept that expresses the richness of habitats, of species in these habitats, of the genetic characteristics of these species and of the ecologic interactions occurring in such habitats. Biodiversity covers the differences between the habitats (or broadly ecosystems) of species in respect of various biotic and abiotic factors, the differences, changing according to location and time, between the organisms living in an ecosystem, between the living organisms and the non-living things in an ecosystem as well as the genes, species, ecosystems and functions.

Ensuring the protection and sustainability of natural resources and biodiversity continues to be one of the most important problems of the humankind in the 21st century too. It is the common duty of everyone to protect and sustain the nature, which is the fundamental origin of life, and the richest thereof.

The purpose of the Biodiversity Action Plan, prepared within the scope of the TANAP Project, is to identify the species and habitats, considering the priorities of national, international and local species and habitats and consequently to determine the applicable and area-specific actions to protect and conserve the biodiversity on the 36 m ROW during the construction, operation and decommissioning phases of the project.

The presence of natural habitats (Please see Annex 1), intersections of the ROW with the protected or conservation areas (Please see Annex 2) and ecologically sensitive species was observed in detail along the ROW. This screening procedure was done on the ground by a team of specialists, selected for their detailed knowledge of the study area.

Critical habitats are defined as areas of high biodiversity value that include at least one or more of the five values specified in paragraph 16, IFC (2012)² Performance Standard 6 and/or other recognised high biodiversity values.

These values are as follows: (i) habitat of significant importance to Critically Endangered and/or Endangered species, (ii) habitat of significant importance to endemic and/or restricted-range species, (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species, (iv) highly threatened and/or unique ecosystems and/or (v) areas associated with key evolutionary processes.

However, according to IFC (2012), identifying a critical habitat does not have to be limited to these criteria. Other recognised high biodiversity values may support the assessment of a habitat as critical and the suitability of such a decision is assessed at case basis.

² IFC, 2012, IFC Sustainability Framework - Effective January, 1, 2012, 1st January 2012. ed. International Finance Corporation, Washington DC, USA.



In Target 1.3 in the Turkish National Biodiversity Strategy and Action Plan³, one of the strategic action is "developing specific conservation measures giving priority to vulnerable, threatened and endangered species and ecosystems, to critical habitats, to classification groups having economic value but rarely examined, to areas with high biodiversity, to regions of rural and urban development, where damages by humans are most intensive.

During the construction, operation and decommissioning phases of the TANAP Project, the vulnerable biological resources in the ROW will be directly or indirectly impacted. Although the majority of the project does not pass through habitats that support rich biodiversity, some parts of the route intersect with the critical habitats that are the subject of Biodiversity Action Plan (BAP) study. Within the framework of BAP, in order to ensure the conservation of these highly sensitive habitats and species, future monitoring programs and species / habitat action plans have been developed through desktop and field studies.

- ✿ The kilometre points (KPs) given in this document are the KPs of pipeline route revision H (Rev-H). After the determination of critical habitats and preparation of this document, route changes occurred and the KPs of the critical habitats were updated to the KPs of revision J (REV-J). Both REV-H and REV-J KPs for each terrestrial and freshwater critical habitats are given in Annex 7.

³ MINISTRY OF ENVIRONMENT AND FORESTRY, 2007, The National Biological Diversity Strategy and Action Plan. General Directorate of Nature Conservation and National Parks. Department of Nature Conservation. National Focal Point of Convention on Biological Diversity.



2. FINDINGS OF THE BASELINE STUDIES



The summaries of the baseline conditions found in the EIA process are listed below.

2.1.TERRESTRIAL STUDIES

2.1.1.FLORA

Based on the desktop and field studies along the TANAP Project route, flora diversity was identified. As a result of the habitat-based field studies carried out in 246 stations along the TANAP route, a total of 1,365 taxa belonging to 91 families were identified. The classification of species, sampling stations and habitat information, layers, relative abundances, threat factor (if existing), conservation and endemism statuses, and sensitivities are given in TANAP EIA Report.

According to the Red Data Book of Turkish Plants⁴ revised in accordance with IUCN 2001, of the taxa identified 9 are considered critically endangered (CR), 14 endangered (EN) 35 are vulnerable (VU) and 14 are near threatened (NT). The remaining is listed as least concern (LC) or has not been evaluated. Moreover, 221 taxa found are endemic and 62 of these are considered as a restricted range.

Of the 86 SCC identified during the studies, 62 SCC were found along the project route during the field studies. In addition, one species new to science was identified, *Verbascum* sp. nov. (CR), bringing the total number of SCC up to 87 for terrestrial flora. The SCC species identified are showed in the Table 2.1.

Table 2.1. Threatened flora species identified along the TANAP Project route

NO	FAMILY	TAXON	RDBP	ENDEMIC / RESTRICTED RANGE	POTENTIAL/ OBSERVATION
1	ALLIACEAE	<i>Allium pseudoalbidum</i>	EN	E/R	Potential
2	AMARANTHACEAE	<i>Cyathobasis fruticulosa</i>	VU	E/R	Observation
3	APIACEAE	<i>Ferulago silaifolia</i>	EN	E/R	Potential
4	APIACEAE	<i>Eryngium wanaturi</i>	VU	E/R	Observation
5	ASPARAGACEAE	<i>Bellevalia crassa</i>	EN	E/R	Observation
6	ASTERACEAE	<i>Achillea gypsicola</i>	VU	E/R	Observation
7	ASTERACEAE	<i>Achillea ketenoglui</i>	EN	E/R	Observation
8	ASTERACEAE	<i>Achillea sintenisii</i>	VU	E/R	Observation
9	ASTERACEAE	<i>Achillea sipikorensis</i>	VU	E/R	Observation
10	ASTERACEAE	<i>Anthemis calcarea var. discoidea</i>	CR	E/R	Potential
11	ASTERACEAE	<i>Anthemis kotschyana var. gypsicola</i>	CR	E/R	Potential
12	ASTERACEAE	<i>Centaurea hedgei</i>	VU	E/R	Observation
13	ASTERACEAE	<i>Centaurea macrocephala</i>	VU	E/R	Observation
14	ASTERACEAE	<i>Centaurea nivea</i>	CR	E/R	Potential

⁴ EKİM, T., KOYUNCU, M., VURAL, M., DUMAN, H., AYTAÇ, Z., ADIGÜZEL, N., 2000, Red Data Book of Turkish Plants, Turkey's Nature Protection Association, Ankara.



NO	FAMILY	TAXON	RDBP	ENDEMIC / RESTRICTED RANGE	POTENTIAL/ OBSERVATION
15	ASTERACEAE	<i>Centaurea sivasica</i>	VU	E/R	Observation
16	ASTERACEAE	<i>Centaurea taochia</i>	CR	E/R	Potential
17	ASTERACEAE	<i>Centaurea tchihatcheffii</i>	EN	E/R	Potential
18	ASTERACEAE	<i>Cirsium eliasianum</i>	EN	E/R	Observation
19	ASTERACEAE	<i>Cousinia bicolor</i>	EN	E/R	Potential
20	ASTERACEAE	<i>Cousinia halysensis</i>	VU	E/R	Observation
21	ASTERACEAE	<i>Cousinia sivasica</i>	VU	E/R	Observation
22	ASTERACEAE	<i>Hieracium sarykamyschense</i>	CR	E/R	Observation
23	ASTERACEAE	<i>Scorzonera aucherana</i>	VU	E/R	Observation
24	ASTERACEAE	<i>Tanacetum albipannosum</i>	VU	E/R	Observation
25	ASTERACEAE	<i>Tanacetum coccineum ssp. chamaemelifolium</i>	VU	E/R	Observation
26	ASTERACEAE	<i>Tanacetum densum subsp. sivasicum</i>	VU	E/R	Observation
27	ASTERACEAE	<i>Tripleurospermum corymbosum</i>	EN	E/R	Potential
28	BORAGINACEAE	<i>Onosma briquetii</i>	VU	E/R	Observation
29	BORAGINACEAE	<i>Onosma sintenisii</i>	VU	E/R	Observation
30	BORAGINACEAE	<i>Onosma sorgerae var. sorgarae</i>	EN	E/R	Potential
31	BORAGINACEAE	<i>Paracaryum lithospermifolium var. erectum</i>	VU	E/R	Observation
32	BRASSICACEAE	<i>Aethionema lepidioides</i>	EN	E/R	Potential
33	BRASSICACEAE	<i>Aethionema sintenisii</i>	EN	E/R	Potential
34	BRASSICACEAE	<i>Alyssum dudleyi</i>	CR	E/R	Observation
35	BRASSICACEAE	<i>Alyssum niveum</i>	EN	E/R	Observation
36	BRASSICACEAE	<i>Alyssum thymops</i>	VU	E/R	Observation
37	BRASSICACEAE	<i>Barbarea auriculata var. paludosa</i>	CR	E/R	Potential
38	BRASSICACEAE	<i>Chrysocamela noeana</i>	EN	E/R	Observation
39	BRASSICACEAE	<i>Cochlearia sintenisii</i>	VU	E/R	Observation
40	BRASSICACEAE	<i>Isatis glauca subsp. sivasica</i>	VU	E/R	Observation
41	BRASSICACEAE	<i>Isatis undulata</i>	EN	E/R	Observation
42	BRASSICACEAE	<i>Lepidium caespitosum</i>	VU	E/R	Observation
43	BRASSICACEAE	<i>Physoptychis haussknechtii</i>	EN	E/R	Potential
44	CAPRIFOLIACEAE	<i>Cephalaria aytachii</i>	CR	E/R	Observation
45	CAPRIFOLIACEAE	<i>Cephalaria sparsipilosa</i>	VU	E/R	Observation
46	CARYOPHYLLACEAE	<i>Dianthus goekayi</i>	CR	E/R	Observation
47	CARYOPHYLLACEAE	<i>Gypsophila aucheri</i>	VU	E/R	Observation
48	CARYOPHYLLACEAE	<i>Gypsophila heteropoda subsp. minutiflora</i>	CR	E/R	Observation
49	CARYOPHYLLACEAE	<i>Gypsophila osmangaziensis</i>	CR	E/R	Observation
50	CARYOPHYLLACEAE	<i>Minuartia corymbulosa var. gypsophiloides</i>	EN	E/R	Observation
51	DIPSACACEAE	<i>Scabiosa hololeuca</i>	EN	E/R	Observation
52	FABACEAE	<i>Astragalus aytatchii</i>	CR	E/R	Observation



NO	FAMILY	TAXON	RDBP	ENDEMIC / RESTRICTED RANGE	POTENTIAL/ OBSERVATION
53	FABACEAE	<i>Astragalus demirizii</i>	EN	E/R	Observation
54	FABACEAE	<i>Astragalus densifolius subsp. ayashensis</i>	VU	E/R	Observation
55	FABACEAE	<i>Astragalus eliasianus</i>	EN	E/R	Observation
56	FABACEAE	<i>Astragalus kochakii</i>	VU	E/R	Observation
57	FABACEAE	<i>Astragalus physodes subsp. acikirensis</i>	EN	E/R	Observation
58	FABACEAE	<i>Astragalus ulaschensis</i>	EN	E/R	Potential
59	FABACEAE	<i>Astragalus zaraensis</i>	EN	E/R	Observation
60	FABACEAE	<i>Lathyrus karsianus</i>	VU	E/R	Observation
61	FABACEAE	<i>Onobrychis paucijuga</i>	VU	E/R	Observation
62	FABACEAE	<i>Onobrychis stenostachya subsp. krausei</i>	EN	E/R	Observation
63	GERANIACEAE	<i>Erodium sibthorpiatum subsp. sibthorpiatum</i>	EN	E/R	Observation
64	HYPERICACEAE	<i>Hypericum pumilio</i>	EN	E/R	Potential
65	HYPERICACEAE	<i>Hypericum sorgerae</i>	EN	E/R	Potential
66	LAMIACEAE	<i>Salvia aytachii</i>	VU	E/R	Observation
67	LAMIACEAE	<i>Salvia huberi</i>	VU	E/R	Observation
68	LAMIACEAE	<i>Salvia tchihatcheffii</i>	VU	E/R	Observation
69	LAMIACEAE	<i>Scutellaria yildirimli</i>	CR	E/R	Observation
70	LAMIACEAE	<i>Sideritis gulendamiae</i>	EN	E/R	Potential
71	LAMIACEAE	<i>Thymus canoviridis</i>	EN	E/R	Observation
72	LAMIACEAE	<i>Thymus cappadocicus var. pruinosus</i>	VU	E/R	Observation
73	LAMIACEAE	<i>Thymus leucostomus</i>	VU	E/R	Observation
74	LILIACEAE	<i>Lilium kesselringianum</i>	VU	E/R	Observation
75	PAPAVERACEAE	<i>Corydalis wendelboi subsp. congesta</i>	EN	E/R	Potential
76	POACEAE	<i>Elymus sosnowskyi</i>	EN	E/R	Potential
77	RANUNCULACEAE	<i>Delphinium iris</i>	EN	E/R	Potential
78	RANUNCULACEAE	<i>Ranunculus vermirrhizus</i>	EN	E/R	Potential
79	RESEDACEAE	<i>Reseda armena var. armena</i>	VU	E/R	Observation
80	RESEDACEAE	<i>Reseda armena var. scabridula</i>	EN	E/R	Potential
81	RUBIACEAE	<i>Asperula capitellata</i>	VU	E/R	Observation
82	SANTALACEAE	<i>Thesium stelleroides</i>	VU	E/R	Observation
83	SCROPHULARIACEA	<i>Verbascum sp. nov.</i>	CR	E/R	Observation
84	SCROPHULARIACEA	<i>Verbascum trichostylum</i>	EN	E/R	Potential
85	SCROPHULARIACEAE	<i>Scrophularia gypsicola</i>	CR	E/R	Potential
86	SCROPHULARIACEAE	<i>Scrophularia lepidota</i>	VU	E/R	Observation
87	SCROPHULARIACEAE	<i>Scrophularia libanotica subsp. libanotica var. sivasica</i>	VU	E/R	Observation



2.1.2. FAUNA

2.1.2.1. MAMMALS

Based on the desktop and field studies along the TANAP Project route, mammal diversity was identified. As a result of the habitat-based field studies carried out in 133 stations along the TANAP route, a total of 33 mammalian species and two genera belonging to six orders and 15 families were identified. The classification of species, station and habitat information, threat factor (if existing), species conservation and endemism statuses and sensitivities are reported in TANAP EIA Report.

A total of five SCC species were identified as a result of desktop study and field studies (Table 2.2); one of them is endemic to Anatolia (*Prometheomys schaposchnikowi*), one of them is *Capra aegagrus* whose subpopulations have less than 1.000 adult individual and three of them are restricted range species in Turkey (*Spermophilus citellus*, *Dryomys laniger*, *Myomimus roachi*).

Table 2.2. Threatened mammal species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	POTENTIAL / OBSERVATION
1	CETARTIODACTyla	BOVIDAE	<i>Capra aegagrus</i>	Wild Goat	VU	Potential
2	RODENTIA	CRICETIDAE	<i>Prometheomys schaposchnikowi</i>	Long-clawed Mole Vole	NT	Potential
3	RODENTIA	GLIRIDAE	<i>Dryomys laniger</i>	Woolly Dormouse	DD	Observation
4	RODENTIA	GLIRIDAE	<i>Myomimus roachi</i>	Mouse-tailed Dormouse	VU	Potential
5	RODENTIA	SCIURIDAE	<i>Spermophilus citellus</i>	The European ground squirrel	VU	Potential

2.1.2.2. BIRDS

Based on the desktop and field studies along the TANAP Project route, bird diversity was identified. As a result of the habitat-based field studies carried out in 152 stations along the TANAP route, a total of 133 bird species belonging to 16 orders and 41 families were observed. The classification of species, station and habitat information, threat factor (if existing), species conservation and endemism statuses and sensitivities are reported in TANAP EIA Report.

Based on the desktop and field studies conducted, it has been confirmed that birds are a taxonomic group extensively widespread in the LSA. Among the species identified there are the Egyptian vulture (*Neophron percnopterus*), the sociable lapwing (*Vanellus gregarius*), the red-breasted goose (*Branta ruficollis*) and the saker falcon (*Falco cherrug*). Also, *Numenius tenuirostris* is in the CR and *Melanitta fusca* is in the EN category, *Aquila clanga* and *Otis tarda* are in the VU, *Tetrax tetrax* is in the NT, *Perdix perdix*, *Tetraogallus caspius*, *Circus pygargus* are in the LC categories which are potentially found along to Project route according to the desktop study (Table 2.3).



Table 2.3. Threatened bird species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	RDBT	POTENTIAL / OBSERVATION
1	ANSERIFORMES	ANATIDAE	<i>Branta ruficollis</i>	The red-breasted goose	EN	B.1.2 (CR)	Potential
2	ANSERIFORMES	ANATIDAE	<i>Melanitta fusca</i>	The velvet scoter	EN	A.3 (VU)	Potential
3	CHARADRIIFORMES	CHARADRIIDAE	<i>Vanellus gregarius</i>	The sociable lapwing	CR	VU	Potential
4	FALCONIFORMES	ACCIPITRIDAE	<i>Aquila clanga</i>	Greater Spotted Eagles	VU	B.1.2 (CR)	Observation
5	FALCONIFORMES	ACCIPITRIDAE	<i>Circus pygargus</i>	The Montagu's harrier	LC	A.1.2 (CR)	Observation
6	FALCONIFORMES	ACCIPITRIDAE	<i>Neophron percnopterus</i>	The Egyptian vulture	EN	A.3 (VU)	Observation
7	FALCONIFORMES	FALCONIDAE	<i>Falco cherrug</i>	The saker falcon	EN	A.1.2 (CR)	Potential
8	GALLIFORMES	PHASIANIDAE	<i>Perdix perdix</i>	The grey partridge	LC	A.1.2 (EN)	Observation
9	GALLIFORMES	PHASIANIDAE	<i>Tetraogallus caspius</i>	The Caspian snowcock	LC	A.1.2 (CR)	Potential
10	GRUIFORMES	OTIDIDAE	<i>Otis tarda</i>	The great bustard	VU	A.2 (EN)	Potential
11	GRUIFORMES	OTIDIDAE	<i>Tetrax tetrix</i>	The little bustard	NT	A.1.2 (EN)	Potential

2.1.2.3. REPTILES

Based on the desktop and field studies along the TANAP Project route, reptile diversity was identified. As a result of the habitat-based field studies carried out in 133 stations along the TANAP route, a total of 30 reptile species belonging to two order and nine families were identified. The classification of species, station and habitat information, threat factor (if existing), species conservation and endemism statuses and sensitivities are reported in TANAP EIA Report.

The potential SCC identified within the pipeline route during the desktop study are three (Table 2.4): one snake species, *Montivipera wagneri* (CR), and two lizards, *Darevskia uszelli* (EN) and *Darevskia unisexualis* (NT). During the field study *Montivipera wagneri* was found in the Erzurum Province while *Darevskia uszelli* was found in the Kars Province.

Table 2.4. Threatened reptile species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	ENDERISM	POTENTIAL / OBSERVATION
1	SQUAMATA	LACERTIDAE	<i>Darevskia uszelli</i>	Uzzell's Lizard	EN	R	Observation
2	SQUAMATA	LACERTIDAE	<i>Darevskia unisexualis</i>	Unisexual Lizard	NT	R	Potential
3	SQUAMATA	VIPERIDAE	<i>Montivipera wagneri</i>	Wagner's Viper	CR	R	Observation



2.1.2.4. AMPHIBIANS

Based on the desktop and field studies along the TANAP Project route, amphibia diversity was identified. As a result of the habitat-based field studies carried out in 133 stations along the TANAP route, a total of seven species belonging to two order and four families were identified. The classification of species, station and habitat information, threat factor (if existing), species conservation and endemism statuses and sensitivities are reported in TANAP EIA Report.

Among the species found none of them is considered SCC. However, according to literature analysis, the restricted range species *Mertensiella caucasica* (VU) is potentially present in the Ardahan province as potential SCC species (Table 2.5).

Table 2.5. Threatened amphibia species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	POTENTIAL / OBSERVATION
1	CAUDATA	SALAMANDRIDAE	<i>Mertensiella caucasica</i>	Caucasian Salamander	VU	Potential

2.1.2.5. ARTHROPODA

Based on the desktop and field studies along the TANAP Project route, arthropoda diversity was identified. As a result of the habitat-based field studies carried out in 243 stations along the TANAP route, a total of 1,043 arthropoda species belonging to five orders (Coleoptera, Diptera, Lepidoptera, Odonata and Neuroptera) and 70 families were identified. The classification of species, station and habitat information, threat factor (if existing), species conservation and endemism statuses and sensitivities are reported in TANAP EIA Report.

A total of 34 SCC were identified as a result of desktop study and field studies (Table 2.6). Of the species identified as SCC, 19 were observed and 15 are potentially distributed species. Five of the SCC observed are endemic to Turkey with regional distribution (*Pygopleurus kareli*, *Dysmachus safranboliticus*, *Phengaris nausithous*, *Cryptocephalus paphlagonius*, *Pimelia testudo*), five of them are restricted range species in Turkey (*Eulasia chrysopyga*, *Muzimes caucasicus*, *Zonitis nigriventris*, *Zygaena armena*, *Polyommatus actis*) and nine of them are new species (*Chrysolina n. sp.*, *Muzimes n. sp.*, *Dioctria n. sp. 1*, *Dioctria n. sp. 2*, *Hilara n. sp. 1*, *Hilara n. sp. 2*, *Hilara n. sp. 3*, *Hexatoma n. sp.*, *Tipula n. sp. 1*).



Table 2.6. Threatened arthropoda species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	RBBT	POTENTIAL / OBSERVATION
1	COLEOPTERA	CERAMBYCIDAE	<i>Dorcadion ardahense</i>	-	-	-	Potential
2	COLEOPTERA	CETONIIDAE	<i>Osmoderma lassallei</i>	-	EN	-	Potential
3	COLEOPTERA	CHRYSOMELIDAE	<i>Chrysolina n. sp.</i>	-	-	-	Observation
4	COLEOPTERA	CHRYSOMELIDAE	<i>Cryptocephalus paphlagonius</i>	-	-	-	Observation
5	COLEOPTERA	ELATERIDAE	<i>Agrypnus crenicollis</i>	-	-	-	Potential
6	COLEOPTERA	GLAPHYRIDAE	<i>Eulasia chrysopyga</i>	-	-	-	Observation
7	COLEOPTERA	GLAPHYRIDAE	<i>Pygopleurus kareli</i>	-	-	-	Observation
8	COLEOPTERA	MELOIDAE	<i>Muzimes caucasicus</i>	-	-	-	Observation
9	COLEOPTERA	MELOIDAE	<i>Muzimes n. sp.</i>	-	-	-	Observation
10	COLEOPTERA	MELOIDAE	<i>Zonitis nigritiventris</i>	-	-	-	Observation
11	COLEOPTERA	TENEBRIONIDAE	<i>Pimelia testudo</i>	-	-	-	Observation
12	DIPTERA	ASILIDAE	<i>Dioctria n. sp. 1</i>	-	-	-	Observation
13	DIPTERA	ASILIDAE	<i>Dioctria n. sp. 2</i>	-	-	-	Observation
14	DIPTERA	ASILIDAE	<i>Dysmachus safranboloticus</i>	-	-	-	Observation
15	DIPTERA	EMPIDIDAE	<i>Empis angorae</i>	-	-	-	Potential
16	DIPTERA	EMPIDIDAE	<i>Hilara n. sp. 1</i>	-	-	-	Observation
17	DIPTERA	EMPIDIDAE	<i>Hilara n. sp. 2</i>	-	-	-	Observation
18	DIPTERA	EMPIDIDAE	<i>Hilara n. sp. 3</i>	-	-	-	Observation
19	DIPTERA	EMPIDIDAE	<i>Hilara truva sp. Nov.</i>	-	-	-	Potential
20	DIPTERA	LIMONIIDAE	<i>Hexatoma n. sp.</i>	-	-	-	Observation
21	DIPTERA	TIPULA	<i>Tipula n. sp. 1</i>	-	-	-	Observation
22	LEPIDOPTERA	LYCAENIDAE	<i>Aricia hyacinthus</i>	Anatolian False Argus	-	NT	Potential
23	LEPIDOPTERA	LYCAENIDAE	<i>Aricia teberdina</i>	Georgian False Argus, Caucasian Silvery Argus	-	EN	Potential
24	LEPIDOPTERA	LYCAENIDAE	<i>Lycaena euphratica</i>	Anatolian Turan Copper	-	DD	Potential
25	LEPIDOPTERA	LYCAENIDAE	<i>Phengaris nausithous</i> (<i>Phengaris nausithous</i> or <i>Glaucopsyche nausithous</i>)	Dusky Large Blue	NT	EN	Observation
26	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus actis</i>	Actis Blue	-	DD	Observation



NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUC N	RBBT	POTENTIAL / OBSERVATION
27	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus artvinensis</i>	Artvin Blue	-	VU	Potential
28	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus dama</i>	Mesopotamian Blue	EN	EN	Potential
29	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus diana</i>	Diana Blue	-	EN	Potential
30	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus merhaba</i>	Hi Blue	-	EN	Potential
31	LEPIDOPTERA	LYCAENIDAE	<i>Polyommatus tankeri</i>	Tanker's Blue	-	EN	Potential
32	LEPIDOPTERA	NYMPHALIDAE	<i>Boloria graeca</i>	Balkan Fritillary	-	CR	Potential
33	LEPIDOPTERA	NYMPHALIDAE	<i>Hyponephele urartua</i>	Urartuan Steppe Brown	-	VU	Potential
34	LEPIDOPTERA	ZYGAENIDAE	<i>Zygaena armena</i>	-	-	-	Observation

2.1.3. EUNIS HABITAT TYPES

Based on the desktop and field studies along the TANAP Project route, The EUNIS habitat types were identified. As the TANAP Project traverses Anatolia from the east to the west, many habitat types in Turkey are present within the pipeline route. 30 different terrestrial habitats at Level 3 were identified on the pipeline route. Such habitats and plant species that characterize them are presented in TANAP EIA Report.

According to the Turkish "National Biological Diversity Strategy and Action Plan"⁵ terrestrial habitats which are part of ecosystems with high threats to biological diversity are steppe, coastal-sand dunes and mountainous forests ecosystems. In parallel to this, the most important habitat types through the TANAP route are also the natural woodlands and steppe (gypsum, marl and serpentine) habitats, where most of the endemic and restricted range flora species are observed.

Assessment of the natural habitat types which intersect with the TANAP Project route is given in Annex 1.

2.2. FRESHWATER STUDIES

2.2.1. FLORA

As a result of the field studies conducted on freshwater areas along the TANAP route, 109 plant taxa belonging to 40 families were identified in the 43 sampling stations. The list of the species identified in each sampling station, including information on the species conservation and endemism statuses and habitats are presented in TANAP EIA Report.

⁵ MINISTRY OF ENVIRONMENT AND FORESTRY, 2007, The National Biological Diversity Strategy and Action Plan, Press Tasarım Ofset, 1st Press.



Based on the desktop and field studies conducted, it has been confirmed that aquatic flora in the LSA is largely composed of common and cosmopolite species and that no SCC was identified. The floristic composition shows a relatively low number of species and no particular hotspots with higher floristic diversity were identified.

2.2.2. FISH

Along the TANAP Project route a total of 189 river/stream crossings were examined, during in two field study campaigns conducted in different seasons. As a result, 40 fish species belonging to four orders and six families were identified. The detailed information on classification, sampling stations, habitats, threat factors, conservation and endemism statuses, total-standard and fork lengths, weights, population densities and CPUE values of these species are given in TANAP EIA Report.

Within the fish species identified during the field study, 27 are endemic of Turkey. Five of them are restricted to the Kura-Araxes basin and four to the Tigris-Euphraticus basin. In addition, the species *Salmo macrostigma* is under protection in Turkey inland waters. The species is in the DD category within the framework of the IUCN (2010) and not considered in the Annexes of the Bern Convention (2002).

A total of 13 SCC species were identified as a result of the field studies and literature analysis (Table 2.7). 11 of them are endemic and high sensitivity species, one of them is under protection in Turkey and two of them are in the CR category according to IUCN.



Table 2.7. Threatened fish species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	END.	POTENTIAL / OBSERVATION
1	ANGUILLIFORMES	ANGUILLIDAE	<i>Anguilla anguilla</i>	European eel	CR	-	Potential
2	CYPRINIFORMES	BALITIDORIDAE	<i>Oxyneomacheilus kosswigi</i>	-	-	R	Observation
3	CYPRINIFORMES	BALITORIDAE	<i>Oxyneomacheilus simavicus</i>	-	CR	R	Observation
4	CYPRINIFORMES	COBITIDAE	<i>Cobitis fahireae</i>	Aegean spined loach	LC	W	Observation
5	CYPRINIFORMES	COBITIDAE	<i>Cobitis puncticulata</i>	-	CR	R	Observation
6	CYPRINIFORMES	COBITIDAE	<i>Cobitis simplicispinna</i>	-	NE	W	Observation
7	CYPRINIFORMES	CYPRINIDAE	<i>Alburnus escherischii</i>	-	NE	W	Observation
8	CYPRINIFORMES	CYPRINIDAE	<i>Alburnus istanbulensis</i>	Thracian shemaya	LC	W	Observation
9	CYPRINIFORMES	CYPRINIDAE	<i>Barbus oligolepis</i>	Checkered Barb	NE	W	Observation
10	CYPRINIFORMES	CYPRINIDAE	<i>Capoeta tinca</i>	Anatolian khramulya	NE	W	Observation
11	CYPRINIFORMES	CYPRINIDAE	<i>Chondrostoma angorensense</i>	-	NE	W	Observation
12	CYPRINIFORMES	CYPRINIDAE	<i>Gobio obtusirostris</i>	-	LC	R	Observation
13	SALMONIFORMES	SALMONIDAE	<i>Salmo macrostigma</i>	Macrostigma trout	DD	-	Observation



2.2.3. AQUATIC INVERTEBRATES

Along the TANAP Project route a total of 189 river/stream crossings were examined, during in two field study campaigns conducted in different seasons As a result, six classes, 13 orders and 29 families within three phyla were identified. The general information of the aquatic macroinvertebrate families identified on the project route, the associated BMWP scores and the detailed information on the macroinvertebrate families identified are given in TANAP EIA Report.

The only selected freshwater invertebrate SCC potentially present along the pipeline route is the mollusc Thick Shelled River Mussel (*Unio crassus* - EN) found according to literature analysis (Table 2.8).

Table 2.8. Threatened freshwater invertebrate species identified along the TANAP Project route

NO	ORDER	FAMILY	SPECIES	COMMON NAME	IUCN	END.	POTENTIAL / OBSERVATION
1	UNIONOIDA	UNIONIDAE	<i>Unio crassus</i>	Thick Shelled River Mussel	EN	-	Potential

2.2.4. EUNIS HABITAT TYPES

In the 500 m LSA of the TANAP route, six different natural habitat types at Level III (freshwater habitats) were identified.

The natural freshwater habitat types are;

- C1.2 (Permanent mesotrophic lakes, ponds and pools),
- C1.6 (Temporary lakes, ponds and pools (wet phase),
- C2.2 (Permanent non-tidal, fast, turbulent watercourses),
- C2.3 (Permanent non-tidal, slow, smooth-flowing watercourses),
- C2.5 (Temporary running waters),
- C3.6 (Unvegetated or sparsely vegetated shores with soft or mobile sediments).

2.3. CITIZEN ENGAGEMENT

Based on the social studies along the TANAP Project route, various surveys has been done. Muhtar survey forms were include many ecological questions; endangered and indigenous (endemic) animals and/or plant species, seasonal harvest, livestocks, beekeeping activities, hunting activities, etc. As a result of the surveys, lots of information was shared with muhtars (Please refer ESIA Report, Social Baseline Report) and their ecological awareness were raised.



In addition as per TANAP Social Policies "Trainings and awareness programmes will be provided to all TANAP employees and its contractors to ensure that TANAP social policies and commitments for the project are understood and are being implemented". All employees, including local ones (which comprise the majority of the unskilled workforce) receive the environmental induction trainings and attend toolbox talks regarding BAP and site specific CHs, FCHs and mitigation measures.



3. STUDIES PERFORMED FOR BAP



3.1. DESKTOP STUDIES

A literature review was completed during the EIA process in consultation with relevant authorities, taxonomic specialists, and other recognized external experts. In-field consultation and desktop research was undertaken to understand the biodiversity values present in the vicinity of project areas and identify existing conservation concerns.

Within the BAP process, the findings produced in the baseline studies carried out during the TANAP EIA studies were re-evaluated. Within this context, in the desktop studies:

- The findings of the field studies performed during the EIA studies in a 500 m LSA were re-assessed for 36 m ROW.
- Natural habitats, SCC's and potential SCC's were re-assessed, and field studies for potentially SCC's were also planned.
- Species and habitat field forms were prepared in parallel with the objectives.
- Intersects of the ROW with the protected areas or high biodiversity areas were reviewed.
- Field studies for considered species and habitats were planned by experts in the relevant disciplines.

3.2. FIELD STUDIES

The presence of ecologically sensitive species and habitats was observed in detail along the ROW. This screening procedure was done on the ground by a team of specialists, selected for their detailed knowledge of the study area; botanists, entomologists, ornithologist, herpetologist (reptile and amphibian specialists), mammalogists, experts in hydrobiology and in aquaculture took part in the field survey. The group was supervised by a senior biologist from the planning and assessment phases of the work. In the field studies conducted in the August – October 2014 period.

The BAP ecological field survey includes a database that offer consistent and useful information for the characterization and management of the ecological conditions of the pipeline right of way (ROW) and to ensure that the impacts that may occur can be controlled and managed during the construction activities. The ecological field survey covers and focus on a 36m wide swath centered on the proposed ROW and the study area in some places up to 70 meters in width along the TANAP route. For the purposes of the present document, the ESIA was considered as a regional overview and the BAP ecological field survey as a more specific, local approach, considering that the ESIA had a 500m wide study corridor and the BAP ecological field survey was restricted to a 36m-wide area. BAP ecological field survey focused on potential impacts within and along and immediately adjacent to the ROW (36-70m) and used the ESIA as a macro perspective of the ROW surroundings⁶.

⁶ PERU LNG, Environment, Social, Health and Safety Management System (ESHSMS), Biodiversity Action Plan, Document Number: 02/ES/PJ/PN/009/A01.



3.3. CRITICAL HABITAT ASSESSMENT

The International Finance Corporation (IFC) requires assessment of environmental and social risks using eight Performance Standards. Performance Standard 6 (PS6; IFC 2012) and the associated Guidance Note 6 (GN6; IFC 2012) focus on the protection and conservation of biodiversity.

The purpose of defining critical habitat is to identify areas of a particularly sensitive nature for biodiversity conservation that deserve special attention and may require extraordinary mitigations. Critical habitat exists independent of a project and can be identified without reference to a project; a project may be proposed in critical habitat, but the critical habitat is present under baseline conditions and is not defined by the size of the project footprint or other project effects.

Paragraphs 56 and 57 of GN6 indicate that critical habitat designation should be determined on a case-by-case basis according to the concepts of irreplaceability and vulnerability. When applying this guidance, it will often be possible to identify critical habitat using five primary criteria provided in Paragraph 16 of PS6:

- criterion 1: habitat of significant importance to Critically Endangered (CR) and/or Endangered (EN) species;
- criterion 2: habitat of significant importance to endemic and/or restricted-range species;
- criterion 3: habitat supporting globally significant concentrations of migratory species and/or congregatory species;
- criterion 4: highly threatened and/or unique ecosystems; and/or
- criterion 5: areas associated with key evolutionary processes.

The thresholds form the basis of a tiered approach, in that numerical thresholds are used to assign Criteria 1 through 3 to a Tier 1 or a Tier 2 critical habitat designation. A summary of the tiers with respect to the thresholds for each criterion is provided in the Table 3.1. It should be emphasized that both the thresholds and associated tiers are indicative and serve as a guideline for decision-making only. There is no universally accepted or automatic formula for making determinations on critical habitat. Also, it should be emphasized that tiered (Criteria 1 through 3) and non-tiered (Criteria 4 and 5) criteria are equally important in this regard (IFC, 2012⁷).

⁷ IFC, 2012, IFC Sustainability Framework - Effective January, 1, 2012, 1st January 2012. ed. International Finance Corporation, Washington DC, USA.



Table 3.1. Quantitative thresholds for Tier 1 and 2 of Critical Habitat Criteria 1 through 3

Criteria	Tier 1	Tier 2
1. Critically Endangered (CR)/Endangered (EN) Species	<p>(a) Habitat required to sustain ≥ 10 percent of the global population of a CR or EN species/subspecies where there are known, regular occurrences of the species and where that habitat could be considered a discrete management unit for that species.</p> <p>(b) Habitat with known, regular occurrences of CR or EN species where that habitat is one of 10 or fewer discrete management sites globally for that species.</p>	<p>(c) Habitat that supports the regular occurrence of a single individual of a CR species and/or habitat containing regionally- important concentrations of a Red-listed EN species where that habitat could be considered a discrete management unit for that species/ subspecies.</p> <p>(d) Habitat of significant importance to CR or EN species that are wide-ranging and/or whose population distribution is not well understood and where the loss of such a habitat could potentially impact the long-term survivability of the species.</p> <p>(e) As appropriate, habitat containing nationally/regionally important concentrations of an EN, CR or equivalent national/regional listing.</p>
2. Endemic/ Restricted Range Species	<p>(a) Habitat known to sustain ≥ 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species (e.g., a single-site endemic).</p>	<p>(b) Habitat known to sustain ≥ 1 percent but < 95 percent of the global population of an endemic or restricted-range species where that habitat could be considered a discrete management unit for that species, where data are available and/or based on expert judgement.</p>
3. Migratory/ Congregatory Species	<p>(a) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 95 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle where that habitat could be considered a discrete management unit for that species.</p>	<p>(b) Habitat known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent but < 95 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle and where that habitat could be considered a discrete management unit for that species, where adequate data are available and/or based on expert judgment.</p> <p>(c) For birds, habitat that meets BirdLife International's Criterion A4 for congregations and/or Ramsar Criteria 5 or 6 for Identifying Wetlands of International Importance.</p> <p>(d) For species with large but clumped distributions, a provisional threshold is set at ≥ 5 percent of the global population for both terrestrial and marine species.</p> <p>(e) Source sites that contribute ≥ 1 percent of the global population of recruits.</p>

In the BAP study, our approach is to identify critical habitats under five criteria outlined in PS6 and GN6 and quantitative assessment for Tier 1 and 2 of Critical Habitat Criteria 1-3 (IFC, 2012⁸). The analyses were completed as the findings of the EIA and designed new specific field studies especially for the critical habitats and species.

The Critical Habitats were first identified during the baseline phases of the ESIA study and during the current study for the definition of the Biodiversity Action Plan the approach used for the definition of the CHs is given in below:

1. Information about the current status of the critical habitats (i.e. at the species, ecosystem and landscape scales) was collected.

⁸ IFC, 2012, IFC Sustainability Framework - Effective January, 1, 2012, 1st January 2012. ed. International Finance Corporation, Washington DC, USA.



2. The relationship of the critical habitats with the critical species they host was identified.
3. Intersects of the ROW with the protected areas or high biodiversity areas were reviewed.
4. The priorities of the species and the habitats were evaluated at the "low, medium and high" scale. In this evaluation, characteristics of the species/habitats such as their national and international conservation statuses, local conditions, distributions and endemism statuses etc. were taken into consideration. Priority scales established for flora and fauna are given in Chapter 3.4.1.4.
5. In the selection of freshwater critical habitats, priorities such as hosting SCC species, the population of species endemic to Turkey and basins (such as Kura-Araxensis, Tigris-Euphraticus) having low population, and the species being under protection in Turkey were taken into account.
6. Of the potential flora species identified in the EIA Studies, those that are within the 36 m ROW were identified and included in the critical species list; those that were not observed and for the terrestrial fauna members the reproduction area, the food plant, nest, trace of which are not identified within the 36 m ROW were excluded from the critical species list.
7. Considering the vegetation period and seasonal restrictions, for species that could not be observed during the BAP studies but probably exist in the region, the periods where field studies should be performed next year were specified (Table 8.1).
8. Currently, there are former two pipelines passing through some sections of the areas studied. In one of these habitats there is no damage since the biorestoration work had been appropriately carried out; in the other, however, no biorestoration work had been carried out, thus, some of the area was severely damaged and although long years have passed, the habitats in the region could not renew themselves. Consequently, especially in the sections where the two pipelines passing, topsoil management should be performed much more meticulously compared to other areas. Considering these two projects, special measures and restoration recommendations were suggested so that the species/habitats rapidly gain their natural status and monitoring programs were established to bring out the sustainability and gains in these species/habitats.

According to the IFC;

Criterion 1: Critically Endangered and Endangered Species

Species threatened with global extinction and listed as CR and EN on the IUCN Red List of Threatened Species and nationally/regionally listed species shall be considered as part of Criterion 1. Where uncertainty was present, a precautionary approach was applied and species were assigned a higher threat level.

Criterion 2: Endemic and Restricted-range Species

Criterion 2 is triggered by habitats of significant importance for endemic or restricted-range species. IFC quantitative definitions were used to define restricted-range species. Global extent of occurrence was used to define range and was determined using IUCN data (IUCN 2013), existing literature, and consultation with taxonomic specialists.



Criterion 3: Migratory and Congregatory Species

Criterion 3 is triggered by migratory and/or congregatory species occurring in the CH. All migratory or congregatory species were screened to determine if the CH contained irreplaceable and/or extremely vulnerable habitats used either periodically or consistently. Migratory birds were identified using information from BirdLife International (2013) and other species were identified using information from IUCN listings (IUCN 2013) and other published literature.

Criterion 4: Highly Threatened and/or Unique Ecosystems

Highly threatened or unique ecosystems are those (i) that are at risk of significantly decreasing in area or quality; (ii) with a small spatial extent; and/or (iii) containing unique assemblages of species including assemblages or concentrations of biome-restricted species. Areas determined to be irreplaceable or of high priority/significance based on systematic conservation planning techniques carried out at the landscape and/or regional scale by governmental bodies, recognized academic institutions and/or other relevant qualified organizations (including internationally-recognized NGOs) or that are recognized as such in existing regional or national plans, would qualify as critical habitat per Criterion 4.

Criterion 5: Key Evolutionary Processes

The structural attributes of a region, such as its topography, geology, soil, temperature and vegetation and combinations of these variables can influence the evolutionary processes that give rise to regional configurations of species and ecological properties. In some cases, spatial features that are unique or idiosyncratic of the landscape have been associated with genetically unique populations or subpopulations of plant and animal species. Physical or spatial features have been described as surrogates or spatial catalysts for evolutionary and ecological processes, and such features are often associated with species diversification. Maintaining these key evolutionary processes inherent in a landscape as well as the resulting species (or subpopulations of species) has become a major focus of biodiversity conservation in recent decades, particularly the conservation of genetic diversity. By conserving species diversity within a landscape, the processes that drive speciation, as well as the genetic diversity within species, ensures the evolutionary flexibility in a system, which is especially important in a rapidly changing climate.

After the critical habitats and species were identified under the five criteria and quantitative assessment outlined in PS6 and GN6, priority actions were specified and targets were established to monitor the progress of the process.



In establishing the critical habitats and species and the targets aimed to be attained, the following various values were also considered:

1. other biodiversity action plans,
2. the habitat integrity of the area,
3. the usage of the area,
4. current resource values of the area,
5. The habitats that bear importance locally and that are included in the Turkish National Biodiversity Strategy and Action Plan,
6. endangered local and regional species or habitats,
7. habitats that have the restoration, sustainability or extension potentials,
8. species / habitats that have potential for conservation by habitat management and,
9. species requiring special conservation action.

Within this framework, the actions should be applied were specified and scheduled. In addition, in parallel to the specified purposes and schedules, appropriate indicators were determined to conserve biodiversity and to apply BAP.

There are 67 terrestrial and 27 freshwater critical habitats identified. Terrestrial critical habitats cover only 0.39% of the ESIA (500 m) corridor and 5.6% of the ROW (36 m) and according to the quantitative impact assessment, of which have been conducted based on the methodology used in Environmental and Social Impact Assessment Studies (DPSIR framework, GIS based approach), there is low degree of impacts expected on natural and critical habitats, therefore significant permanent and long term impacts are not expected and the defined mitigation measures are sufficient for the recovery of habitats.

According to the impact assessment, there will be no long term or permanent significant impact for SCC's. There is no expectation of;

- the long-term decrease in the size of population,
- fragment or increase fragmentation of an ecological community,
- reduce the area of occupancy of the species,
- fragment an existing population into two or more populations,
- substantially modify, destroy or isolate an area of important habitat for a migratory species,
- seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species,
- adversely affect CH to the survival of a species,
- disrupt the breeding cycle of a population,
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,
- areas of the wetland being destroyed or substantially modified.

Although no long term or permanent impact on SCCs is expected; it is possible that alien invasive species may be introduced to the areas where construction activities are performed and may cause the loss of biological diversity. Therefore, "Alien Invasive Species Guidance Document" is prepared and given in Annex 5.



The actions required to be taken in pre-construction, post-construction and monitoring phases for each terrestrial critical habitats and SCC species are presented in Section 4 & Section 5, respectively. Moreover, the actions for freshwater critical habitats and SCC species are given in Section 6 & Section 7 respectively as well.

There are no critical habitats for marine environment, neither critical marine species nor marine protected & conservation areas elaborated along the project route during the ESIA process. In addition, the area where the offshore section of TANAP route passes from is determined as a corridor for energy and infrastructure projects. There is an existing pipeline, Turkey – Greece Natural Gas Pipeline, in the area of offshore section of TANAP route. Thus, the area is already disturbed due to the construction activities of the existing pipeline.

In addition to actions defined in this document, TANAP's "Erosion, Reinstatement and Landscaping Plan" which is Appendix 5.9 of ESIA includes required actions for reinstatement and biorestoration of project sites from developed areas to undeveloped areas. The main objectives of the given actions are to reinstate the variety and distribution pattern of the original plant species with the long term objective of reinstating the local ecology and to establish sufficient vegetation cover to reduce erosion to meet the performance requirement through restoration of the local plant community. Similarly, more detailed reinstatement and biorestoration actions are given in the EPCM's "Specification for Reinstatement" document (WRP-SPC-EGG-PLG-001), which is given in Annex 6.1. Specification for Reinstatement details the reinstatement and biorestoration actions separately for each sites of project both ROW and other areas. The details include the scheduling of activities, selection of species for different sites of project during resintatement and biorestoration, seeding, planting and other procedures to be followed by Contractors, reforestation, protection of planted materials, monitoring and corrective actions.

In the reference of TANAP's "Erosion, Reinstatement and Landscaping Plan" and EPCM's "Specification for Reinstatement" document, the Contractors prepared their own Erosion, Reinstatement and Landscaping Plans. Erosion, Reinstatement and Landscaping Plans for LOT-1, LOT-2, LOT-3 and LOT-4 are given in Annex 6.2, Annex 6.3, Annex 6.4 and Annex 6.5, respectively. According to these Erosion, Reinstatement and Landscaping Plans, each Contractor will produce Biorestoration Schedule including pre-construction transplanting or cultivation in addition to post-construction soil preparation, planting and aftercare inline with the ESIA requirements and management plans and will be issued to TANAP for confirmation before being applied. Moreover, each Contractor will produce Site Specific Special Area Reinstatement Plans and Generic Reinstatement Plans describing the quantity of plants/seeds and material forms to be planted for approval by TANAP. This plan will include certain mitigations and limitation for critical areas in terms of selection of species and seeds to be used.



During the Contractor's contract maintenance period, each Contractor will be responsible for maintaining the standard of reinstatement and for ensuring that the stated erosion class and biorestoration requirements are met. In long term, after the contract maintenance period ends, TANAP will perform the monitoring of the success of reinstatement and biorestoration activities according to a biorestoration monitoring plan that will be prepared.



3.4. FINDINGS

During the construction activities, route change occurred on certain critical habitats where some SCC species are present. *Neolycaena soezen* (CH57), *Hilara n.sp. 1* (CH17) and *Verbascum n.sp.* (CH63) is not located on the ROW of new route. Moreover, there is no additional new SCC species determined on the new route during the site surveys. Therefore, the impact does not increase due to these route changes.



3.4.1. TERRESTRIAL STUDIES

3.4.1.1. FLORA AND FAUNA

As a result of the studies conducted within the framework of BAP, the followings were assessed:

- 53 flora taxa belonging to 22 families,
- Three mammalian species belonging to three families,
- Seven bird species belonging to five families,
- Three reptilian species belonging to two families,
- One amphibian species belonging to one family,
- 14 arthropod species belonging to 10 families and
- 23 natural terrestrial EUNIS habitat types.

The final SCC identified according to the IFC (2012) criterions and tiers, based on the SCC determined during the EIA studies are given in the Table 3.2 and Table 3.3 together with the reasons for selecting and/or excluding them.



Table 3.2. The final terrestrial SCC flora species

FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
BRASSICACEAE	<i>Alyssum dudleyi</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Anthemis calcarea var. discoidea</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Anthemis kotschyana var. gypsicola</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
FABACEAE	<i>Astragalus aytatchii</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
BRASSICACEAE	<i>Barbarea auriculata var. paludosa</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Centaurea nivea</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW.
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Centaurea taochia</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
CAPRIFOLIACEAE	<i>Cephalaria aytachii</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
CARYOPHYLLACEAE	<i>Dianthus goekayi</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
CARYOPHYLLACEAE	<i>Gypsophila heteropoda subsp. Minutiflora</i>	Endemic/ Restricted range	CR	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
CARYOPHYLLACEAE	<i>Gypsophila osmangaziensis</i>	Endemic/ Restricted range	CR	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Yes
ASTERACEAE	<i>Hieracium sarykamyschense</i>	Endemic/ Restricted range	CR	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Yes
LAMIACEAE	<i>Salvia tchihatcheffii</i>	Endemic/ Restricted range	CR	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Yes
SCROPHULARIACEAE	<i>Scrophularia gypsicola</i>	Endemic/ Restricted range	CR	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	No / There isn't any specimen in 36 m ROW
SCROPHULARIACEA	<i>Verbascum sp. nov.</i>	Endemic/ Restricted range	CR	Criterion 1 Criterion 2	Tier 1 (b) Tier 1 (a)	No
ASTERACEAE	<i>Achillea ketenoglui</i>	Endemic/ Restricted range	EN	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Yes
BRASSICACEAE	<i>Aethionema lepidioides</i>	Endemic/ Restricted range	EN	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	No / There isn't any specimen in 36 m ROW
BRASSICACEAE	<i>Aethionema sintenisii</i>	Endemic/ Restricted range	EN	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	No / There isn't any specimen in 36 m ROW
ALLIACEAE	<i>Allium pseudoalbidum</i>	Endemic/ Restricted range	EN	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	No / There isn't any specimen in 36 m ROW
BRASSICACEAE	<i>Alyssum niveum</i>	Endemic/ Restricted range	EN	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Yes
FABACEAE	<i>Astragalus demirizii</i>		EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
		Endemic/ Restricted range		Criterion 2	Tier 2 (b)	
FABACEAE	<i>Astragalus eliasianus</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
FABACEAE	<i>Astragalus physodes subsp. acikirensis</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
FABACEAE	<i>Astragalus ulaschensis</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
FABACEAE	<i>Astragalus zaraensis</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
ASPARAGACEAE	<i>Bellevalia crassa</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Centaurea tchihatcheffii</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
BRASSICACEAE	<i>Chrysocamela noeana</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Cirsium eliasianum</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
PAPAVERACEAE	<i>Corydalis wendelboi subsp. congesta</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes / The new field study is suggested
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Cousinia bicolor</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
RANUNCULACEAE	<i>Delphinium iris</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
POACEAE	<i>Elymus sosnowskyi</i>		EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?	
		Endemic/ Restricted range		Criterion 2	Tier 2 (b)		
GERANIACEAE	<i>Erodium sibthorpiatum subsp. sibthorpiatum</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes	
				Criterion 2	Tier 2 (b)		
APIACEAE	<i>Ferulago silaifolia</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
HYPERICACEAE	<i>Hypericum pumilio</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
HYPERICACEAE	<i>Hypericum sorgerae</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
BRASSICACEAE	<i>Isatis undulata</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes	
				Criterion 2	Tier 2 (b)		
CARYOPHYLLACEAE	<i>Minuartia corymbulosa var. gypsophiloides</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes	
				Criterion 2	Tier 2 (b)		
FABACEAE	<i>Onobrychis stenostachya subsp. krausei</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes	
				Criterion 2	Tier 2 (b)		
BORAGINACEAE	<i>Onosma sorgerae var. sorgarae</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
BRASSICACEAE	<i>Physoptychis haussknechtii</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
RANUNCULACEAE	<i>Ranunculus vermirrhizus</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
RESEDACEAE	<i>Reseda armena var. scabridula</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW	
				Criterion 2	Tier 2 (b)		
DIPSACACEAE	<i>Scabiosa hololeuca</i>		EN	Criterion 1	Tier 2 (d)	Yes	



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
		Endemic/ Restricted range		Criterion 2	Tier 2 (b)	
LAMIACEAE	<i>Scutellaria yildirimli</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	Yes
				Criterion 2	Tier 2 (b)	
LAMIACEAE	<i>Sideritis gulendamiae</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Tripleurospermum corymbosum</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
SCROPHULARIACEA	<i>Verbascum trichostylum</i>	Endemic/ Restricted range	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen in 36 m ROW
				Criterion 2	Tier 2 (b)	
ASTERACEAE	<i>Achillea gypsicola</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
ASTERACEAE	<i>Achillea sintenisii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Achillea sipikorensis</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BRASSICACEAE	<i>Alyssum thymops</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
RUBIACEAE	<i>Asperula capitellata</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
FABACEAE	<i>Astragalus densifolius subsp. ayashensis</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
FABACEAE	<i>Astragalus kochakii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Centaurea hedgei</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
ASTERACEAE	<i>Centaurea macrocephala</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Centaurea sivasica</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
CAPRIFOLIACEAE	<i>Cephalaria sparsipilosa</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
BRASSICACEAE	<i>Cochlearia sintenisii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Cousinia halysensis</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Cousinia sivasica</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
AMARANTHACEAE	<i>Cyathobasis fruticulosa</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
APIACEAE	<i>Eryngium wanaturi</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
CARYOPHYLLACEAE	<i>Gypsophila aucheri</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BRASSICACEAE	<i>Isatis glauca subsp. sivasica</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
FABACEAE	<i>Lathyrus karsianus</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BRASSICACEAE	<i>Lepidium caespitosum</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
LILIACEAE	<i>Lilium kesselringianum</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
FABACEAE	<i>Onobrychis paucijuga</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BORAGINACEAE	<i>Onosma briquetii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BORAGINACEAE	<i>Onosma sintenisii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
BORAGINACEAE	<i>Paracaryum lithospermifolium var. erectum</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
RESEDACEAE	<i>Reseda armena var. armena</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
LAMIACEAE	<i>Salvia aytachii</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
LAMIACEAE	<i>Salvia huberi</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Scorzonera aucherana</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes



FAMILY	SCIENTIFIC NAME	ENDEMIC/ RESTRICTED RANGE	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
SCROPHULARIACEAE	<i>Scrophularia lepidota</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
SCROPHULARIACEAE	<i>Scrophularia libanotica</i> subsp. <i>libanotica</i> var. <i>sivasica</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	No / There isn't any specimen in 36 m ROW
ASTERACEAE	<i>Tanacetum albipannosum</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
ASTERACEAE	<i>Tanacetum densum</i> subsp. <i>sivasicum</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
SANTALACEAE	<i>Thesium stelleroides</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
LAMIACEAE	<i>Thymus canoviridis</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
LAMIACEAE	<i>Thymus cappadocicus</i> var. <i>pruinosus</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes
LAMIACEAE	<i>Thymus leucostomus</i>	Endemic/ Restricted range	VU	Criterion 2	Tier 2 (b)	Yes



Table 3.3. The final terrestrial SCC fauna species

CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Mammals	RODENTIA	Cricetidae	<i>Prometheomys schaposchnikowi</i>	Restricted Range	NT	-	Criterion 2	Tier 2 (b)	Yes
Mammals	RODENTIA	Sciuridae	<i>Spermophilus citellus</i>	Endemic to central and south-eastern Europe	VU	-	Criterion 2	Tier 2 (b)	Yes / Potential
Mammals	RODENTIA	Gliridae	<i>Dryomys laniger</i>	Endemic / Restricted Range	DD	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable or breeding area in the 36 m ROW
Mammals	RODENTIA	Gliridae	<i>Myomimus roachi</i>	Endemic to the Mediterranean Region/ Restricted Range	VU	-	Criterion 2	Tier 2 (b)	Yes / Potential
Birds	FALCONIFORMES	Accipitridae	<i>Aquila clanga</i>	-	VU	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable or breeding area in the 36 m ROW
Birds	ANSERIFORMES	Anatidae	<i>Branta ruficollis</i>	-	EN	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable or breeding area in the 36 m ROW
Birds	FALCONIFORMES	Accipitridae	<i>Circus pygargus</i>	-	LC	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable or breeding area in the 36 m ROW
Birds	FALCONIFORMES	Falconidae	<i>Falco cherrug</i>	-	EN	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable or breeding area in the 36 m ROW



CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Birds	ANSERIFORMES	Anatidae	<i>Melanitta fusca</i>	-	EN	VU	Criterion 1	Tier 2 (d)	No / There isn't any suitable or breeding area in the 36 m ROW
							Criterion 3	Tier 2 (b)	
Birds	FALCONIFORMES	Accipitridae	<i>Neophron percnopterus</i>	-	EN	VU	Criterion 1	Tier 2 (d)	No / There isn't any breeding area in the 36 m ROW
							Criterion 3	Tier 2 (b)	
Birds	GRUIFORMES	Otididae	<i>Otis tarda</i>	-	VU	EN	Criterion 1	Tier 2 (d)	Yes
Birds	GALLIFORMES	Phasianidae	<i>Perdix perdix</i>	-	LC	EN	Criterion 1	Tier 2 (d)	No / There isn't any breeding area in the 36 m ROW
Birds	GALLIFORMES	Phasianidae	<i>Tetraogallus caspius</i>	-	LC	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable or breeding area in the 36 m ROW
Birds	GRUIFORMES	Otididae	<i>Tetrao tetrix</i>	-	NT	EN	Criterion 1	Tier 2 (d)	No / There isn't any suitable or breeding area in the 36 m ROW
Birds	CHARADRIIFORMES	Charadriidae	<i>Vanellus gregarius</i>	-	CR	VU	Criterion 1	Tier 2 (c)	Yes
							Criterion 3	Tier 2 (b)	
Birds	ANSERIFORMES	ANATIDAE	<i>Cygnus cygnus</i>	-	LC	VU	Criterion 3	Tier 2 (e)	Yes
Birds	ANSERIFORMES	ANATIDAE	<i>Cygnus olor</i>	-	LC	VU	Criterion 3	Tier 2 (e)	Yes
Birds	PELECANIFORMES	PELECANIDAE	<i>Pelecanus onocrotalus</i>	-	LC	VU	Criterion 3	Tier 2 (e)	Yes
Birds	PELECANIFORMES	PHALACROCORACIDAE	<i>Phalacrocorax carbo</i>	-	LC	VU	Criterion 3	Tier 2 (e)	Yes
Birds	PELECANIFORMES	PHALACROCORACIDAE	<i>Phalacrocorax pygmeus</i>	-	LC	VU	Criterion 3	Tier 2 (e)	Yes



CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Reptiles	SQUAMATA	Viperidae	<i>Montivipera wagneri</i>	Endemic / Restricted Range	CR	-	Criterion 1	Tier 2 (c)	Yes
							Criterion 2	Tier 2 (b)	
Reptiles	SQUAMATA	Lacertidae	<i>Darevskia uzzelli</i>	Endemic / Restricted Range	EN	-	Criterion 1	Tier 2 (e)	Yes
							Criterion 2	Tier 2 (b)	
Reptiles	SQUAMATA	Lacertidae	<i>Darevskia unisexualis</i>	Restricted Range	NT	-	Criterion 2	Tier 2 (b)	Yes
Amphibians	CAUDATA	Salamandridae	<i>Mertensiella caucasica</i>	Restricted Range	VU	-	Criterion 2	Tier 2 (b)	Yes / The new field study is suggested
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus dama</i>	Endemic / Restricted Range	EN	EN	Criterion 1	Tier 2 (e)	No, there isn't any suitable area in the 36 m ROW
							Criterion 2	Tier 2 (b)	
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Phengaris nausithous</i>	Restricted Range	NT	EN	Criterion 1	Tier 2 (e)	Yes
							Criterion 2	Tier 2 (b)	
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus actis</i>	Endemic / Restricted Range	DD	DD	Criterion 2	Tier 2 (b)	Yes
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Lycaena euphratica</i>	Endemic / Restricted Range	-	DD	Criterion 2	Tier 2 (b)	No, there isn't any suitable area in the 36 m ROW
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Aricia hyacinthus</i>	Endemic / Restricted Range	-	NT	Criterion 2	Tier 2 (b)	No, there isn't any suitable area in the 36 m ROW
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus tankeri</i>	Endemic / Restricted Range	-	EN	Criterion 1	Tier 2 (e)	No, there isn't any suitable area in the 36 m ROW
							Criterion 2	Tier 2 (b)	
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus diana</i>	Endemic / Restricted Range	-	EN	Criterion 1	Tier 2 (e):	No, there isn't any suitable area in the 36 m ROW
							Criterion 2	Tier 2 (b)	
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus artvinensis</i>	Endemic / Restricted Range	-	VU	Criterion 2	Tier 2 (b)	No, there isn't any suitable area in the 36 m ROW



CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus merhaba</i>	Endemic	-	EN	Criterion 1	Tier 2 (e)	Yes
Arthropods	LEPIDOPTERA	Nymphalidae	<i>Hyponephele urartua</i>	Endemic / Restricted Range	-	VU	Criterion 2	Tier 2 (b)	No, there isn't any suitable area in the 36 m ROW
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Aricia teberdina</i>	Restricted Range	-	EN	Criterion 1	Tier 2 (e)	No, there isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Tenebrionidae	<i>Pimelia testudo</i>	-	-	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Glyphyridae	<i>Eulasia chrysopyga</i>	Restricted Range	-	-	Criterion 2	Tier 2 (b)	Yes
Arthropods	COLEOPTERA	Glyphyridae	<i>Pygopleurus kareli</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Meloidae	<i>Muzimes caucasicus</i>	Restricted Range	-	-	Criterion 2	Tier 2 (b)	Yes / The new field study is suggested
Arthropods	COLEOPTERA	Meloidae	<i>Zonitis nigritiventris</i>	Restricted Range	-	-	Criterion 2	Tier 2 (b)	Yes
Arthropods	DIPTERA	Asilidae	<i>Dysmachus safranboliticus</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	Yes
Arthropods	LEPIDOPTERA	Zygaenidae	<i>Zygaena armena</i>	Restricted Range	-	-	Criterion 2	Tier 2 (b)	Yes
Arthropods	DIPTERA	Empididae	<i>Empis angorae</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Elateridae	<i>Agrypnus crenicollis</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Cerambycidae	<i>Dorcadion ardahense</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	Yes / The new field study is suggested
Arthropods	DIPTERA	Empididae	<i>Hilara truva</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	Yes / The new field study is suggested



CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	RDBT	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Arthropods	COLEOPTERA	Cetoniidae	<i>Osmoderma lassallei</i>	Endemic	-	-	Criterion 2	Tier 2 (b)	No / There isn't any suitable area in the 36 m ROW
Arthropods	LEPIDOPTERA	Nymphalidae	<i>Boloria graeca</i>	Endemic	-	CR	Criterion 1	Tier 2 (c)	No / There isn't any suitable area in the 36 m ROW
Arthropods	COLEOPTERA	Chrysomelidae	<i>Chrysolina n. sp.</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	No / There isn't any suitable area in the 36 m ROW
Arthropods	DIPTERA	Tipulidae	<i>Tipula n. sp. 1</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	Yes
Arthropods	DIPTERA	Asilidae	<i>Dioctria n. sp. 1</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	Yes
Arthropods	DIPTERA	Asilidae	<i>Dioctria n. sp. 2</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	Yes
Arthropods	COLEOPTERA	Meloidae	<i>Muzimes n. sp.</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	No / There isn't any suitable area in the 36 m ROW
Arthropods	DIPTERA	Empididae	<i>Hilara n. sp. 1</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	No
Arthropods	DIPTERA	Empididae	<i>Hilara n. sp. 2</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	No / There isn't any suitable area in the 36 m ROW
Arthropods	DIPTERA	Empididae	<i>Hilara n. sp. 3</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	Yes
Arthropods	DIPTERA	Limoniidae	<i>Hexatoma n. sp.</i>	Endemic	-	-	Criterion 2	Tier 1 (a)	Yes
Arthropods	LEPIDOPTERA	Nymphalidae	<i>Erebia ottomana</i>	Near endemic / Restricted Range	NT	NT	Criterion 2	Tier 2 (b)	Yes
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Neolycaena soeken</i>	Endemic / Restricted Range	-	-	Criterion 2	Tier 2 (b)	No
Arthropods	LEPIDOPTERA	Lycaenidae	<i>Polyommatus antidolus</i>	Endemic / Restricted Range	-	DD	Criterion 2	Tier 2 (b)	Yes



3.4.1.2. TERRESTRIAL EUNIS HABITAT TYPES

In the habitat studies conducted within the framework of BAP, 23 natural terrestrial habitats were identified in the critical habitats. These habitat types are given in Table 3.4.

Table 3.4. Terrestrial habitat types along the TANAP route

NO	EUNIS CODE	EUNIS HABITAT TYPE
1	E1.00	Anatolian gypsum steppes
2	E1.01	Marl Steppe
3	E1.2E	Irano-Anatolian steppes
4	E1.2B	Serpentine steppes
5	E1.22	Arid subcontinental steppic grassland [<i>Festucion valesiacae</i>]
6	E2.1	Permanent mesotrophic pastures and aftermath-grazed meadows
7	E2.5	Meadows of the steppe zone
8	E3.4	Moist or wet eutrophic and mesotrophic grassland
9	E4.4	Calcareous alpine and subalpine grassland
10	E6.2	Continental inland salt steppes and marshes
11	F2.2	Evergreen alpine and subalpine heath and scrub
12	G1.1	Riparian and gallery woodland, with dominant <i>Alnus</i> , <i>Betula</i> , <i>Populus</i> or <i>Salix</i>
13	G1.3	Mediterranean riparian woodland
14	G1.A	Meso- and eutrophic <i>Quercus</i> , <i>Carpinus</i> , <i>Fraxinus</i> , <i>Acer</i> , <i>Tilia</i> , <i>Ulmus</i> and related woodland
15	G1.7	Thermophilous deciduous woodland
16	G1.9	Non-riverine woodland with <i>Betula</i> , <i>Populus tremula</i> or <i>Sorbus aucuparia</i>
17	G2.1	Mediterranean evergreen <i>Quercus</i> woodland
18	G3.F	Highly artificial coniferous plantations
19	G3.4	<i>Pinus sylvestris</i> woodland south of the taiga
20	G3.5	<i>Pinus nigra</i> woodlands
21	G3.75	<i>Pinus brutia</i> forests
22	G4.B	Mixed mediterranean <i>Pinus</i> - thermophilous <i>Quercus</i> woodland
23	X18	Wooded steppes

E1.00. Anatolian Gypsum Steppes

This habitat type is quite common around Sivas, Çankırı and Erzincan in Turkey. It can also be seen in small fragments in several provinces of the Central Anatolia. Along the route, this habitat type was identified in CH18, CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH40, CH41, CH42, CH43, CH44, CH52 and CH53. As gypsum habitat differs slightly from province to province, the endemic species distributed in the gypsum habitats in each province vary as well. Thus, gypsum habitat is exceptionally important in terms of flora.

E1.01. Marl Steppe

Marl steppe habitat can be seen in discrete forms in several parts of the Central Anatolia. This habitat is quite interesting in terms of both its vegetation structure and flora. The composition of plant communities differ from region to region. It can be seen in CH55, CH56, CH57 and



CH60 along the project route. This habitat type is sometimes confused with gypsum habitat, because the flora of marl habitats is remarkably similar to that of gypsum habitats. The main difference regards soil chemical composition that influences the distribution of particular species.

E1.2B. Serpentine Steppes

Serpentine steppe is found in CH26, CH27, CH28 along the route. Vegetation cover of the plants growing in this habitat is poor, whereas the level of endemism is quite high.

E1.2E. Irano-Anatolian Steppes

Irano-Anatolian steppe, one of the most frequent habitat types along the route, can be seen in CH9, CH10, CH15, CH16, CH17, CH19, CH20, CH21, CH22, CH23, CH24, CH29, CH30, CH31, CH45, CH46, CH47, CH48, CH50, CH51, CH54, and CH58. A lot of endemic species are distributed in this habitat.

E2.1. Permanent mesotrophic pastures and aftermath-grazed meadows

This habitat type is quite common in the East Anatolia Region. Natural mesotrophic pastures are harvested by local people in late June and July each year to provide winter feed for livestock. Therefore, this habitat is considered as a modified habitat. This habitat can be seen in CH3, CH5, CH8, CH13 and CH15 along the route.

E2.5. Meadows of the steppe zone

This habitat type is observed in CH27 and CH46 along the route. It develops around small water sources within the Irano-Turanian steppe and is characterised by herbaceous species. The water demand of these species is more than those of the steppe species. In this habitat, in general, cosmopolitan species are distributed.

E1.22. Arid subcontinental steppic grassland [*Festucion valesiacae*]

Arid subcontinental steppic grassland habitat can be seen in CH63 and CH65 along the route. This habitat type is the Marmara Region vicariant of the Irano-Turanian-Anatolian Steppe habitat, widely distributed in the Central and East Anatolia Regions. This habitat, characterised by herbaceous species, is richer in the members of the Graminae family.

E3.4. Moist or wet eutrophic and mesotrophic grassland

Moist or wet eutrophic and mesotrophic grassland formations can be seen in CH7, CH8, CH11, CH13, CH17, CH48 and CH63 along the route. Plants with a high water demand grow in this habitat.

E4.4. Calcareous alpine and subalpine grassland

Calcareous alpine and subalpine grassland formations can be seen in CH2, CH3, CH4, CH5, CH6, CH7, CH8, CH13, CH14, and CH15 along the route. This habitat type is very common particularly above 2,000 m in Ardahan. Species that make up the floristic composition are rather the taxa belonging to the Poaceae and Fabaceae families. The vegetation cover on the habitat can reach up to 100%.



E6.2. Continental inland salt steppes and marshes

Along the project route, one of the most interesting, most sensitive and most important (in terms of biodiversity) habitat is the continental inland salt steppes. This habitat type can only be seen in the Erzurum Plain along the project route, in CH17.

F2.2. Evergreen alpine and subalpine heath and scrub

This habitat type is observed in elevations of the northern part of the Central Anatolia Region and in the elevations of the East Anatolia Region. This habitat type, characterised by short and creeping plants and shrubs, is observed only in CH27 and CH28 along the route.

G1.A. Meso- and eutrophic *Quercus*, *Carpinus*, *Fraxinus*, *Acer*, *Tilia*, *Ulmus* and related woodland

This habitat type is observed mostly in Posof, within the provincial borders of Ardahan along the route, in CH1 and CH2. This habitat is more arid than the *Betula pendula* forests and has been damaged more since it is closer to residential areas.

G1.1. Riparian and gallery woodland, with dominant *Alnus*, *Betula*, *Populus* or *Salix*

These woodlands develop along creeks around only in Posof, within the provincial borders of Ardahan along the route, in CH1 and CH2. Tree species such as *Alnus*, *Fraxinus* are found in these areas.

G1.3. Mediterranean riparian woodland

Mediterranean riparian woodlands can be seen in CH31 and CH67 along the route, along the riparian zone. Dominant species is *Salix* in this habitat.

G1.7. Thermophilous deciduous woodland

Thermophilous deciduous woodland habitat was observed in CH19, CH28, CH49, CH59 and CH61 along the route. The characteristic tree species of such woodlands are oaks. Although mixed oaks generally form vast forests at the climax phase in the Marmara Region, they are not very healthy along the route.

G1.9. Non-riverine woodland with *Betula*, *Populus tremula* or *Sorbus aucuparia*

Natural *Betula pendula* woodlands are distributed only in Ardahan along the project route and were observed in CH3 and CH5.

G2.1. Mediterranean evergreen *Quercus* woodland

Although this habitat is widespread in the Mediterranean Basin and in Turkey in the Mediterranean and the Aegean Regions, it is only seen in the Thrace Region along the route. The characteristic species of the habitat are evergreen scrubs. This habitat was observed in CH66.

G3.F. Highly artificial coniferous plantations

Highly artificial coniferous plantation habitat can be seen in CH5, CH11, CH12, CH13, CH26 and CH63 along the TANAP Project route. The planted pines vary from region to region. The subflora varies depending on the dominance and age of the planted trees.



G3.4. *Pinus sylvestris* woodland south of the taiga

Natural *Pinus sylvestris* woodlands can be seen in CH5, CH11, CH12, CH13, CH27 and CH28 along the route. One of the best representatives of this habitat is the Sarıkamış Forest. The dominant tree species of this habitat is *Pinus sylvestris*. However, *Populus tremula* woodlands can also be found, albeit infrequently, in the openings of *Pinus sylvestris* woodlands. The subflora of such woodlands is quite rich.

G3.5. *Pinus nigra* woodlands

In this habitat, the undergrowth flora changes depending on the bedrock. *Pinus nigra* woodlands are observed in CH60, CH61 and CH63 along the route.

G3.75. *Pinus brutia* forests

This habitat type is widespread in the Mediterranean Basin in the world, and in Turkey in the Mediterranean and the Aegean Regions between 0-1,000 m. Red pine woodlands are seen in the CH63 along the route. This habitat is interesting with respect to endemic and local species. The rate of endemism is especially high in areas with serpentine rock. The lower flora of this habitat changes depending on the bedrock.

G4.B. Mixed mediterranean *Pinus* - thermophilous *Quercus* woodland

This habitat type is widespread in Turkey in the Mediterranean, Marmara and the Aegean Regions and can be seen in CH62 and CH63 along the route. In the upper flora pine species are dominant, whereas in the lower flora deciduous oak species become dominant. The floristic composition changes depending on the bedrock. The rate of endemism is high in areas with serpentine rock. Within the borders of the Bursa province, black pine and deciduous mixed oak woodlands sometimes form neat populations, and sometimes black pine and deciduous oak woodlands form mixed forests.

X18. Wooded steppes

This habitat type is pretty widespread in Turkey. It is observed in CH25 along the route. The trees are sparse and the openings are steppes. Thus, steppe species are more widespread.

Along the TANAP route 67 terrestrial critical habitats have been identified. The details of these terrestrial critical habitats are given in Table 3.5.

The impact level of terrestrial critical habitats and summarized mitigation measures table is given in Annex 3.

Also assessment of the protected and conservation areas which intersects with the TANAP Project route is given in Annex 2.



Table 3.5. Terrestrial Critical Habitats

Critical Habitat No	KP	Total Length (km)	Priority	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion
CH1	003+000-003+735	0.735	M	Ardahan	POSOF WDA + POSOF PBA+POSOF FOREST (KBA)	Criterion 4	G1.A G1.1	<i>Zygaena armena</i> <i>Reseda armena var. armena</i> <i>Mertensiella caucasica</i>	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4
CH2	003+940-004+051	0.111	M	Ardahan	POSOF WDA + POSOF PBA+POSOF FOREST (KBA)	Criterion 4	G1.A G1.1 E4.4	<i>Zygaena armena</i> <i>Reseda armena var. armena</i> <i>Mertensiella caucasica</i>	M	Criterion 2	Tier 2 (b)	
CH3	20+700-23+000	2,3	H	Ardahan	POSOF WDA + POSOF FOREST (KBA)	Criterion 4	G1.9 E2.1 E4.4	<i>Tipula n.sp</i> <i>Centaurea macrocephala</i> <i>Erebia ottomana</i> <i>Lilium kesselringianum</i>	H M M H	Criterion 2 Criterion 2 Criterion 2 Criterion 2	Tier 1 (a) Tier 2 (b) Tier 2 (b) Tier 2 (b)	Criterion 2 & 4
CH4	23+670-27+081	3.411	M	Ardahan	POSOF WDA + POSOF FOREST (KBA)	Criterion 4	E4.4	<i>Prometheomyia schaposchnikowi</i>	H	Criterion 2	Tier 2 (b)	
CH5	62+320-63+140	0.82	H	Ardahan	ARDAHAN FOREST (IBA, KBA)	Criterion 4	E4.4 G1.9 G3.F G3.4 E2.1	<i>Lathyrus karsianus</i> <i>Tanacetum coccineum ssp. chamaemelifolium</i> <i>Phengaris nausithous</i> <i>Tipula n.sp</i> <i>Erebia ottomana</i>	M M H H M	Criterion 2 Criterion 2 Criterion 1 Criterion 2 Criterion 2	Tier 2 (b) Tier 2 (b) Tier 2 (e) Tier 2 (b) Tier 1 (a)	Criterion 1, 2 & 4



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH6	84+758-87+000	2.242	H	Ardahan	-	-	E4.4	<i>Phengaris nausithous</i>	H	Criterion 1	Tier 2 (e)	Criterion 1 & 2
										Criterion 2	Tier 2 (b)	
CH7	115+393-116+000	0.607	H	Kars	ALLAHUEKBER MOUNTAINS (KBA)	Criterion 4	E4.4	<i>Phengaris nausithous</i>	H	Criterion 1	Tier 2 (e)	Criterion Criterion 1, 2 & 4
							E3.4			Criterion 2	Tier 2 (b)	
CH8	116+069-116+637	0.568	H	Kars	ALLAHUEKBER MOUNTAINS (KBA)	Criterion 4	E4.4	<i>Phengaris nausithous</i>	H	Criterion 1	Tier 2 (e)	Criterion 1, 2 & 4
							E3.4			Criterion 2	Tier 2 (b)	
CH9	164+345-164+566	0.221	M	Kars	-	-	E1.2E	<i>Darevskia uzzelli</i>	H	Criterion 1	Tier 2 (e)	Criterion 1 & 2
										Criterion 2	Tier 2 (b)	
CH10	167+000-167+154	0.154	M	Kars	-	-	E1.2E	<i>Darevskia uzzelli</i>	H	Criterion 1	Tier 2 (e)	Criterion 1 & 2
										Criterion 2	Tier 2 (b)	
CH11	169+000-174+000	5	M	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	E3.4	<i>Otis tarda</i>	M	Criterion 1	Tier 2 (d)	Criterion 1 & 4
							G3.4					
CH12	174+412-176+000	1.588	H	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	G3.4	<i>Eulasia chrysopyga</i>	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4
							G3.F			H	Criterion 1	Tier 2 (d)



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH13	187+557-193+000	5.443	M	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	E4.4 G3.4 E2.1	<i>Lathyrus karsianus</i> <i>Eulasia chrysopyga</i> <i>Phengaris nausithous</i>	M M H	Criterion 2 Criterion 2 Criterion 1	Tier 2 (b) Tier 2 (b) Tier 2 (e)	Criterion 1, 2 & 4
							E3.4	<i>Zonitis nigriventris</i>	M	Criterion 2	Tier 2 (b)	
							G3.F	<i>Hieracium sarykamyschense</i>	H	Criterion 1	Tier 2 (d)	
CH14	202+930-203+709	0.779	M	Kars	-	-	E4.4	<i>Zonitis nigriventris</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH15	214+885-219+641	5.641	M	Erzurum	-	-	E1.2E E2.1 E4.4	<i>Montivipera wagneri</i> <i>Salvia huberi</i> <i>Cephalaria sparsipilosa</i> <i>Eryngium wanaturi</i> <i>Polyommatus merhaba</i> <i>Cousinia bicolor</i>	H H M M H H	Criterion 1 Criterion 2 Criterion 2 Criterion 2 Criterion 1 Criterion 1	Tier 2 (c) Tier 2 (b) Tier 2 (b) Tier 2 (b) Tier 2 (e) Tier 2 (d)	Criterion 1 & 2
CH16	232+172-232+787	0.615	M	Erzurum	-	-	E1.2E	<i>Cousinia bicolor</i>	H	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Criterion 1 & 2



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH17	306+365-312+319 (except highway)	5.873	H	Erzurum	ERZURUM MARSHES BUFFER ZONE (WETLAND, KBA)	Criterion 4	E6.2 E1.2E E3.4	<i>Vanellus gregarius</i> <i>Lepidium caespitosum</i>	H M	Criterion 1 Criterion 2	Tier 2 (c) Tier 2 (b) Tier 2 (b)	Criterion 1, 2, 3 & 4
CH18	369+037-369+126	0.089	H	Erzurum	-	-	E1.00	<i>Thymus canoviridis</i>	H	Criterion 2	Tier 2 (b)	Criterion 2
CH19	385+169-390+000	4.831	M	Erzurum	-	-	E1.2E G1.7	<i>Polyommatus antidolus</i>	H	Criterion 2	Tier 2 (b)	Criterion 2
CH20	393+489-394+339	0.85	M	Erzincan	-	-	E1.2E	<i>Zonitis nigriventris</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH21	432+592-434+819	2.227	M	Erzincan	-	-	E1.2E	<i>Salvia huberi</i> <i>Cousinia halsensis</i>	H M	Criterion 2 Criterion 2	Tier 2 (b) Tier 2 (b)	Criterion 2
CH22	451+458-454+120	2.662	M	Erzincan	-	-	E1.2E	<i>Isatis glauca</i> ssp. <i>sivasica</i> <i>Polyommatus actis</i>	M H	Criterion 2 Criterion 2	Tier 2 (b) Tier 2 (b)	Criterion 2
CH23	518+154-521+487	3.333	M	Gümüşhane	-	-	E1.2E	<i>Tanacetum densum</i> ssp. <i>sivasicum</i> <i>Polyommatus actis</i>	M H	Criterion 2 Criterion 2	Tier 2 (b) Tier 2 (b)	Criterion 2
CH24	537+806-543+711	5.905	M	Erzincan-Gümüşhane	-	-	E1.2E	<i>Tanacetum albipannosum</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH25	564+425-565+125	0.7	M	Erzincan	-	-	X18	<i>Isatis undulata</i>	M	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Criterion 1 & 2



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH26	588+880-590+358	1.478	M	Erzincan	REFAHİYE FOREST (KBA)	Criterion 4	G3.F E1.2B	<i>Cochlearia sintenisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4
CH27	604+940-608+000	03.Haz	M	Erzincan-Sivas	REFAHİYE FOREST (KBA)	Criterion 4	E1.2B G3.4 F2.2 E2.5	<i>Cochlearia sintenisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4
CH28	614+648-626+000	11.352	H (E1.2B), M (G3.4, F2.2, G1.7)	Sivas	REFAHİYE FOREST (KBA)	Criterion 4	E1.2B G3.4 F2.2 G1.7 Achillea sintenisii	<i>Bellevalia crassa</i> <i>Asperula capitellata</i> <i>Cochlearia sintenisii</i> <i>Thymus cappadocicus var. pruinosis</i> <i>Achillea sintenisii</i>	H M M M M	Criterion 1 Criterion 2 Criterion 2 Criterion 2 Criterion 2	Tier 2 (d) Tier 2 (b) Tier 2 (b) Tier 2 (b) Tier 2 (b)	Criterion 1, 2 & 4



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH29	632+635-634+183	1.548	M	Sivas	-	-	E1.2E	<i>Isatis undulata</i>	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2
								<i>Cochlearia sintenisii</i>	M	Criterion 2	Tier 2 (b)	
CH30	634+285-634+864	0.579	M	Sivas	-	-	E1.2E	<i>Isatis undulata</i>	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2
								<i>Cochlearia sintenisii</i>	M	Criterion 2	Tier 2 (b)	
CH31	634+906-634+932	0,026	H	Sivas	-	-	G1.3	<i>Hexatoma n. sp.</i>	H	Criterion 2	Tier 1 (a)	Criterion 2
							E1.2E	<i>Tipula n.sp</i>	H	Criterion 2	Tier 1 (a)	
CH32	652+000-654+878	2,878	H	Sivas	-	-	E1.00	<i>Gypsophila heteropoda ssp. minutiflora</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
								<i>Chrysocamela noeana</i>	H	Criterion 2	Tier 2 (b)	
									H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Minuartia corymbulosa</i> <i>var. gypsophiloidea</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Gypsophila aucheri</i>	M	Criterion 2	Tier 2 (b)	
								<i>Isatis glauca</i> ssp. <i>sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scorzonera aucherana</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scrophularia lepidota</i>	M	Criterion 2	Tier 2 (b)	
								<i>Thesium stellerooides</i>	M	Criterion 2	Tier 2 (b)	
								<i>Tipula n.sp</i>	H	Criterion 2	Tier 1 (a)	
CH33	656+000- 656+431	0.431	H	Sivas	-	-	E1.00	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2
										Criterion 2	Tier 2 (b)	
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Gypsophila aucheri</i>	M	Criterion 2	Tier 2 (b)	
								<i>Isatis glauca</i> ssp. <i>sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scorzonera aucherana</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scrophularia lepidota</i>	M	Criterion 2	Tier 2 (b)	
								<i>Thesium stellerooides</i>	M	Criterion 2	Tier 2 (b)	
								<i>Tipula n.sp</i>	H	Criterion 2	Tier 1 (a)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH34	660+353-660+456	0.103	H	Sivas	-	-	E1.00	<i>Gypsophila heteropoda</i> <i>ssp. minutiflora</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Gypsophila aucheri</i>	M	Criterion 2	Tier 2 (b)	
								<i>Isatis glauca</i> ssp. <i>sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scorzonera aucherana</i>	M	Criterion 2	Tier 2 (b)	
								<i>Scrophularia lepidota</i>	M	Criterion 2	Tier 2 (b)	
								<i>Thesium stelleroides</i>	M	Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Tipula n.sp</i>	H	Criterion 2	Tier 1 (a)	
CH35	661+206- 661+709	0.503	H	Sivas	-	E1.00	<i>Gypsophila heteropoda</i> <i>ssp. minutiflora</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
							<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)		
										Criterion 2	Tier 2 (b)	
							<i>Minuartia corymbulosa</i> <i>var. gypsophiloides</i>	H	Criterion 1	Tier 2 (d)		
							<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)		
							<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)		
							<i>Gypsophila aucheri</i>	M	Criterion 2	Tier 2 (b)		
							<i>Isatis glauca ssp. sivasica</i>	M	Criterion 2	Tier 2 (b)		
							<i>Scorzonera aucherana</i>	M	Criterion 2	Tier 2 (b)		



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Scrophularia lepidota</i>	M	Criterion 2	Tier 2 (b)	
								<i>Thesium stelleroides</i>	M	Criterion 2	Tier 2 (b)	
								<i>Tipula n.sp</i>	H	Criterion 2	Tier 1 (a)	
CH36	683+613-683+648	0.035	H	Sivas	HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Dysmachus safranboliticus</i>	H	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Astragalus aytatchii</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Gypsophila heteropoda ssp. minutiflora</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Minuartia corymbulosa</i> var. <i>gypsophilooides</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
CH37	683+924- 683+963	0.039	H	Sivas	HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Dysmachus safranboliticus</i>	H	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Astragalus aytatchii</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Minuartia corymbulosa</i> var. <i>gypsophilooides</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
CH38	700+549-701+087	0.538	H	Sivas	MAĞARA LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Astragalus aytatchii</i>	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4
										Criterion 2	Tier 2 (b)	
								<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Minuartia corymbulosa</i> var. <i>gypsophilooides</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Onobrychis stenostcahya</i> ssp. <i>krusei</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
								<i>Achillea sipikorensis</i>	M	Criterion 2	Tier 2 (b)	
								<i>Centaurea sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Isatis glauca ssp. sivasica</i>	M	Criterion 2	Tier 2 (b)	
CH39	708+677-708+890	0.213	H	Sivas	BATAKLIKDÜZÜ 2 BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Achillea s intentisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	
								<i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>	H	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH40	713+855-713+956	0.101	H	Sivas	ÇETME LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Achillea sintenisii</i> <i>Gypsophila aucheri</i> <i>Gypsophila heteropoda</i> <i>ssp. minutiflora</i> <i>Onosma sintenisii</i> <i>Centaurea sivasica</i>	M M H Criterion 2	Criterion 2 Criterion 2 Criterion 1 Criterion 2 Criterion 2	Tier 2 (b) Tier 2 (b) Tier 2 (d) Tier 2 (b) Tier 2 (b)	Criterion 1, 2 & 4
CH41	720+035-720+290	0.255	H	Sivas	TUZLU LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Gypsophila heteropoda</i> <i>ssp. minutiflora</i> <i>Astragalus zaraensis</i> <i>Minuartia corymbulosa</i> <i>var. gypsophiloides</i> <i>Achillea sintenisii</i> <i>Gypsophila aucheri</i>	H H H H H M M	Criterion 1 Criterion 2 Criterion 1 Criterion 2 Criterion 1 Criterion 2 Criterion 2	Tier 2 (d) Tier 2 (b) Tier 2 (d) Tier 2 (b) Tier 2 (d) Tier 2 (b) Tier 2 (b)	Criterion 1, 2 & 4



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
<i>Onosma sintenisii</i>												
CH42	729+485-729+571	0.086	H	Sivas	BALIKLIKAYA BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
CH43	733+201-733+366	0.165	H	Sivas	HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	<i>Onosma sintenisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4
								<i>Isatis glauca ssp. sivasica</i>	M	Criterion 2	Tier 2 (b)	
								<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	
CH44	741+301-741+446	0.145	H	Sivas	-	-	E1.00	<i>Achillea sintenisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 1 & 2
								<i>Chrysocamela noeana</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Astragalus zaraensis</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Cousinia sivasica</i>	M	Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH45	746+599-749+672	3.073	M	Sivas	-	-	E1.2E	<i>Dysmachus safranboliticus</i>	H	Criterion 2	Tier 2 (b)	Criterion 2
CH46	802+361-802+428	0.067	H	Sivas	-	-	E2.5	<i>Hexatoma n. sp.</i>	H	Criterion 2	Tier 1 (a)	Criterion 2
							E1.2E	<i>Cousinia halysensis</i>	M	Criterion 2	Tier 2 (b)	
CH47	802+454-802+755	0.301	H	Sivas	-	-	E1.2E	<i>Hexatoma n. sp.</i>	H	Criterion 2	Tier 1 (a)	Criterion 2
								<i>Cousinia halysensis</i>	M	Criterion 2	Tier 2 (b)	
CH48	815+368-815+380	0.012	H	Sivas	-	-	E1.2E	<i>Hilara n. sp. 3</i>	H	Criterion 2	Tier 1 (a)	Criterion 2
							E3.4					
CH49	846+021-846+224	0.203	H	Yozgat	-	-	G1.7	<i>Dioclea n. sp. 2</i>	H	Criterion 2	Tier 1 (a)	Criterion 2
								<i>Dysmachus safranboliticus</i>	H	Criterion 2	Tier 2 (b)	
CH50	945+058-945+445	0.387	M	Yozgat	-	-	E1.2E	<i>Cousinia halysensis</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH51	993+073-993+795	0.722	M	Yozgat	-	-	E1.2E	<i>Cousinia halysensis</i>	M	Criterion 2	Tier 2 (b)	Criterion 2



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH52	1029+605-1029+804	0.199	M	Yozgat	-	-	E1.00	<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
								<i>Cousinia halsensis</i>	M	Criterion 2	Tier 2 (b)	
CH53	1030+091-1030+310	0.219	M	Yozgat	-	-	E1.00	<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
								<i>Cousinia halsensis</i>	M	Criterion 2	Tier 2 (b)	
CH54	1139+490-1140+300	0.81	M	Ankara	-	-	E1.2E	<i>Cousinia halsensis</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH55	1149+730-1149+900	0.17	M	Ankara	-	-	E1.01	<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
								<i>Cousinia halsensis</i>	M	Criterion 2	Tier 2 (b)	
CH56	1208+945-1209+108	0.163	M	Ankara	-	-	E1.01	<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	Criterion 2



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH57	1223+54-1223+506	0.452	H	Eskişehir	ACIKIR STEPPE (KBA, IPA)	Criterion 4	E1.01	<i>Scutellaria yildirimli</i>	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4
								<i>Achillea ketenoglu</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Astragalus physodes ssp. acikirensis</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Minuartia corymbulosa var. gypsophiloidea</i>	H	Criterion 1	Tier 2 (d)	
									H	Criterion 2	Tier 2 (b)	
								<i>Astragalus kochakii</i>	M	Criterion 2	Tier 2 (b)	
								<i>Cyathobasis fruticulosa</i>	M	Criterion 2	Tier 2 (b)	
								<i>Onobrychis paucijuga</i>	M	Criterion 2	Tier 2 (b)	
								<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH58	1362+917-1363+753	0.836	L	Eskişehir	-	-	E1.2E	<i>Thymus leucostomus</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH59	1366+493-1366+692	0.199	M	Eskişehir	-	-	G1.7	<i>Salvia tchihatcheffii</i>	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2
CH60	1372+340-1372+683	0.343	H	Eskişehir	-	-	E1.01	<i>Dioctria n. sp. 1</i>	H	Criterion 2	Tier 1 (a)	Criterion 1 & 2
							G3.5	<i>Cephalaria aytachii</i>	H	Criterion 1	Tier 2 (d)	
								<i>Gypsophila osmangaziensis</i>	H	Criterion 2	Tier 2 (b)	
								<i>Alyssum niveum</i>	H	Criterion 1	Tier 2 (d)	
								<i>Scabiosa hololeuca</i>	H	Criterion 2	Tier 2 (b)	
								<i>Salvia tchihatcheffii</i>	M	Criterion 1	Tier 2 (d)	
										Criterion 2	Tier 2 (b)	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH61	1430+920-1432+305	1.385	M	Kütahya	-	-	G1.7	<i>Erodium sibthorpiatum</i> <i>ssp. sibthorpiatum</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2
							G3.5	<i>Astragalus densifolius</i> <i>ssp. ayashensis</i>	M	Criterion 2	Tier 2 (b)	
CH62	1477+452-1477+833	0.381	M	Bursa	-	-	G4.B	<i>Onosma briquetii</i>	M	Criterion 2	Tier 2 (b)	Criterion 2
CH63	1491+767-1496+340	4.573	H (G3.75, G4.B), M (E3.4, G3.F)	Bursa	-	-	G3.F	<i>Alyssum dudleyi</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2
							G3.75			Criterion 2	Tier 2 (b)	
							E3.4					
							G3.5					
							G4.B	<i>Dianthus goekayi</i>	H	Criterion 1	Tier 2 (d)	
							E1.22			Criterion 2	Tier 2 (b)	
CH64	1736+000-1738+300	2.3	M	Çanakkale	-	-	Modified habitats (I1.1, I1.4, J5.4)	<i>Phalacrocorax carbo</i> <i>Phalacrocorax pygmeus</i>	M	Criterion 3	Tier 2 (e)	Criterion 3



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION
CH65	1741+100-1741+500	0.4	M	Çanakkale	-	-	E1.22	<i>Spermophilus citellus</i>	L	Criterion 2	Tier 2 (b)	Criterion 2
CH66	1788+300-1788+500	0.2	M	Edirne	-	-	G2.1	<i>Myomimus roachi</i>	L	Criterion 2	Tier 2 (b)	Criterion 2
CH67	1800+600-1805+000	4.4	H	Edirne	-	-	G1.3	<i>Phalacrocorax carbo</i> <i>Phalacrocorax pygmeus</i> <i>Cygnus olor</i> <i>Cygnus cygnus</i> <i>Pelecanus onocrotalus</i>	M	Criterion 3	Tier 2 (e)	Criterion 3 Tier 2 (e) Tier 2 (e) Tier 2 (e) Tier 2 (e)



3.4.1.3. RECOMMENDED METHODOLOGIES WITHIN TERRESTRIAL PLANS

3.4.1.3.1. FLORA

Seed Planting Method

In the seed planting activities within the scope of the Project, the following method should be used:

- The seeds should be planted on 10 x 10 m areas at the coordinates or KP's given in the Table 10.1.
- The plantation depth should be 3-5 cm.
- The seeds should be planted in September-November.

Seed Collecting and Conservation Method

Within the scope of the Project, collecting time for the species should be carried out in the time intervals of each species in the Species Action Plan.

- The seeds collected should be placed in 10 x 25 cm canvas bags and stored in a ventilated, cool place.
- For every species, 1,000-3,000 seeds should be collected.
- Some of the collected seeds (from Edirne to Erzincan) should be delivered to the seed gene bank in Ankara and some of them (from Erzincan to Ardahan) to the seed gene bank to be established in the Artvin Çoruh University Gene Bank which is supposed to be supported within the scope of the TANAP BAP Project (if construction is completed).

Translocation and Relocation Procedures

- The individual plants to be transferred to outside of the ROW, near to the project area and should be collected together with its soil of 15-30 cm depth, depending on the plant species and root structure, and should be planted in soil of the same depth.
- Plant specimens to be translocated should be transferred in September-November.
- The first water should be supplied to the transferred individuals.
- The plant specimens to be relocated should be transferred in March-May, depending on the elevation.

Soil Scraping Procedures

In all critical habitats, except otherwise provided for in the species and habitat action plans, top soil should be scraped.

- The top soil should be scraped to a depth of 10-15 cm and should be stored nearby the ROW.
- The height of the stored top soil should not be higher than 1 m.



- The storage time of the top soil should be as short as possible, and especially in summer storage should not exceed 3 months.

Both in the critical habitat action plans and the species action plans, the regions recommended for seed collection and plantation, collection and planting a plant or a bulb, stone and rock restoration, harvesting of the herbaceous plants, scraping the top soil as a layer, the riparian vegetation, aquatic and semi aquatic area rehabilitation and terracing are given in Table 10.1.



3.4.1.3.2. FAUNA

Mammals

Prometheomys schaposchnikowi

- The entrance to the gallery where *Prometheomys schaposchnikowi* individuals live should be opened.
- A thin, wooden bar should be introduced to a few cm into the gallery 20 cm beyond the opened part.
- A wooden 10 cm plate should be placed right behind the bar.
- In a few seconds after the individual comes to close the gallery entrance, its re-entrance to the gallery should be prevented by tapping on the plate.
- Top soil should be removed to open the gallery.
- The individual should be caught with gloves and put into a wire cage.
- The individuals should be put in different cages so that they do not harm each other.
- They should be released into a similar habitat nearby the ROW at the latest within an hour.

Spermophilus citellus, Myomimus roachi

- Tomahawk type live traps (Figure 3.1) should be set to catch the individuals in the area and they should be released into similar habitats in a nearby area.

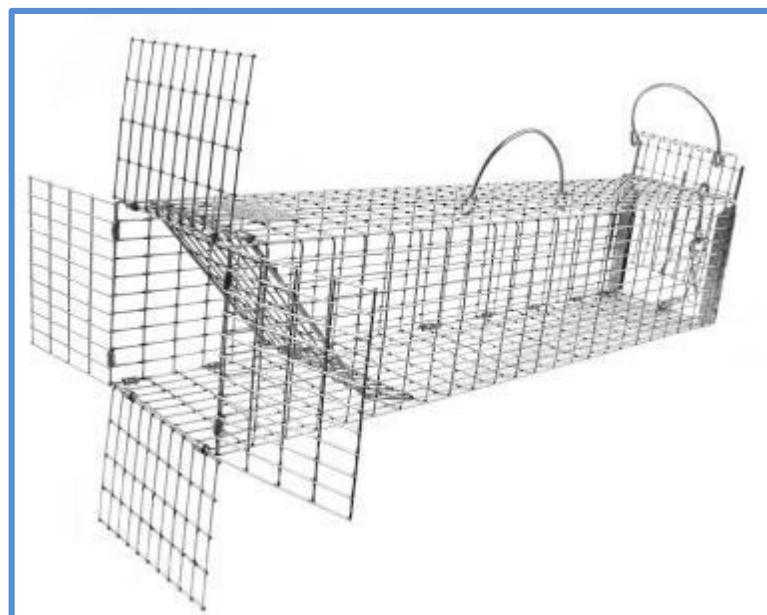


Figure 3.1. Tomahawk type live trap

Reptiles



- Lizard and snake species are poikilotherm animals, that is, they are cold-blooded animals whose body temperature depends on the temperature of the environment. Thus, it is not possible to see reptiles in the winter months when the ambient temperature is low. However, in the spring, as the ambient temperature starts to rise, they can be observed as they go around in open air or resting under a stone.
- Leather gloves are used in field studies concerning reptiles when lifting stones and similar objects to find them (Figure 3.2.a). These gloves also prevent thorns, etc, pricking the hands. Another method used in catching snake or lizard is using a loop method (Figure 3.2.b). Only for catching snakes, an apparatus with a U-shaped end as shown in Figure 3.2.b can also be used. The lizard and snake specimens caught with an appropriate method are put into canvas bags and are conveniently carried to the similar habitats in a nearby area.



Figure 3.2. Tools used to catch lizard and snake specimens (Leather gloves – Loop – Snake catching apparatus)



3.4.1.4. PRIORITIES SPECIFIED IN ACTION PLANS

3.4.1.4.1. FLORA

- The priority status of the species in the EN and CR categories according to the IUCN and to the Red Data Book of Turkish Plants⁹ of new species, and of endemic species with restricted range is determined to be "high"
- The priority status of the species in the VU category according to the IUCN and to the Red Data Book of Turkish Plants and of widespread endemic species is determined to be "medium".
- There is no species with "low" priority in the study.

3.4.1.4.2. FAUNA

MAMMALS

- The priority status of the species in the EN and CR categories according to the IUCN is determined to be "high".
- There is no species with "medium" priority in the study.
- The priority status of the species in the VU category according to the IUCN and the potential species is determined to be "low".

BIRDS

- The priority status of the species in the CR category according to the IUCN and to the Red Data Book for Birds of Türkiye¹⁰ is determined to be "high".
- The priority status of the species in the VU and LC categories according to the IUCN and to the Red Data Book for Birds of Türkiye and of congregatory species is determined to be "medium".
- There is no species with "low" priority in the study.

REPTILES

- The priority status of the species in the EN and CR categories according to the IUCN is determined to be "high".
- There is no species with "medium" priority in the study.
- The priority status of the species in the NT category according to the IUCN and the potential species is determined to be "low".

AMPHIBIANS

- There is no species with "high" and "medium" priorities in the study.
- The priority status of the species in the VU category according to the IUCN is determined to be "low".

⁹ EKİM, T., KOYUNCU, M., VURAL, M., DUMAN, H. (Our flora expert) AYTAÇ, Z. (Our flora expert) ADIGÜZEL, N., 2000. Red Data Book of Turkish Plants, Turkey's Nature Protection Association, Ankara.

¹⁰ KIZIROĞLU, İ., 2008. Red Data Book for Birds of Türkiye, Desen Print, Ankara.



ARTHROPODA

- The priority status of the species in the EN and CR categories according to the IUCN and to the Red Book of Butterflies in Turkey¹¹, of new species, and of endemic species with restricted range and of the expert judgement is determined to be "high".
- The priority status of the species in the VU category according to the IUCN is determined to be "medium".
- There is no species with "low" priority in the study.

FRESHWATER FISH

- The priority status of the species in the EN and CR categories according to the IUCN, of endemic species for Türkiye, of the species which have a low population and of the expert judgement is determined to be "high".
- The priority status of the endemic species for Türkiye, of the species which have a dense population and of the expert judgement is determined to be "medium".
- There is no species with "low" priority in the study.

* Also an expert judgement is very important for determining the priority of the species, which are coming from their 2 years observations along the TANAP ESIA route.

¹¹ KARAÇETİN, E., WELCH, H.J., 2011. Red Book of Butterflies in Turkey. Nature Protection Center, Ankara, Turkey.



3.4.1.5. POPULATION SCALES SPECIFIED IN THE ACTION PLANS

3.4.1.5.1. FLORA

- Low: 1-5 individuals in 100 m²
- Medium: 6-10 individuals in 100 m²
- High: 11 or more individuals in 100 m²

3.4.1.5.2. FAUNA

MAMMALS

- Low: 1-3 individuals in 1000 m²
- Medium: 4-9 individuals in 1000 m²
- High: 10 or more individuals in 1000 m²

BIRDS

- Low: 1-2 individuals in 1000 m²
- Medium: 3-9 individuals in 1000 m²
- High: 10 or more individuals in 1000 m²

For congregatory species

- Low: 1-19 individuals in 1000 m²
- Medium: 20-99 individuals in 1000 m²
- High: 100 or more individuals in 1000 m²

REPTILES

- Low: 1-3 individuals in 1000 m²
- Medium: 4-9 individuals in 1000 m²
- High: 10 or more individuals in 1000 m²

ARTHROPODA

- Low: 1-3 individuals in 1000 m²
- Medium: 4-9 individuals in 1000 m²
- High: 10 or more individuals in 1000 m²

FRESHWATER FISH

- Low: 1-5 individuals in 400 m²
- Medium: 6-10 individuals in 400 m²
- High: 11 or more individuals in 400 m²



3.4.1.6. MONITORING SCHEDULE AND CRITERIA FOR ACHIEVEMENT

Monitoring periods should be 1st, 3rd, 5th, 8th and 10th years.

In these periods:

- 1st year: The main purpose is to prevent erosion. To this end, especially in highly sloped areas, the seeds of the endemic plants of the region should be collected and planted on the ROW for erosion control. In the 1st year, observing 10% plant diversity in the area is a criterion of achievement.
- 3rd year: The main purpose is that the vegetation cover growing on the ROW is 30% similar to the nearby natural vegetation; the flora and fauna species diversity being 40% identical is a criterion of achievement.
- 5th year: The main purpose is that the vegetation cover growing on the ROW is 50% similar to the nearby natural vegetation; the flora and fauna species diversity being 60% identical is a criterion of achievement.
- 8th year: The main purpose is that the vegetation cover growing on the ROW is 70% similar to the nearby natural vegetation; the flora and fauna species diversity being 80% identical is a criterion of achievement.
- 10th year: The main purpose is that the vegetation cover growing on the ROW is 100% similar to the nearby natural vegetation; the flora and fauna species diversity being 100% identical is a criterion of achievement.

Terrestrial Critical Habitats Action Plans are given in Chapter 4, and the Species Action Plans concerning the target species hosted by these habitats are given in Chapter 5.

In addition, Biorestoration Monitoring Plan which describes the achievement criteria, reporting, schedule and methodology of biorestoration monitoring studies those will be implemented for the monitoring of on-going and completed biorestoration activites at each terrestrial and freshwater critical habitat is given in Annex 8.

3.4.2. FRESHWATER STUDIES

3.4.2.2. FAUNA

As a result of the studies conducted within the framework of BAP, the followings were assessed:

- Nine fish species belonging to five families,
- One macroinvertebrate species,
- Two natural freshwater EUNIS habitat types.

The final target species identified according to the IFC (2012) criterions and tiers, based on the target species determined during the EIA studies are given in the Table 3.6, together with the reasons for selecting and/or excluded them.



Table 3.6. The final freshwater SCC fauna species

CLASS	ORDER	FAMILY	SPECIES	ENDEMIC / RESTRICTED RANGE	IUCN	CRITERION	INDICATIVE TIER	SCC / IF NOT, WHY?
Fish	ANGUILLIFORMES	ANGUILLIDAE	<i>Anguilla anguilla</i>	-	CR	Criterion 1	Tier 2 (c)	Yes
						Criterion 3	Tier 2 (b)	
Fish	CYPRINIFORMES	COBITIDAE	<i>Cobitis puncticulata</i>	Endemic	CR	Criterion 1	Tier 1 (a/b)	Yes
						Criterion 2	Tier 1 (a)	
Fish	CYPRINIFORMES	CYPRINIDAE	<i>Alburnus escherischi</i>	Endemic	-	Criterion 2	Tier 2 (b)	No / This species is endemic to Turkey but has wide distribution in Kızılırmak and Sakarya Basin.
Fish	CYPRINIFORMES	CYPRINIDAE	<i>Barbus oligolepis</i>	Endemic	-	Criterion 2	Tier 2 (b)	No / This species has wide distribution in Susurluk and Manyas Basin.
Fish	CYPRINIFORMES	CYPRINIDAE	<i>Capoeta tinca</i>	Endemic	-	Criterion 2	Tier 2 (b)	No / This species has wide distribution in Turkey.
Fish	CYPRINIFORMES	CYPRINIDAE	<i>Chondrostoma angoranse</i>	Endemic	-	Criterion 2	Tier 2 (b)	Yes
Fish	CYPRINIFORMES	COBITIDAE	<i>Cobitis fahireae</i>	Endemic	-	Criterion 2	Tier 2 (b)	Yes
Fish	CYPRINIFORMES	BALITORIDAE	<i>Oxyneomacheilus simavica</i>	Endemic	CR	Criterion 1	Tier 1 (a/b)	Yes
						Criterion 2	Tier 2 (b)	
Fish	CYPRINIFORMES	COBITIDAE	<i>Cobitis simplicispinna</i>	Endemic	-	Criterion 2	Tier 2 (b)	Yes
Fish	CYPRINIFORMES	BALITORIDAE	<i>Oxyneomacheilus kossugi</i>	Endemic	-	Criterion 2	Tier 2 (b)	Yes
Fish	CYPRINIFORMES	CYPRINIDAE	<i>Gobio obtusirostris</i>	Endemic	-	Criterion 2	Tier 2 (b)	Yes
Fish	SALMONIFORMES	SALMONIDAE	<i>Salmo macrostigma</i>	-	DD	Criterion 2	Tier 2 (b)	Yes
Macroinvertebrates	UNIONOIDA	UNIONIDAE	<i>Unio crassus</i>	-	EN	Criterion 1	Tier 2 (d)	No / There isn't any specimen observed during the BAP field studies which were conducted 17 rivers that were classified as potential rivers for this species in the TANAP EIA Report.



3.4.2.3. FRESHWATER EUNIS HABITAT TYPES

In the habitat studies conducted within the framework of BAP, two natural freshwater habitats were identified in the critical habitats. These habitat types are as follows:

C2.2: Permanent non-tidal, fast, turbulent watercourses

Rivers, streams, brooks, rivulets, rills, torrents, waterfalls, cascades and rapids are included. The bed is typically composed of rocks, stones or gravel with only occasional sandy and silty patches. Features of the river bed, uncovered by low water or permanently emerging, such as gravel or rock islands and bars are treated as the littoral zone (C3). Includes high, mid and low-altitude, usually small to medium-sized streams as defined by the Water Framework Directive.

C2.3: Permanent non-tidal, smooth-flowing watercourses

Slow-flowing rivers, streams, brooks, rivulets and rills; also fast-flowing rivers with laminar flow. The bed is typically composed of sand or mud. Features of the river bed, uncovered by low water or permanently emerging, such as sand or mud islands and bars are treated as the littoral zone (C3). Includes mid and low-altitude streams as defined by the Water Framework Directive.

Along the TANAP route 27 freshwater critical habitats were identified. Details of the fresh water critical habitats are given in Table 3.7.

The impact level of freshwater critical habitats and summarized mitigation measures table is given in Annex 4.



Table 3.7. Freshwater Critical Habitats

NO	Critical Habitat Name (River Name)	KP	Province	Protected Area / High Biodiversity Area (If Intersects)	EUNIS Habitat	Priority	SCC (If Any)	Priority	Criterion	Indicative Tier (Quantitative Assessment)
FCH1	Kura River	71+710-71+755	Ardahan	PUTKA-GÖLBAŞI BUFFER ZONE	C2.2	M	-	-	Criterion 4	-
FCH2	Unknown Creek	166+450-166+571	Kars	-	C2.3	L	-	-	-	-
FCH3	Süngütaşı River	220+177-220+211	Erzurum	-	C2.3	L	-	-	-	-
FCH4	Kızıllarıkı River	269+680-269+696	Erzurum	-	C2.3	M	-	-	-	-
FCH5	Büyükdere River	280+401-280+414	Erzurum	-	C2.3	L	-	-	-	-
FCH6	Abitçayırılığı River	332+830-332+845	Erzurum	-	C2.3	L	-	-	-	-
FCH7	Baş River	353+584-353+613	Erzurum	-	C2.3	L	-	-	-	-
FCH8	Karasu River	372+760-372+903	Erzurum	-	C2.3	M	-	-	-	-
FCH9	Değirmendere River	504+756-504+770	Gümüşhane	-	C2.3	L	-	-	-	-
FCH10	Unknown Creek-Öğütlü village	508+498-508+510	Gümüşhane	-	C2.3	M	<i>Oxyneomacheilus kossugi</i>	M	Criterion 2	Tier 2 (b)
							<i>Salmo macrostigma</i>	M	Criterion 2	Tier 2 (b)
FCH11	Hafik	709+815-709+897	Sivas	HAFİK ZARA HILLS (KBA, IPA, IBA)	C2.3	L	<i>Gobio obtusirostris</i>	M	Criterion 2, 4	Tier 2 (b)
FCH12	Yıldız River	763+361-763+381	Sivas	-	C2.3	L	-	-	-	-
FCH13	Delice Stream	983+388-983+432	Yozgat	-	C2.3	M	<i>Cobitis simplicispinna</i>	M	Criterion 2	Tier 2 (b)
FCH14	Kılıçözü River	1035+368-1035+377	Kırıkkale	-	C2.3	L	<i>Cobitis simplicispinna</i>	-	-	-



NO	CRITICAL HABITAT NAME (RIVER NAME)	KP	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	EUNIS HABITAT	PRIORITY	SCC (IF ANY)	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)
FCH15	Kızılırmak River	1087+890+1087+980	Kırıkkale	-	C2.2	M	-	-	-	-
FCH16	Sakarya River	1214+260-1214+290	Eskişehir	ACIKIR STEPPES (KBA, IPA)	C2.3	M	-	-	Criterion 4	-
FCH17	Seydi Stream	1315+643-1315+665	Eskişehir	-	C2.3	L	<i>Cobitis simplicispinna</i>	M	Criterion 2	Tier 2 (b)
							<i>Gobio obtusirostris</i>	M	Criterion 2	Tier 2 (b)
FCH18	Seydi Stream	1323+270-1323+300	Eskişehir	-	C2.3	L	<i>Cobitis simplicispinna</i>	M	Criterion 2	Tier 2 (b)
							<i>Gobio obtusirostris</i>	M	Criterion 2	Tier 2 (b)
							<i>Chondrostoma angorane</i>	M	Criterion 2	Tier 2 (b)
FCH19	Tributary of Uludere	1396+221-1396+237	Eskişehir	-	C2.3	L	<i>Gobio obtusirostris</i>	M	Criterion 2	Tier 2 (b)
FCH20	Tributary of Kocasu Stream-Söğüçak	1461+293-1461+349	Kütahya	-	C2.3	M	<i>Oxyneomacheilus simavica</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 2 (b)
FCH21	Aliova Stream	1553+697-1553+730	Bursa	-	C2.3	M	<i>Oxyneomacheilus simavica</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 2 (b)
FCH22	Sarp Creek	1565+865-1565+885	Bursa	-	C2.3	L	<i>Cobitis fahirae</i>	M	Criterion 2	Tier 2 (b)
FCH23	Simav Stream	1590+290-1590+362	Balıkesir	-	C2.3	M	<i>Oxyneomacheilus simavica</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 2 (b)



NO	CRITICAL HABITAT NAME (RIVER NAME)	KP	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	EUNIS HABITAT	PRIORITY	SCC (IF ANY)	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)
FCH24	Mürvetler Stream	1605+400-1605+425	Balıkesir	-	C2.3	M	<i>Oxyneomacheilus simavica</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 2 (b)
							<i>Cobitis puncticulata</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 1 (a)
FCH25	Manyas-Kocacay Stream	1613+360-1613+419	Balıkesir	-	C2.3	M	<i>Cobitis puncticulata</i>	H	Criterion 1	Tier 1 (a/b)
									Criterion 2	Tier 1 (a)
							<i>Cobitis fahirae</i>	M	Criterion 2	Tier 2 (b)
FCH26	Gönen Stream	1651+548-1651+598	Balıkesir	-	C2.3	M	<i>Anguilla anguilla</i>	H	Criterion 1	Tier 2 (c)
									Criterion 3	Tier 2 (b)
FCH27	Biga Stream	1689+784-1689+838	Çanakkale	-	C2.3	M	<i>Cobitis fahirae</i>	M	Criterion 2	Tier 2 (b)



Freshwater Critical Habitats Action Plans are given in Chapter 6, and the Species Action Plans concerning the SCC species hosted by these habitats are given in Chapter 7.



4. TERRESTRIAL CRITICAL HABITATS ACTION PLANS



CH1 – KP: 003+000-003+735



EUNIS Code

- The main habitat type is G1.A (Meso- and eutrophic *Quercus*, *Carpinus*, *Fraxinus*, *Acer*, *Tilia*, *Ulmus* and related woodland), and the G1.1 (Riparian and gallery woodland, with dominant *Alnus*, *Betula*, *Populus* or *Salix*) habitat is in a restricted area.

Priority for BAP

- Medium

Protected or High Biodiversity Area

- Posof WDA, Posof PBA, Posof Forest (KBA)

Related Species

- Zygaena armena*, *Reseda armena* var. *armena* and *Mertensiella caucasica*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.A habitat covers 2.56 ha, and the G1.1 habitat covers 0.03 ha area.
- The habitats in this area have been partially damaged due to fields, grazing areas and gardens.

Recommended Actions Before Construction

- The top soil between 003+000-003+735 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- To control erosion at sloping areas, seeds of the non-endemic natural plants of the region should be collected.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- To control erosion at sloping areas, seeds of the non-endemic natural plants of the region should be planted on the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil; the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- The main habitat type is G1.A (Meso- and eutrophic *Quercus*, *Carpinus*, *Fraxinus*, *Acer*, *Tilia*, *Ulmus* and related woodland), the E4.4 (Calcareous alpine and subalpine grassland) and the G1.1 (Riparian and gallery woodland, with dominant *Alnus*, *Betula*, *Populus* or *Salix*) habitats are in a restricted area.

Priority for BAP

- Medium

Protected or High Biodiversity Area

- Posof WDA + Posof PBA+Posof Forest (KBA)

Related Species

- *Zygaena armena*, *Reseda armena* var. *armena* and *Mertensiella caucasica*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.A habitat covers 0.29 ha, the E4.4 habitat covers 0.09 ha, and the G1.1 habitat covers 0.02 ha area.
- The habitats in this area have been partially damaged due to fields, grazing areas and gardens.



Recommended Actions Before Construction

- The top soil between 003+940-004+051 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- To control erosion at sloping areas, seeds of the non-endemic natural plants of the region should be collected.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- To control erosion at sloping areas, seeds of the non-endemic natural plants of the region should be planted on the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil; the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- The main habitat type is G1.9 (Non-riverine woodland with *Betula*, *Populus tremula* or *Sorbus aucuparia*), the E2.1 (Permanent mesotrophic pastures and aftermath-grazed meadows) and the E4.4 (Calcareous alpine and subalpine grassland) habitats are in a restricted area.

Priority for BAP

- The priority status of the G1.9 habitat type in this critical habitat was determined to be "high". Thus, it is important that the construction corridor in this critical habitat is narrowed down.

Protected or High Biodiversity Area

- Posof WDA + Posof Forest (KBA)

Related Species

- *Tipula n.sp*, *Centaurea macrocephala*, *Erebia ottomana*, *Lilium kesselringianum*

Does the habitat have the potential to be sustainable, restorable or expandable?

- Since the trees in the G1.9 habitat will be cut down within the scope of the project, the E4.4 habitat will dominate the area. E2.1 habitat has a sustainability and restorability potential.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.9 habitat covers 5.34 ha, the E2.1 habitat covers 0.62 ha, and the E4.4 habitat covers 1.02 ha area.
- The habitats in this area ensure their natural features.



Recommended Actions Before Construction

- The top soil between 20+700-23+000 KP's should be scraped at a depth of 10 -15 cm and should be stored along one side of the ROW.
- Between the KP's specified Table 10.1, the plants in the sections where Poaceae are very dense should be harvested and stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Harvested herbaceous plants should be laid on the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 30%.
- It should be observed whether the critical food plants of *Erebia ottomana* develop in the area.



EUNIS Code

- E4.4 (Calcareous alpine and subalpine grassland)

Priority for BAP

- Medium

Protected or High Biodiversity Area

- Posof WDA + Posof Forest (KBA)

Related Species

- *Prometheomys schaposchnikowi*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 11.75 ha area.
- The habitats in this area ensure their natural features.

Recommended Actions Before Construction

- The area should be restricted between 15 May-15 August because this period is a breeding period for *Prometheomys schaposchnikowi*.
- The top soil between 23+670-27+081 KP's should be scraped at a depth of 10-15 cm after 15 August and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 30%.



EUNIS Code

- E4.4 (Calcareous alpine and subalpine grassland), G1.9 Non-riverine woodland with *Betula*, *Populus tremula* or *Sorbus aucuparia*), G3.F (Highly artificial coniferous plantations), G3.4 *Pinus sylvestris* woodland south of the taiga), E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows)

Priority for BAP

- High

Protected or High Biodiversity Area

- Ardahan Forest (IBA, KBA)

Related Species

- *Lathyrus karsianus*, *Tanacetum coccineum* ssp. *chamaemelifolium*, *Phengaris nausithous*, *Tipula n.sp*, *Erebia ottomana*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 0.70 ha, the G1.9 habitat covers 0.74 ha, the G3.F habitat covers 0.68 ha, the G3.4 habitat covers 0.42 ha, and the E2.1 habitat covers 0.08 ha area.
- These habitat types are healthy within the critical habitat.



Recommended Actions Before Construction

- The top soil between 62+320-63+140 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).
- The creek rehabilitation should be done where the KP's are given in Table 10.1.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 20%.



EUNIS Code

- E4.4 (Calcareous alpine and subalpine grassland)

Priority for BAP

- High

Related Species

- *Phengaris nausithous* (The species *Sanguisorba armena*, which is the food plant of the larva of the species, is also endemic)

Does the habitat have the potential to be sustainable, restorable or expandable?

- The restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 8.41 ha area.
- This habitat is a natural, untouched habitat which has been preserving its natural characteristics although the plants here have been harvested from time to time.

Recommended Actions Before Construction

- The top soil between 84+758-87+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 20%.



EUNIS Code

- The main habitat type is E4.4 (Calcareous alpine and subalpine grassland), and the E3.4 (Moist or wet eutrophic and mesotrophic grassland) habitat is in a restricted area.

Priority for BAP

- High

Protected or High Biodiversity Area

- Allahuekber Mountains (KBA)

Related Species

- *Phengaris nausithous* (The species *Sanguisorba armena*, which is the food plant of the larva of the species, is also endemic)

Does the habitat have the potential to be sustainable, restorable or expandable?

- The restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 2.17 ha, the E3.4 habitat covers 0.11 ha area.
- This habitat is a natural, untouched habitat which has been preserving its natural characteristics although the plants here have been harvested time to time.
- The E4.4 habitat type covers wide areas in the East Anatolia Region. Occasionally, the subalpine grassland and wet grassland habitats merge into each other depending upon the level of the groundwater. Both habitat types can be observed in this area nearby a temporary creek, fed by the waters of this creek.



- Since in the two pipeline routes passing through the habitat top soil management and biorestoration had not been appropriately done, part of the area has been damaged and despite the passing of many years, this habitat type has not spontaneously established on the pipeline route. In addition, this habitat preserves its natural state although it is harvested occasionally.

Recommended Actions Before Construction

- The top soil between 115+393-116+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- The top soil between the KP's indicated in Table 10.1 should be removed in layers of 10-15 cm depth, together with the plants on it, and should be stored nearby the construction site and should be irrigated once every two weeks.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The layers removed should be appropriately spread over the line and the first water should be given.
- The stored stones and rocks should be spread by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 20%.



EUNIS Code

- The main habitat type is E4.4 (Calcareous alpine and subalpine grassland), and the E2.1 (Permanent mesotrophic pastures and aftermath-grazed meadows) and E3.4 (Moist or wet eutrophic and mesotrophic grassland) habitats are in a restricted area.

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Allahuekber Mountains (KBA)

Related Species

- *Phengaris nausithous* (The species *Sanguisorba armena*, which is the food plant of the larva of the species, is also endemic)

Does the habitat have the potential to be sustainable, restorable or expandable?

- The restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 1.61 ha, the E2.1 habitat covers 0.39 ha and the E3.4 habitat covers 0.05 ha area.
- This habitat is a natural, untouched habitat which has been preserving its natural characteristics although the plants here have been harvested time to time.
- The E4.4 habitat type covers wide areas in the East Anatolia Region. Occasionally, the subalpine grassland and wet grassland habitats merge into each other depending upon the level of the groundwater. Both habitat types can be observed in this area nearby a temporary creek, fed by the waters of this creek.



- Since in the two pipeline routes passing through the habitat top soil management and biorestoration had not been appropriately done, part of the area has been damaged and despite the passing of many years, this habitat type has not spontaneously established on the pipeline route. In addition, this habitat preserves its natural state although it is harvested occasionally.

Recommended Actions Before Construction

- The top soil between 116+069-116+637 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- The top soil between the KP's indicated in Table 10.1 should be removed in layers of 10-15 cm depth, together with the plants on it, and should be stored nearby the construction site and should be irrigated once every two weeks.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The layers removed should be appropriately spread over the line and the first water should be given.
- The stored stones and rocks should be spread by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes) (includes intensive stones and rocks)

Priority for BAP

- Medium

Related Species

- *Darevskia uzzelli*, *Darevskia unisexualis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 0.79 ha area.
- The composition of the plant species in the habitat in this area is poor since it includes intensive superficial stones and rocks. In addition, grazing is also intensive in the area.

Recommended Actions Before Construction

- The area should be restricted in the spring before the June, because this period is a hibernation period for *Darevskia uzzelli* and *Darevskia unisexualis*.
- The top soil between 164+345-164+566 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether the *Darevskia uzzelli* individuals, which are the umbrella species, appear in the area.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Darevskia uzzelli*, *Darevskia unisexualis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 0.57 ha area.
- The composition of the plant species in the habitat in this area is poor since it includes intensive superficial stones and rocks.

Recommended Actions Before Construction

- The area should be restricted in the spring before the June, because this period is a hibernation period for *Darevskia uzzelli* and *Darevskia unisexualis*.
- The top soil between 167+000-167+154 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether the *Darevskia uzzelli* individuals, which are the umbrella species, appear in the area.



EUNIS Code

- G3.F (Highly artificial coniferous plantations), G3.4 (*Pinus sylvestris* woodland south of the taiga), E3.4 (Moist or wet eutrophic and mesotrophic grassland)

Priority for BAP

- Medium

Protected and/or High Biodiversity Area

- Sarıkamış Forest (IBA, KBA)

Related Species

- *Otis tarda* is identified as the potential species in the area with literature¹² recordings. It could not be observed during the field studies.

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G3.F habitat covers 1.00 ha, the G3.4 habitat covers 0.59 ha, the E3.4 habitat covers 0.04 ha area.
- The habitats in this area preserve their natural features. Grazing, land clearing and harvesting grasses are the factors that threatened this habitat.

¹² PER E., ÖZBEK M.U., UZUNHISARCIKLI M.E., BILGILI B., 2012, Great Bustard *Otis tarda* in Turkey: adult female with three chicks at forest edge in Kars province, Sandgrouse 34, p: 148-150.



Recommended Actions Before Construction

- The top soil between 169+000 - 174+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Reinstate all habitats to baseline conditions existing prior to construction activities.

Monitoring

- It should be observed whether the vegetative cover has become similar with the surrounding areas in the first May-June period following the spread of top soil.
- It should be monitoring whether the species observing in the area.



EUNIS Code

- G3.4 (*Pinus sylvestris* woodland south of the taiga), G3.F (Highly artificial coniferous plantations)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Sarıkamış Forest (IBA, KBA)

Related Species

- *Eulasia chrysopyga, Hieracium sarykamyschense*

Does the habitat have the potential to be sustainable, restorable or expandable?

- This habitat has the sustainability and restorability potential.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G3.4 habitat covers 4.29 ha, the G3.F habitat covers 2.17 ha area.
- Although the G3.4 habitat is in the climax stage in this area, the route of the other pipelines going through this habitat has not been able to renew itself after many years since the necessary measures had not been taken (Photograph below).



- The trees in the G3.4 and G3.F habitats will be cut down within the scope of the project. Thus, herbaceous species will become dominant.

Recommended Actions Before Construction

- The top soil between 174+412-176+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- It should be followed-up whether in the first May-June following the spread of the top soil; the vegetative cover of the area has recovered by 40% and the diversity by 30%.



EUNIS Code

- The main habitat types are E4.4 (Calcareous alpine and subalpine grassland) and G3.4 (*Pinus sylvestris* woodland south of the taiga); and the E2.1 (Permanent mesotrophic pastures and aftermath-grazed meadows), the E3.4 (Moist or wet eutrophic and mesotrophic grassland) and the G3.F (Highly artificial coniferous plantations) habitat is in a restricted area.

Priority for BAP

- Medium

Protected and/or High Biodiversity Area

- Sarıkamış Forest (IBA, KBA)

Related Species

- Lathyrus karsianus*, *Eulasia chrysopyga*, *Phengaris nausithous*, *Zonitis nigriventris*, *Hieracium sarykamyschense*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 14.75 ha, the G3.4 habitat covers 4.41 ha, the E2.1 habitat covers 0.41 ha, the E3.4 habitat covers 0.01 ha, the G3.F habitat covers 0.18 ha area.
- Although the G3.4 habitat is in the climax stage in this area, the route of the other pipelines going through this habitat has not been able to renew itself after many years since the necessary measures had not been taken.



- The trees in the G3.4 and G3.F habitats will be cut down within the scope of the project. Thus, herbaceous species will become dominant.

Recommended Actions Before Construction

- The top soil between 187+557 - 193+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- The plants in the sections where Poaceae are very dense should be harvested and stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Between the coordinates specified in Table 10.1, harvested herbaceous plants should be laid on the ROW.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 30%.



EUNIS Code

- E4.4 (Calcareous alpine and subalpine grassland)

Priority for BAP

- Medium

Related Species

- *Zonitis nigriventris*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E4.4 habitat covers 1.30 ha area.
- It was observed that the restoration of some of the pipeline routes passing through the E4.4 habitat had been carried out in accordance with the rules and thus, this habitat has been able to renew itself. However, in areas where bio restoration had not been appropriately carried out, the habitat still has not been able to renew itself.

Recommended Actions Before Construction

- The top soil between 202+930-203+709 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Between the KP's specified in Table 10.1, the plants in the sections where Poaceae are very dense should be harvested and stored along one side of the ROW.

Recommended Actions After Construction



- The stored top soil should be laid back in 3 months at the latest.
- Harvested herbaceous plants should be laid on the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 30%.



EUNIS Code

- The main habitat type is the E1.2E (Irano-Anatolian steppes), and the E2.1 (Permanent mesotrophic pastures and aftermath-grazed meadows) and the E4.4 (Calcareous alpine and subalpine grassland) habitats are in a restricted area.

Priority for BAP

- Medium
- In this area construction cannot be carried out before June because the individuals of the *Montivipera wagneri* species will be hibernating until then.

Related Species

- *Montivipera wagneri*, *Salvia huberi*, *Cephalaria sparsipilosa*, *Eryngium wanaturi*, *Polyommatus merhaba*, *Cousinia bicolor*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 13.92 ha, the E2.1 habitat covers 0.29 ha, the E4.4 habitat covers 3.13 ha area.
- The route of the other pipelines close to this critical habitat has not been able to renew itself after many years since the necessary measures had not been taken.



Recommended Actions Before Construction

- The construction works cannot be done in the first spring, before the June, because *Montivipera wagneri* is going to hibernation.
- The top soil between 214+885-219+641 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).
- In the regions between the KP's specified in Table 10.1, terracing should be carried out to prevent erosion.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 25% and the diversity by 30%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Cousinia bicolor*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 1.96 ha area.
- Damage was observed in this critical habitat due to extensive grazing.

Recommended Actions Before Construction

- The top soil between 232+172-232+787 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



CH17 – KP: 306+365-312+319 (except highway)



EUNIS Code

- E6.2 (Continental inland salt steppes and marshes), E1.2E (Irano-Anatolian steppes), E3.4 (Moist or wet eutrophic and mesotrophic grassland) (In the E1.2E (Irano-Anatolian steppes) habitat, there is the E3.4 (Moist or wet eutrophic and mesotrophic grassland) habitat as a microhabitat and also a spring water outflow)

Priority for BAP

- High (The most important habitats are the E6.2 ve E3.4 habitat which is located in the E1.2E habitat as a microhabitat)

Protected and/or High Biodiversity Area

- Erzurum Marshes Buffer Zone (Wetland)

Related Species

- *Hilara n. sp. 1, Vanellus gregarius, Lepidium caespitosum*
- During the construction activities, route change occurred on the area where CH17 is located. Site survey was conducted on the ROW of the new route on 13.07.2016 in order to determine if above mentioned related species are present or not. According to the observations during site survey, *Hilara n.sp. 1* is not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.
- Since the pre-construction and post-construction mitigation measures stated for *Hilara n.sp. 1* at CH17 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E6.2 habitat covers 3.96 ha, the E3.4 habitat covers 1.23 ha, the E1.2E habitat covers 7.10 ha area.



- The E6.2 habitat is local but the E1.2E and E3.4 habitats are widespread in the region.
- Although the E3.4 habitat can be observed in the E1.2E habitat as a microhabitat, being in a semi-salt marsh makes this habitat special.
- Near the area, the Akdağ Industrial Estate construction has started. If this settlement continues, the habitat will face the danger of destruction.

Recommended Actions Before Construction

- The construction works cannot be done in the first spring, in March and between 15 September – 30 October, when it is the migration period of the *Vanellus gregarius* species, if they will be seen.
- The top soil between 306+365-312+319 (except highway) KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- The top soil between the KP's indicated in Table 10.1 should be removed in layers of 10-15 cm depth, together with the plants on it, and should be stored nearby the construction site and should be irrigated once every two weeks.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The layers removed should be appropriately spread over the line and the first water should be given.
- The riparian vegetation, aquatic and semi aquatic areas should be rehabilitated.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 40% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Thymus canoviridis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.30 ha area.
- Grazing, land clearing, pesticide using are the factors that threatened this habitat.

Recommended Actions Before Construction

- The top soil between 369+037-369+126 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring



- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 30%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes), G1.7 (Thermophilous deciduous woodland)

Priority for BAP

- Medium

Related Species

- *Polyommatus antidolus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 16.78 ha, the G1.7 habitat covers 0.10 ha area.
- Grazing, land clearing, pesticide using are the factors that threatened this habitat.

Recommended Actions Before Construction

- The top soil between 385+169-390+000 KP's should be scraped at a depth of 20 cm, which is the ant nest (photograph below) depth, and should be stored along one side of the ROW.
- Stones and rocks should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread on the ROW, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).
- Invasive flora species control should be done.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Zonitis nigriventris*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 3.04 ha area.
- Grazing, burning the *Acanthalimon* clusters, and land clearing are the factors that threatened this habitat. The habitat preserves its natural status at a significant level.

Recommended Actions Before Construction

- The top soil between 393+489-394+339 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Tall plants belonging to the Compositae, Labiateae, Leguminosae families in the area should be harvested at the end of August, at the end of the vegetation period and should be stored nearby the construction site.

Recommended Actions After Construction



- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Salvia huberi*, *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 8.10 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 432+592-434+819 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Isatis glauca* ssp. *sivasica*, *Polyommatus actis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 9.57 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 451+458-454+120 KP's should be scraped together with rocks and stones, at a depth of 20 cm, which is the ant nest depth, and should be stored along one side of the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).
- Invasive flora species control should be done.
- Terracing should be carried out which the KP's are given in Table 10.1, to prevent erosion.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Tanacetum densum ssp. sivasicum, Polyommatus actis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 12.08 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 518+154-521+487 KP's should be scraped together with rocks and stones, at a depth of 20 cm, which is the ant nest depth, and should be stored along one side of the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).
- Invasive flora species control should be done.
- The seeds of non-endemic native plants should be collected and planted on the ROW for erosion at sloping areas.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Tanacetum albipannosum*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 21.81 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 537+806-543+711 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 10% and the diversity by 20%.

**EUNIS Code**

- X18 (Wooded steppes)

Priority for BAP

- Medium

Related Species

- *Isatis undulata*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the X18 habitat covers 1.73 ha area.
- Grazing and cutting trees are the factors that threatened this habitat. The habitat preserves its natural status at a significant level.

Recommended Actions Before Construction

- The top soil between 564+425-565+125 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- G3.F (Highly artificial coniferous plantations), E1.2B (Serpentine steppes)

Priority for BAP

- Medium

Protected and/or High Biodiversity Area

- Refahiye Forest (KBA)

Related Species

- *Cochlearia sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G3.F habitat covers 1.32 ha, the E1.2B habitat covers 3.10 ha area.
- Grazing and cutting trees are the factors that threatened this habitat. The habitat preserves its natural status at a significant level.

Recommended Actions Before Construction

- The top soil between 588+880- 590+358 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2B (Serpentine steppes), G3.4 (*Pinus sylvestris* woodland south of the taiga), F2.2 (Evergreen alpine and subalpine heath and scrub), E2.5 (Meadows of the steppe zone)

Priority for BAP

- Medium

Protected and/or High Biodiversity Area

- Refahiye Forest (KBA)

Related Species

- *Cochlearia sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2B habitat covers 4.38 ha, the G3.4 habitat covers 4.79 ha, the F2.2 habitat covers 0.11 ha and the E2.5 habitat covers 0.03 ha area.
- Grazing and cutting trees are the factors that threatened this habitat. The habitat preserves its natural status at a significant level.

Recommended Actions Before Construction

- The top soil between 604+940-608+000 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 10% and the diversity by 20%.



EUNIS Code

- E1.2B (Serpentine steppes),
- G3.4 (*Pinus sylvestris* woodland south of the taiga), F2.2 (Evergreen alpine and subalpine heath and scrub), G1.7 (Thermophilous deciduous woodland)

Priority for BAP

- E1.2B: High,
- G3.4, F2.2, G1.7: Medium

Protected and/or High Biodiversity Area

- Refahiye Forest (KBA)

Related Species

- *Bellevalia crassa*, *Asperula capitellata*, *Cochlearia sintenisii*, *Thymus cappadocicus* var. *pruinosus*, *Achillea sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2B habitat covers 27.68 ha, the G3.4 habitat covers 7.45 ha, the F2.2 habitat covers 0.18 ha, the G1.7 habitat covers 1.75 ha area.
- Mining activities, tree cutting in the woodlands and grazing are the factors that threatened this habitat. Majority of the habitats are natural.



Recommended Actions Before Construction

- The top soil between 626+000- 614+648 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 10% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Isatis undulata, Cochlearia sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 5.48 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 632+635-634+183 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Terracing should be carried out which the KP's are given in Table 10.1, to prevent erosion.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Isatis undulata, Cochlearia sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 2.06 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 634+285- 634+864 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Terracing should be carried out which the KP's are given in Table 10.1, to prevent erosion.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 10% and the diversity by 20%.



EUNIS Code

- G1.3 (Mediterranean riparian woodland), E1.2E (Irano-Anatolian steppes)

Priority for BAP

- High

Related Species

- *Hexatoma n. sp.*, *Tipula n.sp*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.3 habitat covers 0.07 ha, the E1.2E habitat covers 0.02 ha area.
- Drying up the creek, tree cutting, land clearing and pesticide utilization are the factors that threatened this habitat. This habitat is semi-natural.

Recommended Actions Before Construction

- The top soil between 634+906- 634+932 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The riparian vegetation should be restored and aquatic and semi-aquatic areas should be re-created.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.

**EUNIS Code**

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloides*, *Achillea sintenisii*, *Centaurea sivasica*, *Gypsophila aucheri*, *Isatis glauca* ssp. *sivasica*, *Scorzonera aucherana*, *Scrophularia lepidota*, *Thesium stelleroides*, *Tipula n.sp*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.93 ha area.
- Grazing, land clearing, pesticide utilization, stubble burning are the factors that threatened this habitat. Despite this, the habitat preserves its natural state at the field sides and on the small hills.

Recommended Actions Before Construction

- The top soil between 652+000-654+878 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloides*, *Achillea sintenisii*, *Centaurea sivasica*, *Gypsophila aucheri*, *Isatis glauca* ssp. *sivasica*, *Scorzonera aucherana*, *Scrophularia lepidota*, *Thesium stelleroides*, *Tipula n.sp.*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 1.29 ha area.
- Grazing, land clearing, pesticide utilization, stubble burning are the factors that threatened this habitat. Despite this, the habitat preserves its natural state at the field sides and on the small hills.

Recommended Actions Before Construction

- The top soil between 656+000-656+431 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloides*, *Achillea sintenisii*, *Centaurea sivasica*, *Gypsophila aucheri*, *Isatis glauca* ssp. *sivasica*, *Scorzonera aucherana*, *Scrophularia lepidota*, *Thesium stelleroides*, *Tipula n.sp.*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.38 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 660+353-660+456 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.

**EUNIS Code**

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloides*, *Achillea sintenisii*, *Centaurea sivasica*, *Gypsophila aucheri*, *Isatis glauca* ssp. *sivasica*, *Scorzonera aucherana*, *Scrophularia lepidota*, *Thesium stelleroides*, *Tipula n.sp.*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 2.14 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 661+206 - 661+709 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- Terracing should be carried out which the KP's are given in Table 10.1

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.

**EUNIS Code**

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Dysmachus safranboluticus*, *Astragalus zaraensis*, *Achillea sintenisii*, *Astragalus aytatchii*, *Centaurea sivasica*, *Chrysocamela noeana*, *Gypsophila heteropoda* ssp. *minutiflora*, *Minuartia corymbulosa* var. *gypsophiloides*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, E1.00 habitatı habitat covers 0.13 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 683+613-683+648 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Herbaceous plants should be harvested and stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the construction site.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- Invasive flora species control should be done.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Dysmachus safranboliticus*, *Astragalus zaraensis*, *Achillea sintenisii*, *Astragalus aytatchii*, *Centaurea sivasica*, *Chrysocamela noeana*, *Gypsophila heteropoda* ssp. *minutiflora*, *Minuartia corymbulosa* var. *gypsophiloides*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.13 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- Herbaceous plants should be harvested and stored along one side of the ROW.
- The top soil between 683+924- 683+963 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.
- Terracing should be carried out which the KP's are given in Table 10.1, and the species are given in the "Species Action Plans" to prevent erosion.
- Invasive flora species control should be done.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.

**EUNIS Code**

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Mağara Lake Buffer Zone (Wetland) + Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Astragalus aytatchii*, *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloides*, *Onobrychis stenostcahya* ssp. *krausei*, *Achillea sintenisii*, *Achillea sipikorensis*, *Centaurea sivasica*, *Isatis glauca* ssp. *sivasica*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 1.93 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.



Recommended Actions Before Construction

- The top soil between 700+549 - 701+087 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- Terracing should be carried out which the KP's are given in Table 10.1, and the species are given in the "Species Action Plans" to prevent erosion.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Bataklıdüzü 2 Buffer Zone (Wetland)+ Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Achillea sintenisii*, *Astragalus zaraensis*, *Chrysocamela noeana*, *Minuartia corymbulosa* var. *gypsophiloidea*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.77 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 708+677-708+890 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Çetme Lake Buffer Zone (Wetland) + Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Achillea sintenisii*, *Gypsophila aucheri*, *Gypsophila heteropoda* ssp. *minutiflora*, *Onosma sintenisii*, *Centaurea sivasica*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.34 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 713+855- 713+956 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.

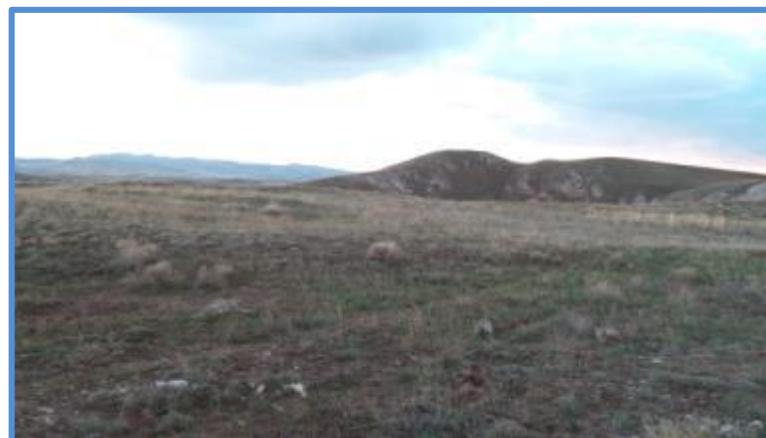


Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Tuzlu Lake Buffer Zone (Wetland)+ Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Gypsophila heteropoda* ssp. *minutiflora*, *Astragalus zaraensis*, *Minuartia corymbulosa* var. *gypsophiloides*, *Achillea sintenisii*, *Gypsophila aucheri*, *Onosma sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.89 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 720+035-720+290 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.

Recommended Actions After Construction



- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- Terracing should be carried out which the KP's are given in Table 10.1, and the species are given in the "Species Action Plans" to prevent erosion.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Balıklıkaya Buffer Zone (Wetland) + Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Astragalus zaraensis, Achillea sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.28 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 729+485-729+571 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Hafik Zara Hills (IBA, KBA, IPA)

Related Species

- *Onosma sintenisii*, *Isatis glauca* ssp. *sivasica*, *Achillea sintenisii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.53 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 733+201- 733+366 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- High

Related Species

- *Achillea sintenisii, Chrysocamela noeana, Astragalus zaraensis, Cousinia sivasica*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.54 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 741+301-741+446 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Gypsum rocks excavated during activity should be stored nearby the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Gypsum rocks stored nearby the construction site should be spread over the ROW.
- Terracing should be carried out which the KP's are given in Table 10.1, and the species are given in the "Species Action Plans" to prevent erosion.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Dysmachus safranboliticus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 9.65 ha area.
- Land clearing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 746+599-749+672 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Herbaceous plants should be harvested and stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.
- Invasive flora species control should be done.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 20%.

**EUNIS Code**

- E2.5 (Meadows of the steppe zone), E1.2E (Irano-Anatolian steppes)

Priority for BAP

- High

Related Species

- *Hexatoma n. sp., Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E2.5 habitat covers 0.02 ha, the E1.2E habitat covers 0.15 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 802+361-802+428 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The riparian vegetation should be restored and aquatic and semi-aquatic areas should be rehabilitated which the KP's are given in Table 10.1.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- High

Related Species

- *Hexatoma n. sp.*, *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 0.90 ha area.
- Grazing is the factor that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 802+454-802+755 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Riparian vegetation, aquatic and semi aquatic vegetation should be restored.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes), E3.4 (Moist or wet eutrophic and mesotrophic grassland)

Priority for BAP

- High

Related Species

- *Hilara n. sp.* 3

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E3.4 habitat covers 0.01 ha and the E1.2E habitat covers 0.04 ha area.
- The habitat preserves its natural status.

Recommended Actions Before Construction

- The riparian vegetation at the creek bank between the KP's indicated in Table 10.1 should be scraped at a depth of 10-15 cm as a layer and stored at the creek side.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The riparian vegetation should be restored and the creek flow should be provided again which the KP's are given in Table 10.1.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 60% and the diversity by 60%.



EUNIS Code

- G1.7 (Thermophilous deciduous woodland)

Priority for BAP

- High

Related Species

- *Dioclea n. sp. 2, Dysmachus safranboluticus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- This critical habitat cannot be restored since the growth of woody species on the ROW is not desired.
- Since the SCC species prefer habitats hosting herbaceous species, they will easily come back to the area after the construction.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.7 habitat covers 0.60 ha area.
- The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 846+021-846+224 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Herbaceous plants should be harvested where the KP's are given in Table 10.1 and should be stored along one side of the ROW.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.
- Invasive flora species control should be done.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 1.39 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 945+058-945+445 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 2.65 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 993+073-993+795 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

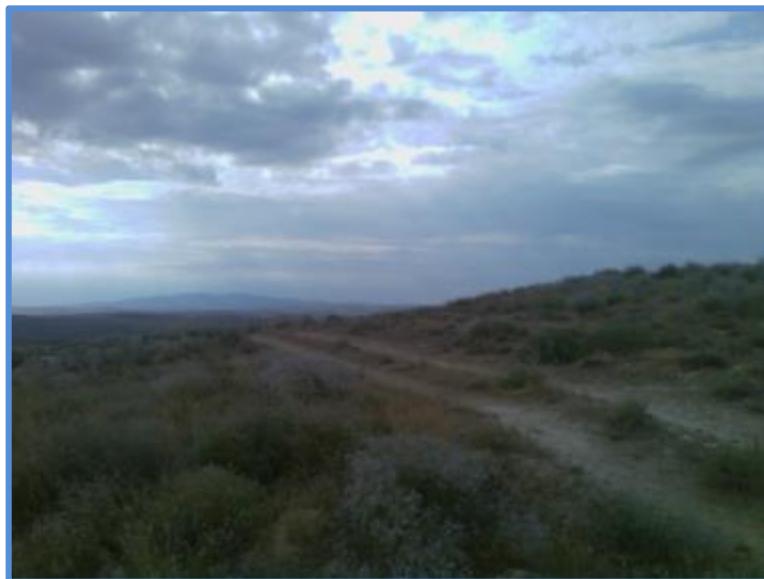
Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- Medium

Related Species

- *Thymus leucostomus*, *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.71 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1029+605-1029+804 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.00 (Anatolian gypsum steppes)

Priority for BAP

- Medium

Related Species

- *Thymus leucostomus*, *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.00 habitat covers 0.79 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1030+091-1030+310 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Medium

Related Species

- *Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 2.96 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1139+490 -1140+300 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.01 (Marl Steppe)

Priority for BAP

- Medium

Related Species

- *Thymus leucostomus, Cousinia halysensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 0.62 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1149+730-1149+900 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.01 (Marl Steppe)

Priority for BAP

- Medium

Related Species

- *Thymus leucostomus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.01 habitat covers 0.39 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1208+945-1209+108 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%.



EUNIS Code

- E1.01 (Marl Steppe)

Priority for BAP

- High

Protected and/or High Biodiversity Area

- Acıkir Steppe (KBA, IPA)

Related Species

- *Neolycaena soezen*, *Scutellaria yildirimli*, *Achillea ketenoglui*, *Astragalus physodes* ssp. *acikirensis*, *Minuartia corymbulosa* var. *gypsophiloides*, *Astragalus kochakii*, *Cyathobasis fruticulosa*, *Onobrychis paucijuga*, *Thymus leucostomus*
- During the construction activities, route change occurred on the area where CH57 is located. Site survey was conducted on the ROW in order to determine if above mentioned related species are present or not. According to the observations during site survey, *Neolycaena soezen* and its food plants *Caragana grandiflora* are not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.
- Since the pre-construction and post-construction mitigation measures stated for *Neolycaena soezen* at CH57 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.01 habitat covers 0,81 ha area.



- Pesticide utilization, grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status at a significant level.

Recommended Actions Before Construction

- The top soil between 1223+54-1223+506 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Invasive flora species control should be done.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 20%.



EUNIS Code

- E1.2E (Irano-Anatolian steppes)

Priority for BAP

- Low

Related Species

- *Thymus leucostomus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.2E habitat covers 3.04 ha area.
- Grazing and land clearing are the factors that threatened this habitat. The habitat preserves its natural status.

Recommended Actions Before Construction

- The top soil between 1362+917- 1363+753 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 30% and the diversity by 30%

**EUNIS Code**

- G1.7 (Thermophilous deciduous woodland)

Priority for BAP

- Medium

Related Species

- *Salvia tchihatcheffii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The marl steppe region of this habitat can be restored, however, the oak woodland cover cannot be restored as it is not desired in the project.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.7 habitat covers 0.59 ha area.
- Grazing, erosion, tree cutting, land clearing for agricultural purposes and hunting threatened this habitat. This habitat is semi-natural.

Recommended Actions Before Construction

- The top soil between 1366+493 - 1366+692 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Terracing should be carried out to prevent erosion which the KP's are given in Table 10.1.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 15% and the diversity by 15%.



EUNIS Code

- E1.01 (Marl Steppe), G3.5 (*Pinus nigra* woodlands)

Priority for BAP

- High

Related Species

- *Dioclea n. sp. 1, Cephalaria aytachii, Gypsophila osmangaziensis, Alyssum niveum, Scabiosa hololeuca, Salvia tchihatcheffii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The marl steppe region of this habitat can be restored; however, the black pine woodland cover cannot be restored as it is not desired in the project.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.01 habitat covers 0.84 ha, the G3.5 habitat covers 0.20 ha area.
- Grazing, erosion and tree cutting are threatened this habitat. This habitat preserves its natural state.

Recommended Actions Before Construction

- The top soil between 1372+340- 1372+683 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Terracing should be carried out in the areas indicated in Table 10.1 to prevent erosion.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- G1.7 (Thermophilous deciduous woodland), G3.5 (*Pinus nigra* woodlands)

Priority for BAP

- Medium

Related Species

- *Erodium sibthorpiatum* ssp. *sibthorpiatum*, *Astragalus densifolius* ssp. *ayashensis*

Does the habitat have the potential to be sustainable, restorable or expandable?

- Although the habitat has sustainability, restorability or expandability potential, since as a requirement of the project the growth of woodland species on ROW is not desired, restoring to the former habitat is not possible in this region.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.7 habitat covers 2.56 ha, the G3.5 habitat covers 1.23 ha area.
- The habitats in this area are natural and at the climax stage. Consequently, the species are at equilibrium at all layers of the habitat.

Recommended Actions Before Construction

- The top soil between 1430+920- 1432+305 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

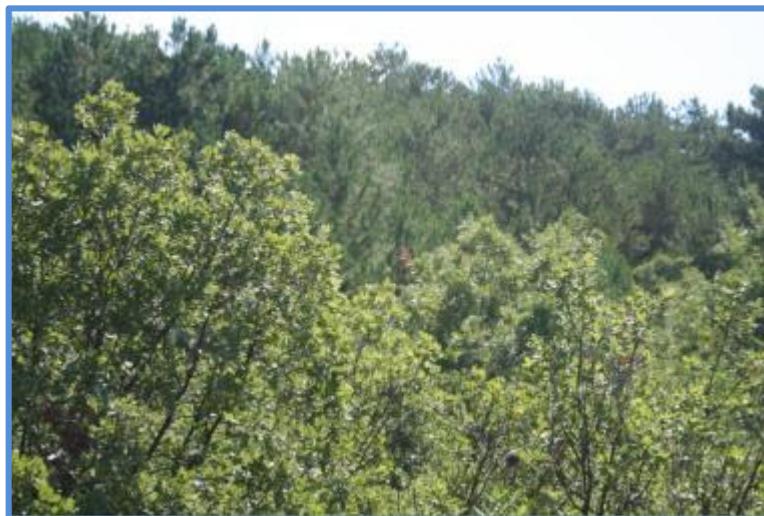
Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- G4.B (Mixed mediterranean *Pinus* - thermophilous *Quercus* woodland)

Priority for BAP

- Medium

Related Species

- *Onosma briquetii*

Does the habitat have the potential to be sustainable, restorable or expandable?

- Although the habitat has sustainability, restorability or expandability potential, since as a requirement of the project the growth of woodland species on ROW is not desired, restoring to the former habitat is not possible in this region.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G4.B habitat covers 1.16 ha area.
- The habitats in this area are natural and at the climax stage. Consequently, the species are at equilibrium at all layers of the habitat.

Recommended Actions Before Construction

- The top soil between 1477+452-1477+833 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.



Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- G3.F (Highly artificial coniferous plantations), G3.75 (*Pinus brutia* forests), E3.4 (Moist or wet eutrophic and mesotrophic grassland), G4.B (Mixed mediterranean *Pinus* - thermophilous *Quercus* woodland), G3.5 (*Pinus nigra* woodlands) and E1.22 (Arid subcontinental steppic grassland [*Festucion valesiacae*])

Priority for BAP

- G3.75, E1.22 and G4.B: High
- G3.F, G3.5 and E3.4: Medium

Related Species

- *Alyssum dudleyi*, *Verbascum n.sp.*, *Dianthus goekayi*
- During the construction activities, route change occurred the area CH63 is located. Site survey was conducted on the ROW of the new route on 19.08.2016 in order to determine if above mentioned related species are present or not. According to the observations during site survey, *Verbascum n.sp.* is not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.
- Since the pre-construction and post-construction mitigation measures stated for *Verbascum n.sp.* at CH63 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Does the habitat have the potential to be sustainable, restorable or expandable?

- Although the habitat has sustainability, restorability or expandability potential, since as a requirement of the project the growth of woodland species on ROW is not desired, restoring to the former habitat is not possible in this region.



The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G3.F habitat covers 0.47 ha, the G3.75 habitat covers 5.48 ha, the E3.4 habitat covers 0.09 ha, E1.22 habitat covers 0.83 ha, G3.5 habitat covers 1.63 ha and the G4.B habitat covers 8.96 ha area.
- The habitats in this area are natural and at the climax stage. Consequently, the species are at equilibrium at all layers of the habitat.

Recommended Actions Before Construction

- The top soil between 1491+767 - 1496+340 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- It should be observed whether in the first May-June following the spread of the top soil, the vegetative cover of the area has recovered by 20% and the diversity by 20%.



EUNIS Code

- I1.1 (Intensive, unmixed crops), I1.4 (Inundated or inundatable croplands, including rice fields), J5.4 (Highly artificial non-saline running waters)(Modified habitats)

Priority for BAP

- Medium

Related Species

- *Phalacrocorax carbo, Phalacrocorax pygmeus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the modified habitats covers 8.74 ha area.
- This area has flood area characteristics starting with the winter months until the end of spring, which forms an appropriate shelter and feeding area for migratory and congregatory bird species. For such species, there are alternative areas close to the ROW.



Recommended Actions Before Construction

- The construction work should not be carried out in February-March when it is important for the congregatory species. There are floods in these months and such floods form the wetlands.
- The top soil between 1736+000-1738+300 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Habitat should be restored.

Monitoring

- It should be observed whether the vegetative cover has become similar with the surrounding areas in the first May-June period following the spread of top soil.



EUNIS Code

- E1.22 (Arid subcontinental steppic grassland [*Festucion valesiacae*])

Priority for BAP

- High

Related Species

- *Spermophilus citellus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the E1.22 habitat covers 1.17 ha area.
- The area is like an unploughed meadow; however, it is under intensive human and pet animal pressure.

Recommended Actions Before Construction

- The top soil between 1741+100 - 1741+500 KP's should be scraped at a depth of 10-15 cm.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Habitat should be restored.

Monitoring

- It should be observed whether the vegetative cover has become similar with the surrounding areas in the first May-June period following the spread of top soil.



EUNIS Code

- G2.1 (Mediterranean evergreen *Quercus* woodland)

Priority for BAP

- Medium

Related Species

- *Myomimus roachi*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the ROW'da G2.1 habitat covers 0.35 ha area.
- The habitat is preserving their natural features.

Recommended Actions Before Construction

- The top soil between 1788+300 - 1788+500 KP's should be scraped at a depth of 10-15 cm.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Habitat should be restored.

Monitoring

- It should be observed whether the vegetative cover has become similar with the surrounding areas in the first May-June period following the spread of top soil.



EUNIS Code

- G1.3 (Mediterranean riparian woodland)

Priority for BAP

- High

Related Species

- *Phalacrocorax carbo*, *Phalacrocorax pygmeus*, *Cygnus olor*, *Cygnus cygnus*, *Pelecanus onocrotalus*

Does the habitat have the potential to be sustainable, restorable or expandable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- In ROW, the G1.3 habitat covers 0.75 ha area.
- This area has flood area characteristics starting with the winter months until the end of spring, which forms an appropriate shelter and feeding area for migratory and congregatory bird species.

Recommended Actions Before Construction

- The construction work should not be carried out in February-March when it is important for the congregatory species. There are floods in these months and such floods form the wetlands.
- The top soil between 1800+600-1805+000 KP's should be scraped at a depth of 10-15 cm.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Habitat should be restored.



Monitoring

- It should be observed whether the vegetative cover has become similar with the surrounding areas in the first May-June period following the spread of top soil.
- After the construction, it should be carefully observed that a barrier preventing the Meriç River to establish a flood area is not formed.



5. TERRESTRIAL SPECIES ACTION PLANS



5.1. FLORA

Species

- *Achillea ketenoglui*



The Biological Features

- DISTRIBUTION: Ankara, Eskişehir
- FLOWERING PERIOD: May
- FRUCTIFYING PERIOD: June
- FRUIT TYPE: Achene
- FLOWER COLOUR: White

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Achillea sintenisii*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas
- FLOWERING PERIOD: May-July
- FRUCTIFYING PERIOD: June-August
- FRUIT TYPE: Achene
- FLOWER COLOUR: White

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH28, CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH40, CH41, CH42, CH43 and CH44

Recommended Actions Before Construction

- CH28: The seeds of the species should be collected between 15 July-15 August.
- CH32, CH33 CH34, CH35, CH36, CH37, CH38, CH39, CH40, CH41, CH43, CH44: The seeds of the species should be collected between 15 June-15 July.
- CH35, CH37, CH38, CH41, CH42, CH43: The species should be removed as tufts between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.



- CH 36: The individuals of the species should be transferred to the areas which coordinates indicated in Table 10.1.

Recommended Actions After Construction

- CH28, CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH40, CH41, CH43, and CH44: The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- CH35, CH37, CH38, CH41, CH42, CH43: The removed individuals of the species should be planted on the ROW.
- CH36: The transferred individuals of the species should be planted on the ROW.
- CH 35, CH37, CH38, CH41, CH43, CH44: The removed individuals of the species as tufts should be planted at the KP's given in Table 10.1, where the terracing should be carried out to prevent erosion and should be irrigated until they root again.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Achillea sipikorensis*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas, Kayseri
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Achene
- FLOWER COLOUR: White

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium



Critical Habitat

- CH38

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.
- The species individuals - should be collected as tufts between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- The translocated individuals of the species as tufts should be planted at the KP's given in Table 10.1, where the terracing should be carried out to prevent erosion and should be irrigated until they root again.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Alyssum dudleyi*



The Biological Features

- DISTRIBUTION: Kütahya, Bursa
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Siliqua
- FLOWER COLOUR: Bright Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH63

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Alyssum niveum*



The Biological Features

- DISTRIBUTION: Eskişehir
- FLOWERING PERIOD: May
- FRUCTIFYING PERIOD: June
- FRUIT TYPE: Siliqua
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH60

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Asperula capitellata*



The Biological Features

- DISTRIBUTION: Kayseri, Sivas
- FLOWERING PERIOD: May-July
- FRUCTIFYING PERIOD: June-August
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Light cream pink

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH28

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Astragalus aytatchii*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Legume
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH36, CH37 and CH38

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Astragalus densifolius ssp. ayashensis*



The Biological Features

- DISTRIBUTION: Ankara, Kütahya
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Legume
- FLOWER COLOUR: White to pink, light purple or violet

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH61

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Astragalus kochakii*



The Biological Features

- DISTRIBUTION: Ankara, Eskişehir
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Legume
- FLOWER COLOUR: Purple

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Astragalus physodes ssp. acikirensis*



The Biological Features

- DISTRIBUTION: Ankara, Eskişehir, Kırıkkale
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Legume
- FLOWER COLOUR: Purple

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 May-15 June.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Astragalus zaraensis*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Legume
- FLOWER COLOUR: Purple

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH41, CH42 and CH44

Recommended Actions Before Construction

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH41, CH44: The seeds of the species should be collected between 15 June-15 July.
- CH35, CH36, CH37, CH38, CH42, CH44: The species individuals should be removed as tufts between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.



Recommended Actions After Construction

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH41, CH44: The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- CH35, CH37, CH38, CH42, CH44: The removed individuals of the species as tufts should be planted at the KP's given in Table 10.1, where the terracing should be carried out to prevent erosion and should be irrigated until they root again.
- CH36: The transferred individuals of the species should be planted at the KP's given in Table 10.1.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Bellevalia crassa*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Light greenish white

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH28

Recommended Actions Before Construction

- The individuals or bulbs of the species should be collected from the ROW.

Recommended Actions After Construction

- The collected individuals or bulbs of the species should be planted on the ROW.



Monitoring

- The success of the planted bulbs should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Centaurea macrocephala*



The Biological Features

- DISTRIBUTION: Kars, Ardahan
- FLOWERING PERIOD: July-August
- FRUCTIFYING PERIOD: August-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH3

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-30 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the forest boundary at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Centaurea sivasica*



The Biological Features

- DISTRIBUTION: Kayseri, Sivas
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Achene
- FLOWER COLOUR: Rosy and purple

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34, CH35, CH36, CH37, CH38 and CH40.

Recommended Actions Before Construction

- CH32: The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cephalaria aytachii*



The Biological Features

- DISTRIBUTION: Eskişehir
- FLOWERING PERIOD: June-September
- FRUCTIFYING PERIOD: September
- FRUIT TYPE: Acene
- FLOWER COLOUR: Yellow or light yellow

Priority for BAP

- High



Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH60

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cephalaria sparsipilosa*



The Biological Features

- DISTRIBUTION: Erzurum, Bitlis, Ağrı
- FLOWERING PERIOD: July-August
- FRUCTIFYING PERIOD: August-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Cream to light yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH15

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Chrysocamela noeana*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: April-May
- FRUCTIFYING PERIOD: May-June
- FRUIT TYPE: Siliqua
- FLOWER COLOUR: Lemon yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39 and CH44.

Recommended Actions Before Construction

- CH32, CH33, CH34, CH35: The seeds of the species should be collected between 1 June-20 July.
- CH36, CH37, CH38, CH39, CH44: The seeds of the species should be collected between 1 June-20 June.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cochlearia sintenisii*



The Biological Features

- DISTRIBUTION: Gümüşhane, Rize, Tunceli, Erzincan, Sivas
- FLOWERING PERIOD: June-August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Silicula
- FLOWER COLOUR: White

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium



Critical Habitat

- CH26, CH27, CH28, CH29 and CH30.

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cousinia bicolor*



The Biological Features

- DISTRIBUTION: Gümüşhane, Erzurum, Muş, Ağrı, Bitlis
- FLOWERING PERIOD: June - August
- FRUCTIFYING PERIOD: July -September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH15 and CH16

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cousinia halysensis*



The Biological Features

- DISTRIBUTION: Ankara, Kırşehir, Kırıkkale, Erzincan, Erzurum, Sivas, Yozgat
- FLOWERING PERIOD: June-August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH21, CH46, CH47, CH50, CH51, CH52, CH53, CH54 and CH55

Recommended Actions Before Construction

- CH21: The seeds of the species should be collected between 15 July-15 August.
- CH46, CH47, CH50, CH51, CH52, CH53, CH54 and CH55: The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cousinia sivasica*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: June-August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Acene
- FLOWER COLOUR: Yellow or yellow with coloured red

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium



Critical Habitat

- CH44

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Cyathobasis fruticulosa*



The Biological Features

- DISTRIBUTION: Kayseri, Ankara, Aksaray, Malatya, Konya, Eskişehir
- FLOWERING PERIOD: July-August
- FRUCTIFYING PERIOD: August-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: -

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Dianthus goekayi*



The Biological Features

- DISTRIBUTION: Bursa
- FLOWERING PERIOD: June-September
- FRUCTIFYING PERIOD: June-September
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH63

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Erodium sibthorpiatum ssp. sibthorpiatum*



The Biological Features

- DISTRIBUTION: Bursa, Kütahya
- FLOWERING PERIOD: July-September
- FRUCTIFYING PERIOD: August-October
- FRUIT TYPE: Shizocarp
- FLOWER COLOUR: White or light syringa

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH61

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Eryngium wanaturi*



The Biological Features

- DISTRIBUTION: Muş, Erzurum
- FLOWERING PERIOD: -
- FRUCTIFYING PERIOD: -
- FRUIT TYPE: Schizocarp
- FLOWER COLOUR: From bluish-green to slightly bluish

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH15

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Gypsophila aucheri*



The Biological Features

- DISTRIBUTION: Sivas, Erzincan, Tunceli
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Pink

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low



Critical Habitat

- CH32, CH33, CH34, CH35, CH40 and CH41.

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW



Species

- *Gypsophila heteropoda ssp. minutiflora*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: May-July
- FRUCTIFYING PERIOD: June-August
- FRUIT TYPE: Capsule
- FLOWER COLOUR: White to light pink

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH40, CH41

Recommended Actions Before Construction

- CH32, CH33, CH34, CH35: The seeds of the species should be collected between 1 June-20 July.
- CH36, CH37, CH38, CH40, CH41: The seeds of the species should be collected between 1 June-20 June.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Gypsophila osmangaziensis*



The Biological Features

- DISTRIBUTION: Eskişehir
- FLOWERING PERIOD: August
- FRUCTIFYING PERIOD: September
- FRUIT TYPE: Capsule
- FLOWER COLOUR: White

Priority for BAP

- High



Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH60

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW



Species

- *Hieracium sarykamyschense*



The Biological Features

- DISTRIBUTION: Kars
- FLOWERING PERIOD: July
- FRUCTIFYING PERIOD: August-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- High



Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH12 and CH13

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds and blossomed members of the species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Isatis glauca ssp. sivasica*



The Biological Features

- DISTRIBUTION: Sivas, Erzincan
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Silicula
- FLOWER COLOUR: Bright yellow

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH22, CH32, CH33, CH34, CH35, CH38 and CH43

Recommended Actions Before Construction

- CH22: The seeds of the species should be collected between 15 July-15 August.
- CH32, CH33, CH34, CH35, CH38, CH43: The seeds of the species should be collected between 15 June -15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Isatis undulata*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas
- FLOWERING PERIOD: April-May
- FRUCTIFYING PERIOD: May-June
- FRUIT TYPE: Silicula
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH25, CH29 and CH30

Recommended Actions Before Construction

- CH25 and CH30: The seeds of the species should be collected between 1 July-1 August.
- CH29: The seeds of the species should be collected from the areas indicated in Table 10.1 between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Lathyrus karsianus*



The Biological Features

- DISTRIBUTION: Kars, Ardahan
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Legume
- FLOWER COLOUR: Lavender blue

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH5 and CH13

Recommended Actions Before Construction

- The seeds of the species shall be collected between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Lepidium caespitosum*



The Biological Features

- DISTRIBUTION: Erzurum, Ankara, Konya, Nevşehir, Kayseri, Sivas
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Silicula
- FLOWER COLOUR: White

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH17

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW between the KP's given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Lilium kesselringianum*



The Biological Features

- DISTRIBUTION: Artvin, Ardahan
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Light cream

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium



Critical Habitat

- CH3

Recommended Actions Before Construction

- The plants or the bulbs of the species should be collected before or during the top soil is scraped from the KP's indicated in Table 10.1 and should be stored collectively nearby the construction site in soil.

Recommended Actions After Construction

- After the construction, the plants or bulbs should be planted at the KP's indicated in Table 10.1 to the tree border at 5 m intervals.

Monitoring

- The success of the planted bulbs or plants should be monitoring.

Achievement Criteria

- The forming of the vegetative parts of the species on the ROW.



Species

- *Minuartia corymbulosa* var. *gypsophiloides*



The Biological Features

- DISTRIBUTION: Malatya, Sivas, Eskişehir
- FLOWERING PERIOD: August
- FRUCTIFYING PERIOD: September
- FRUIT TYPE: Capsule
- FLOWER COLOUR: White

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH41 and CH57

Recommended Actions Before Construction

- CH32, CH33, CH34, CH35, CH36, CH37, CH38, CH39, CH41: The seeds of the species should be collected between 15 June-15 July.
- CH57: The seeds of the species should be collected between 15 July-15 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Onobrychis paucijuga*



The Biological Features

- DISTRIBUTION: Eskişehir, Konya
- FLOWERING PERIOD: May-July
- FRUCTIFYING PERIOD: June-August
- FRUIT TYPE: Legume
- FLOWER COLOUR: Pink

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.



Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Onobrychis stenostcahya ssp. krausei*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Legume
- FLOWER COLOUR: Pink or creamy white

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium



Critical Habitat

- CH38

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Onosma briquetii*



The Biological Features

- DISTRIBUTION: Çankırı, Sivas, Bursa
- FLOWERING PERIOD: July
- FRUCTIFYING PERIOD: August
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: From yellow to ocher

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH62



Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Onosma sintenisii*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas
- FLOWERING PERIOD: May-July
- FRUCTIFYING PERIOD: June-August
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH40, CH41 and CH43.

Recommended Actions Before Construction

- CH40, CH41, and CH43: The seeds of the species should be collected between 15 June-15 July.
- CH43: The species individuals should be collected between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.



Recommended Actions After Construction

- CH40, CH41, CH43: The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- CH43: The translocated individuals of the species should be planted at the KP's given in Table 10.1.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Reseda armena var. armena*



The Biological Features

- DISTRIBUTION: Erzurum, Erzincan, Sivas, Malatya and Ardahan
- FLOWERING PERIOD: June-August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH1 and CH2

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-30 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Salvia huberi*



The Biological Features

- DISTRIBUTION: Erzurum, Gümüşhane, Artvin, Erzincan
- FLOWERING PERIOD: May - August
- FRUCTIFYING PERIOD: June -September
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: Pinkish syringa

Priority for BAP

- High



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH15 and CH21

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Salvia tchihatcheffii*



The Biological Features

- DISTRIBUTION: Ankara, Çankırı, Kütahya, Eskişehir
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: Light violet to white

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH59 and CH60.

Recommended Actions Before Construction

- CH59: The seeds of the species should be collected between 1 June-1 July.
- CH60: The seeds of the species should be collected between 15 July-15 August.
- CH59: The species individuals should be collected as tufts between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.



Recommended Actions After Construction

- CH59, CH60: The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- CH59: The translocated individuals of the species as tufts should be planted at the KP's given in Table 10.1, where the terracing should be carried out to prevent erosion and should be irrigated until they root again.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Scabiosa hololeuca*



The Biological Features

- DISTRIBUTION: Eskişehir, Kütahya
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH60

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

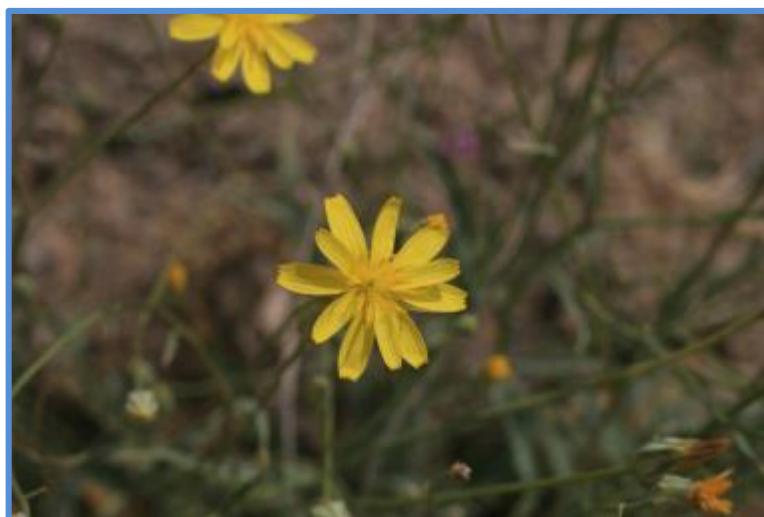
Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Scorzonera aucherana*



The Biological Features

- DISTRIBUTION: Sivas, Erzincan
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34 and CH35.

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.
- CH35: The species individuals should be collected as tufts between the KP's indicated in Table 10.1 and should be transferred to the areas which coordinates indicated in Table 10.1.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.
- The translocated individuals of the species as tufts should be planted to the ROW.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.
- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Scrophularia lepidota*



The Biological Features

- DISTRIBUTION: Sivas, Erzincan
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-June
- FRUIT TYPE: Capsule
- FLOWER COLOUR: From greenish to maroon

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34 and CH35.

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Scutellaria yildirimli*



The Biological Features

- DISTRIBUTION: Ankara, Eskişehir
- FLOWERING PERIOD: June-September
- FRUCTIFYING PERIOD: August-October
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: Yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: CR

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH57

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 June-1 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Tanacetum albipannosum*



The Biological Features

- DISTRIBUTION: Erzincan, Sivas, Giresun
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Achene
- FLOWER COLOUR: White or very light yellow

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH24

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Tanacetum coccineum ssp. chamaemelifolium*



The Biological Features

- DISTRIBUTION: Rize, Artvin, Erzurum, Ardahan
- FLOWERING PERIOD: June-August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Reddish pink

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH5

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 July-15 August.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The success of the planted seeds should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Tanacetum densum ssp. sivasicum*



The Biological Features

- DISTRIBUTION: Sivas, Malatya, Gümüşhane
- FLOWERING PERIOD: June- August
- FRUCTIFYING PERIOD: July-September
- FRUIT TYPE: Achene
- FLOWER COLOUR: Yellow

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH23

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Thesium stelleroides*



The Biological Features

- DISTRIBUTION: Sivas, Erzincan
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Nut
- FLOWER COLOUR: Light yellow

Priority for BAP

- Medium



Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH32, CH33, CH34 and CH35.

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Thymus canoviridis*



The Biological Features

- DISTRIBUTION: Erzurum
- FLOWERING PERIOD: July-August
- FRUCTIFYING PERIOD: August-September
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: Purple or light yellow

Priority for BAP

- High

Conservation Status

- IUCN-RDBP CATEGORY: EN

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH18

Recommended Actions Before Construction

- The species individuals should be collected as tufts and should be transferred to the areas which coordinates indicated in Table 10.1.



Recommended Actions After Construction

- The translocated individual of the species as tufts should be planted at the KP's given in Table 10.1.

Monitoring

- The vitality of the translocated and relocated species should be monitoring.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Thymus cappadocicus var. pruinosa*



The Biological Features

- DISTRIBUTION: Sivas
- FLOWERING PERIOD: June-July
- FRUCTIFYING PERIOD: July-August
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: From white to lilac

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH28

Recommended Actions Before Construction

- The seeds of the species should be collected between 1 July-1 August.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Thymus leucostomus*



The Biological Features

- DISTRIBUTION: Kastamonu, Çankırı, Çorum, Ankara, Konya, Eskişehir, Kırşehir, Yozgat
- FLOWERING PERIOD: May-June
- FRUCTIFYING PERIOD: June-July
- FRUIT TYPE: Nutlet
- FLOWER COLOUR: White

Priority for BAP

- Medium

Conservation Status

- IUCN-RDBP CATEGORY: VU

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH52, CH53, CH55, CH56, CH57 and CH58.

Recommended Actions Before Construction

- The seeds of the species should be collected between 15 June-15 July.



Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



Species

- *Verbascum n. sp.*



The Biological Features

- DISTRIBUTION: Bursa
- FLOWERING PERIOD: June
- FRUCTIFYING PERIOD: July
- FRUIT TYPE: Capsule
- FLOWER COLOUR: Yellow

Priority for BAP

- High



Conservation Status

- IUCN-RDBP CATEGORY: CR
- THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH63
- During the construction activities, route change occurred on the area where CH63 is located. Site survey was conducted on the ROW of the new route on 19.08.2016 in order to determine if above mentioned related species are present or not. According to the observations during site survey, *Verbascum n.sp.* is not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.
- Since the pre-construction and post-construction mitigation measures stated for *Verbascum n.sp.* at CH63 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Recommended Actions Before Construction

- The seeds of the species should be collected at the coordinates given in Table 10.1 between 15 June-15 July.

Recommended Actions After Construction

- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1 between September-November, in accordance with the methodology.

Monitoring

- The germination success of the planted seeds should be monitoring in the first May-June following the plantation.

Achievement Criteria

- The species forming a healthy population on the ROW.



5.2. FAUNA

5.2.1. MAMMALS

Species

- *Myomimus roachi* (Mouse-tailed Dormouse)



<http://www.wwf.org.tr> /Halim Diker

The Biological Features

- This species prefers open area habitats in general. In such environments, it is found in tree borders at the sides of especially sunflower and grain fields. In such tree borders, it prefers places around trees such as apple, pear, and thorn. However, these trees should be aged. Sometimes it is found in orchards too, but not in dense woodlands. It may be found in small oak groups scattered in open areas. If there are blackberry bushes under these oak groups, its accommodation and feeding will become easier.
- It exhibits activity both on the ground and on the top of the trees.
- It is a hibernating species. Hibernation is in nests at about 12 cm under the ground. It is active from the beginning of April to mid-November. They hibernate between mid-November to beginning of April.
- After hibernation, they mate and give birth between mid-May to beginning of June. There are 5-14 offsprings.
- As well as food of plant origin, they consume food of animal origin such as insects, grasshoppers.

Priority for BAP

- Low



Conservation Status

- IUCN RED LIST: VU
- BERN CONVENTION: Ann II
- Endemic to the Mediterranean Region/ Restricted Range

Status of the Species along the ROW

- This species could not observe during the field studies.

Critical Habitat

- CH66

Recommended Actions Before Construction

- The top soil between 1788+300 - 1788+500 KP's should be scraped at a depth of 10-15 cm.
- If *Myomimus roachi* individuals will be seen during the top soil strapping, they should be carried to the appropriate and close areas by specialists according to the methodology.

Recommended Actions After Construction

- The stored top soil should be laid again in 3 months.

Monitoring

- Observing whether the species has come to the area.
- Observing the nests in the area.

Achievement Criteria

- The vegetation covers of the area resemble with that of the nearby similar habitat.
- Observing the nesting activities of the transferred members.



Species

- *Prometheomys schaposchnikowi* (Long-clawed Mole Vole)



The Biological Features

- This is a restricted range species that is reported in Turkey only in 4 localities in the Artvin and Ardahan provinces.
- It is found in the sloping parts of the high mountainous grasslands that are covered with snow almost half of the year. It is distributed in areas of 2000-2800 m altitude. In such areas, it nests less inclined slopes where the soil is not saturated with water. It does not nest in slopes with an angle exceeding 25 degrees and in rocky ground.
- It has a social life as family groups in the gallery system, which it digs about 7-14 cm under the surface. It digs into the soil with its forelegs.
- They have nests covered with dry weeds up to 1 m under the surface. They have 10-12 galleries of 2.5 to 4 cm going out from the nest system to the surroundings.
- They bring out the soil from gallery digging to the surface to form small humps with short intervals between them.
- They reproduce from May to August. They give birth two times a year. Each time they give birth to 3 to 6 offspring. It is not known whether these offspring reproduce the same year.
- In the natural environment they can only live about two years.
- They are feeding on plants.
- In hot seasons they are rarely active on the surface and feed themselves for about 5-20 minutes. That especially stores the roots and bulbs of plants for consumption in winter. The amount of this storage may be up to 3-4 kg.

Priority for BAP

- The conservation status of this species is identified as "high". It is a rare species for Turkey. Its distribution area is rather restricted. Up to now, the ShahDeniz, BTC pipelines pass through; thus, the area is within the energy corridor. Since the future new lines will probably pass through here, it is deemed important that a "Conservation Action Plan" is established starting now and that the exact distribution borders and population density of the species is determined.

Conservation Status



- IUCN RED LIST: NT
- BERN CONVENTION: -
- Restricted Range

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH4

Recommended Actions Before Construction

- The area should be restricted between 15 May-15 August because this period is a breeding period for *Prometheomys schaposchnikowi*.
- The top soil between 23+670-27+081 KP's should be scraped at a depth of 10-15 cm after 15 August.
- *Prometheomys schaposchnikowi* individuals should be carried to the appropriate and close areas by specialists according to the methodology.
- When the nest gallery system is being excavated, the nest material and the stored food found in the nest should also be carried to the new transferred nesting area and should be placed inside the gallery entrance so that the members can take them in their new nests they are building.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months.

Monitoring

- Observing whether the species comes to the area.
- Observing the humps that show the presence of the nests in the area.
- Counting the nests in the area for monitoring the development of the population.

Achievement Criteria

- Observing the nesting activities of the transferred members.



Species

- *Spermophilus citellus* (The European ground squirrel)



The Biological Features

- European Ground Squirrel lives in steppes, pastures and grasslands with short grass. Since it builds its nest under the ground, the area should not be flooded. It can not be found in meadows with longer grass and in agricultural fields annually plowed. In addition, it does not live in scrublands and woodlands
- It is a diurnal species. Its activities decrease in hot noon times.
- It is a hibernating species. The hibernation starts to end in mid-May. At the beginning of September it again hibernates.
- It has a permanent nest in its habitat, and also a temporary nest where it can occasionally hide in when feeding. The nest in general reaches down to a depth of 1 m, although rare, up to 150 cm the nest entrance generally has a good field of vision. However, they sometimes nest among shrubs.
- As soon as hibernation ends, reproduction activity begins. They give birth to 2-9 offspring, once every year. Breast feeding is for 25-26 days. When the offspring are 25 days old, they start coming out of the nest.
- At the end of July, the weight of the offspring nears 200 gr.
- They are mainly herbivorous. They feed on the leaves, flowers, seeds and underground parts of plants. Occasionally they may eat food of animal origin such as insects, worms, grasshoppers, larvae.

Priority for BAP

- Low

Conservation Status

- IUCN RED LIST: VU
- BERN CONVENTION: Ann II
- Endemic to central and south-eastern Europe



Status of the Species along the ROW

- This species could not observe during the field studies.

Critical Habitat

- CH65

Recommended Actions Before Construction

- The top soil between 1741+100 - 1741+500 KP's should be scraped at a depth of 10-15 cm.
- If *Spermophilus citellus* individuals will be seen during the top soil strapping, they should be carried to the appropriate and close areas by specialists according to the methodology.

Recommended Actions After Construction

- The stored top soil should be laid again in 3 months.
- If *Spermophilus citellus* individuals will be seen, since these animals prefer building nests above the ground level, when soil is being spread, it will be beneficial forming humps of about 2 m diameter and about 50 cm height.

Monitoring

- Observing whether the species has come to the area.
- Observing the nests in the area.

Achievement Criteria

- The vegetation covers of the area resemble with that of the nearby similar habitat.
- Observing the nesting activities of the transferred members.



5.2.2.BIRDS¹³

Species

- *Cygnus cygnus* (The whooper swan)



The Biological Features

- It is a large swan native to the Northern Hemisphere. It has a length between 140 and 165 cm. Its wingspan reaches 275 cm and its weight varies between 7.4–14 kg. The females are a bit smaller.
- The upper part of the bill is yellow at darker tones and becomes black to the edges.
- This species require large areas of water to live in. Especially when they are still growing, their body weight cannot be supported by their legs for extended periods of time. Therefore, it spends much of its time swimming.
- These swans are monogamous and look after their offspring all winter. They may even be joined by offspring from previous years. They prefer wetlands for nesting. Both parents build the nest together. While the female incubates, the male stands guard over the nest. On the average, they lay 4-7 eggs.
- During their migration to East Asia and south Europe they may travel thousands of kilometres.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: Ann 2

¹³ All bird photographs are taken from www.wikimedia.com



Status of the Species along the ROW

- Population Status: Low
- This is a congregatory species.

Critical Habitat

- CH67

Recommended Actions Before Construction

- If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the population, construction should be stopped until the species leave the site.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region

Achievement Criteria

- Observing the species again on the site as colonies.



Species

- *Cygnus olor* (The mute swan)



The Biological Features

- It is native to Europe and Asia. Rarely it is observed wintering in the north of Africa. It is also an introduced species in North America, Australia and southern Africa.
- It is called as the mute swan being less vocal than other swan species.
- Its length varies between 125 cm and 170 cm.
- It is wholly white in plumage with a typical orange bill bordered with black. It is recognisable by its pronounced knob at the top of its bill. Males are larger than females.
- The young individuals have much darker feathers in their development stages.
- This species which is monogamous nest on large mounds that they build with waterside vegetation and reuse the same nest each year, restoring or rebuilding it as needed. Mute swans lay an average of four eggs every year.
- They are partially migratory throughout northern latitudes in Europe and Asia. The total native population of mute swans worldwide is estimated to be about 500.000 birds at the end of the breeding season.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: Ann 3

Status of the Species along the ROW



- Population Status: Low
- This is a congregatory species.

Critical Habitat

- CH67

Recommended Actions Before Construction

- If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the population, construction should be stopped until the species leave the site.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region

Achievement Criteria

- Observing the species again on the site as colonies.



Species

- *Otis tarda* (The great bustard)



The Biological Features

- The males are probably the largest among all flying animals. Sexual dimorphism is very clear. The males are typically 90-105 cm tall and 115 cm long. Wingspan may be up to 2.7 m. Their weight changes between 9.6 to 13.5 kg.
- Females are on the average 75-85 cm tall and 90 cm long. Their weight changes between 3.3 to 8 kg. The males are obvious with their long grey neck and head. Their characteristic neck bristles may measure up to 12–15 cm. They have long legs.
- The main habitat of this bird is open areas or the steppe zone. They also use agricultural lands where there are tall crops. However, during the breeding season, they actively avoid areas with regular human activity. Although in winter they form gatherings, male and female groups do not mix outside of the breeding season.
- In March, a single male may mate with up to five females. Immediately before mating, the males moult into their breeding plumage in January. The males exhibit a typical courtship to attract the females for mating. Doing so, the male puffs up its throat shows it protruding among the fathers and hides its head.
- The great bustard feeds both on plants and insects.
- It is categorised under the Vulnerable (VU) category by the IUCN Red List. The main factors that put this species under this category are human pressure and habitat loss.



Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: VU
- BERN CONVENTION: Ann 2

Status of the Species along the ROW

- The species is identified as the potential species in the area with literature recordings. It could not be observed during the field studies.

Critical Habitat

- CH11

Recommended Actions Before Construction

- The members and breeding activities in April-May should be investigated. Consequently, in case members in reproductive activity are observed, construction activities should not be started, studies accompanied by an expert should be carried out to wait for the offspring hatching from the egg, and it should be ensured that the members are removed from the area only after the young ones start going around with their mother.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Conducting studies to observe the members in the region

Achievement Criteria

- In case the species is observed before construction, observing the members of the species in the region during reproduction.



Species

- *Pelecanus onocrotalus* (The great white pelican)



The Biological Features

- The wingspan of this huge species can range from 226 to 360 cm. Its length is between 140 and 180 cm. Its bill is interesting with its size of 30 – 45 cm, compared to this total length. Adult males, weigh from 9 to 15 kg.
- The females are a bit smaller in size than the males.
- The adults have white body feathers and the flight feathers at the edges of the wings are black or dark coloured.
- They are found generally in warm and shallow fresh waters. Through Eurasia, they can be found in lakes, lagoons, deltas and reedbeds. Migratory populations are found from Eastern Europe to Kazakhstan during the breeding season. The breeding season continues through April – May in temperate climates, and February to April in India.
- They form large colonies in the breeding season. They lay from 1 to 4 eggs, being two on the average. They generally nest on the ground but they occasionally may nest on trees.
- They mainly feed on fish. Each member needs from 1 to 1.5 kg of fish every day.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: Ann 2



Status of the Species along the ROW

- Population Status: Low
- This is a congregatory species.

Critical Habitat

- CH67

Recommended Actions Before Construction

- If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the population, construction should be stopped until the species leave the site.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region

Achievement Criteria

- Observing the species again on the site as colonies.



Species

- *Phalacrocorax carbo* (The great cormorant)



The Biological Features

- The great cormorant is a large black bird. There is variation in size in the distribution range of the species. Weight is reported from 1.5 kg to 5.3 kg. Length can vary from 70 to 102 cm. Wingspan may reach 160 cm.
- The longish tail and yellow throat-patch are obvious.
- This is a widespread bird species. It feeds on the sea, in estuaries, and on freshwater lakes and rivers.
- Northern birds migrate south and winter along any coast that is well-supplied with fish.
- They make their nests on cliffs or at the top of trees. Three or four eggs are laid in each breeding season.
- The great cormorant can dive to considerable depths, but often feeds in shallow water.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: Ann 3

Status of the Species along the ROW

- Population Status: Low
- This is a congregatory species.



Critical Habitat

- CH64, CH67

Recommended Actions Before Construction

- If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the population, construction should be stopped until the species leave the site.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region

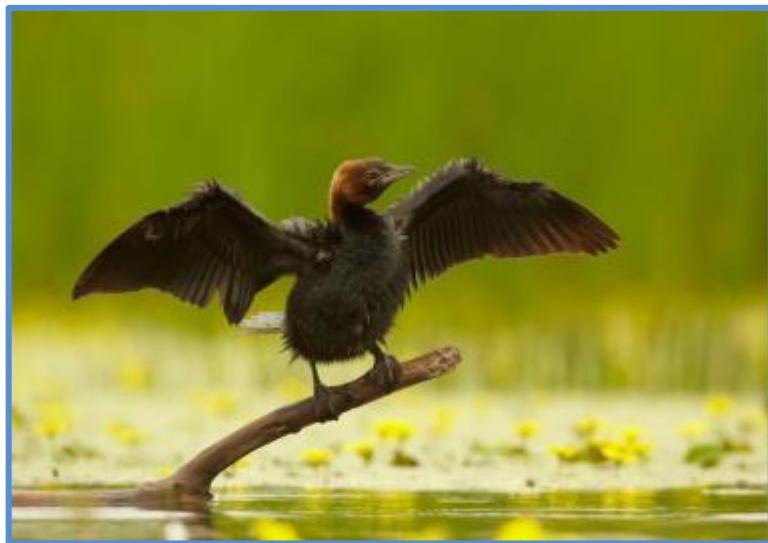
Achievement Criteria

- Observing the species again on the site as colonies.



Species

- *Phalacrocorax pygmeus* (Pygmy cormorant)



The Biological Features

- It is a medium sized cormorant. Its size varies between 15 to 55 cm.
- It can be distinguished from other cormorant species by its short thick bill. It has a long tail.
- It lives in groups and generally prefer wetlands where there are still or slow-flowing streams.
- It lays 3-6 eggs into the nest which it builds in reedbeds or trees.
- It feeds mainly on fish, often hunting in groups.
- They are distributed in a range from south-eastern Europe to south-western Asia. According to the 2006 report of the Wetlands International the population size worldwide is estimated to be 85,000 – 180,000 members, and 74 to 94 percent of this population lives in Europe.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: Ann 2

Status of the Species along the ROW

- Population Status: Low
- This is a congregatory species.



Critical Habitat

- CH64, CH67

Recommended Actions Before Construction

- If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the population, construction should be stopped until the species leave the site.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region

Achievement Criteria

- Observing the species again on the site as colonies.



Species

- *Vanellus gregarius* (The sociable lapwing)



The Biological Features

- Sociable lapwing, which is in the Aves class, lapwing family and is 27-30 cm long, is distinguished with its longish black legs and a short black bill. Summer adults have grey backs and breast, dark belly and white undertail.
- The head has a striking pattern, with a black crown and black feathers extending like an eyestripe, which shows up from long distances. In winter, the patterns at its head become relatively paler.
- It breeds on open grassland in Russia and Kazakhstan. Three to five eggs are laid in a ground nest.
- These birds migrate through Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, Afghanistan, Armenia, Iran, Iraq, Saudi Arabia, Syria, Eritrea and Turkey, to key wintering sites in Israel, Syria, Sudan and north-west India. Birds winter occasionally in Pakistan, Sri Lanka and Oman. This lapwing is a very rare vagrant in western and northern Europe.
- It feeds picking insects and other small prey mainly from grassland or arable land.
- It is categorised as critically endangered, due to a very rapid population decline for poorly understood reasons. This decline was very rapid between 1960 and 1987.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: CR
- BERN CONVENTION: Ann 3

Status of the Species along the ROW



- The species is identified as the potential species in the area with literature recordings. It could not be observed during the field studies.

Critical Habitat

- CH17

Recommended Actions Before Construction

- In case the species is observed, no construction activities should be carried out in March and between 15 September-30 October, when it is the migration periods.

Recommended Actions After Construction

- Habitat should be restored.

Monitoring

- Carrying out observation studies in the region in the migration periods of the members.

Achievement Criteria

- In case the species is observed before construction, observing the members of the species in the region during migration.



5.2.3.REPTILES

Species

- *Darevskia unisexualis* (Unisexual Lizard)



The Biological Features

- Body length of this species may be up to 20 cm. Its dorsal scales are smooth, upper side is brown or grey-brown. On this ground colour there are dark spots that are not much clear. At the sides of the dorsal line there is a pair of white spot rows. The flanks of the body are a bit darker than the dorsum and black spotted. The underside of the body is white.
- This species that is distributed in Turkey in the East Anatolia Region can be observed in stony and rocky areas with scarce vegetation.
- Its foods are insect and mollusc species.
- This lizard species that reproduces partenogenetically is all composed of female individuals. A female individual partenogenetically lays about 5 eggs.

Priority for BAP

- Low

Conservation Status

- IUCN RED LIST: NT
- BERN CONVENTION: Ann 3
- Restricted Range

Status of the Species along the ROW

- This species cold not observed during the field studies. But *Darevskia uzzelli* species is chosen as an "umbrella species", if this species conserved, *Darevskia unisexualis* can be conserved too.

Critical Habitats

- CH9 and CH10



Recommended Actions Before Construction

- The construction works cannot be done in the spring, before the June, because this species is going to hibernation.
- At the beginning of July, a field study should be carried out by experts, and *Darevskia unisexualis* individuals should be carried to the appropriate and close areas by specialists according to the methodology.
- The top soil between 164+345-164+566 KP's and between 167+000-167+154 KP's should be scraped at a depth of 10-15 cm.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- Observing the members on the construction site on or under stones.

Achievement Criteria

- Observing the members of the species on the site.



Species

- *Darevskia uzzelli* (Uzzell's Lizard)



The Biological Features

- Body length of this species may be up to 18 cm. Its dorsal scales are smooth and grey-brown, on which there are small dark spots. Between the upper side and flanks of the body there are whitish spot rows. In addition, there are dark and light spots at the flanks of the body. The underside of the body is greenish-yellow and there are blue spots on the plates at the flanks of the belly.
- This species that is endemic to Turkey is observed in stony and rocky areas with scarce vegetation.
- Its foods are insect and mollusc species.
- This lizard species that reproduces partenogenetically is all composed of female individuals. Although there is less information on the biology of the species, it is known that a female partenogenetically lays 4-5 eggs.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: EN
- BERN CONVENTION: Ann 3
- Endemic / Restricted Range

Status of the Species Along the ROW

- Population Status: Medium

Critical Habitat

- CH9 and CH10



Recommended Actions Before Construction

- The construction works cannot be done in the spring, before the June, because this species is going to hibernation.
- At the beginning of July, a field study should be carried out by experts, and *Darevskia uzzelli* individuals should be carried to the appropriate and close areas by specialists according to the methodology.
- The top soil between 164+345-164+566 KP's and between 167+000-167+154 KP's should be scraped at a depth of 10-15 cm.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- Observing the members on the construction site on or under stones.

Achievement Criteria

- Observing the members of the species on the site



Species

- *Montivipera wagneri* (Wagner's Viper)



The Biological Features

- This venomous snake species is endemic to Turkey.
- It is a viper species, the body length of which may be up to 90 cm, and is beautifully coloured.
- The neck is obviously thin; the upper side of the head is covered with little scales with carina.
- The iris is vertical; there are 12-15 scales around the eye and 2 rows of scales between the eye and the supralabialia. There are 9 supralabialia. The dorsal scales have carina and there are 23 rows around the body. Ventralia is between 161-168 and subcaudalia is between 23-31.
- Back side is grey or brown-beige and is obviously spotted. The edges of the spots are dark, whereas the inner parts are reddish or yellowish-brown. The spots are separate or adjacent and form a wavy band at the tail. The dark stripes at the flanks of the head (temporal stripes) are obvious, and there are spot rows at the flanks of the body. The underside is light grey and there are diffuse dark spots.
- It lives on stony and rocky mountain slopes with scarce vegetation. It is mostly observed near streams in such areas.
- It comes out for hunting early in the day and late in the night.
- When disturbed, it gives off a strong hiss. It is assumed that the venom of this snake is dangerous for man. However, there are no known deaths by the bite of this snake.
- It is a viper species that foreigners collect and take with them due to its beautiful colours and patterns. Because of this, it is in the Annex 2 list of CITES.
- It feeds on rodents, especially mouse species, lizards and birds.
- There is few information on the reproduction of this species which gives live birth.
- The vertical distribution of the species changes between 1200 and 2000 meters.

Priority for BAP

- High

Conservation Status



- IUCN RED LIST: CR
- BERN CONVENTION: Ann 2
- Endemic / Restricted Range

Status of the Species Along the ROW

- Population Status: Low

Critical Habitat

- CH15

Recommended Actions Before Construction

- The construction works cannot be done in the first spring, before the June, because this species is going to hibernation.
- At the beginning of July, a field study should be carried out by experts, and *Montivipera wagneri* individuals should be carried to the appropriate and close areas are given in Table 10.1, by specialists according to the methodology.
- The top soil between 214+885-219+641 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread, which the KP's are given in Table 10.1, by embedding them in 5-10 cm soil, in accordance with the photograph below.



Monitoring



- Observing the members on the construction site on or under stones.

Achievement Criteria

- Observing the mice which are the food for this snake species into the construction site.
- Observing the members of the species on the site.



5.2.4. AMPHIBIANS

Species

- *Mertensiella caucasica* (Caucasian Salamander)



The Biological Features

- This salamander species, distributed in the Easter Black Sea region, is thin and long; the length of the adult individuals is about 20 cm.
- The tail is round and longer than the length of the head and body together. The head is flattened, the eyes are protruding, and the skin is smooth and shiny.
- In the male individuals, there is an appendage of 2-3 mm length on the upper side of the tail root, which helps to distinguish the sexes.
- The colour of the upper side changes from black to brown. On this ground colour there are two longitudinal rows of roundish, yellow spots. The underside is grey or red-brown, with small whitish grey spots. These spots can also be seen on the flanks.
- This salamander species lives at the banks of streams and the in the surrounding woody places.
- In daytime it hides under stones and tree barks.
- It comes out at night to feed on insect and worms. Its movements are rather quick.
- Reproduction may be by laying eggs or live birth.
- It can be distributed between 400 and 2800 m elevations.

Priority for BAP

- Low

Conservation Status

- IUCN RED LIST: VU



- BERN CONVENTION: Ann 3
- Restricted Range

Status of the Species along the ROW

- The species is identified as the potential species in the area with literature recordings. It could not be observed during the field studies.

Critical Habitat

- CH1, CH2

Recommended Actions Before Construction

- If this species will be observed in the ROW, the construction works cannot be done before the April, because this species is going to hibernation.
- At the beginning of April, a field study should be carried out by experts, and if this species will be observed, individuals should be carried to the appropriate and close aquatic areas by specialists according to the methodology.

Recommended Actions After Construction

- If the species is observed in the area, it should be ensured that the habitat is restored by restoring the stones and rocks in and near the aquatic environment.

Monitoring

- Members should be searched for using scoops in water in the construction area and looking under tree barks and stones by the water.

Achievement Criteria

- In case the species is observed before construction, observing the members of the species in the region
- In case the species is observed before construction, observing the members of the species in the region during breeding.



5.2.5.ARTHROPODA

Species

- *Dioclea n. sp. 1*



The Biological Features

- This species has not been described yet.
- The larvae of this species feed on the larvae of smaller insects on the soil.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH60

Recommended Actions Before Construction

- The top soil in the CH60 KP's should be scraped at a depth of 10-15 cm.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Invasive flora species control should be done.

Monitoring

- Observing the species individuals on plants

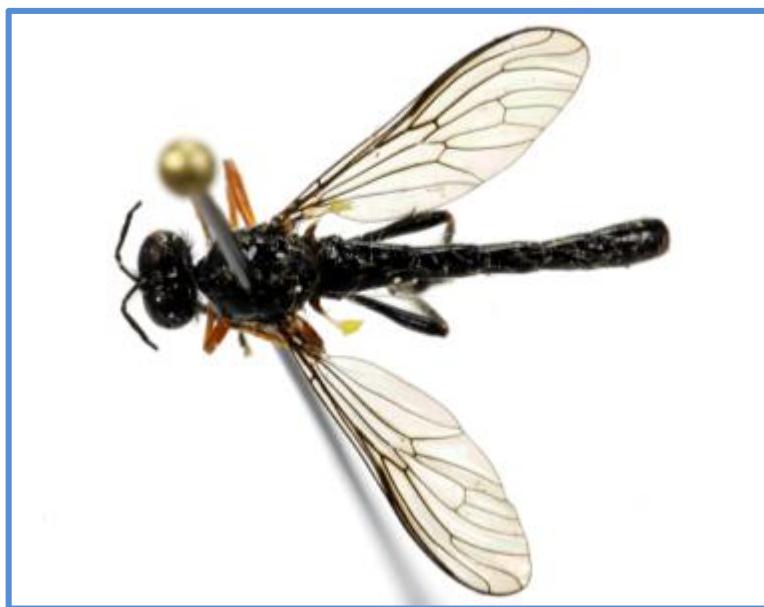
Achievement Criteria

- Observing the members of the species in the restored parts in the studies to be conducted in the area between the first 1 May – 15 June period following the scraping of the top soil



Species

- *Dioctria n. sp. 2*



The Biological Features

- This species has not been described.
- The larvae of this species feed on the larvae of smaller insects on the soil.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH49

Recommended Actions Before Construction

- The top soil in the CH49 KP's should be scraped at a depth of 10-15 cm.



Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Invasive flora species control should be done.

Monitoring

- Observing the species individuals on plants

Achievement Criteria

- Observing the members of the species in the restored parts in the studies to be conducted in the area between the first 1 May – 15 June period following the scraping of the top soil.



Species

- *Dysmachus safranboluticus*



The Biological Features

- These are similar to *D. obtusus*. Both have epandrium (genital) separated from the back part and the males have 8 similar sternits. Different from *D. obtusus*, the dorsal expansion in *Dysmachus safranboluticus* is conical, head-shaped; setae on the lateral sides of 8 sternits are longer and more intensive¹⁴.
- The larvae of this species feed on the larvae of other small insects on the soil.
- **Distribution:** Karabük

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic

¹⁴ HASBENLİ, A. and GELLER-GRIMM, F., 1999, Two new species of *Dysmachus* Loew, 1860 (Asilidae: Diptera) from Turkey. L'Ent. Res. Soc. 1(1), 13- 19.



Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH36, CH37, CH45 and CH49

Recommended Actions Before Construction

- The top soil in the CH36, CH37, CH45 and CH49 KP's should be scraped at a depth of 10-15 cm.
- Herbaceous plants should be harvested and stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.
- Invasive flora species control should be done.

Monitoring

- Observing the species individuals on plants

Achievement Criteria

- Observing the members of the species in the restored parts in the studies to be conducted in the area between the first 1 June – 15 July period following the scraping of the top soil.



Species

- *Erebia ottomana* (Ottoman Ringlet)



The Biological Features

- Each of the chocolate coloured wings of the male bear an orange middle outer band. The band on the hind wing is divided by orange spots. On the front wing under the apex there are two adjacent eye spots. There are 3-4 spots on the hind wings. The colour of the underside of the front wing is dark chestnut, and the edge lines are silvery-grey. The upper side of the wings in the female is duller. The front wing is orange and the hind wing is yellowish^{15,16,17,18}.
- It hibernates from the end of August to the start of June as a larvae.
- **Food and Food Preferences:** Weeds, including the *Festuca* genus
- **Distribution:** Bursa, Erzurum, Gümüşhane, Kastamonu, Trabzon

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: NT
- RBBT: NT
- Near endemic and restricted range

Status of the Species along the ROW

- Population Status: Low
- Species of the *Festuca* genus and other Poaceae members, which are the food plants, are abundant in the area.

Critical Habitat

- CH3, CH5

¹⁵ BAYTAŞ, A. 2008. The Butterflies of Turkey, NTV Publishing, Türkiye, pp.222.

¹⁶ <http://www.trakel.org/kelebekler/?fsx=2fsdl17@d&tur=Harem%20G%C3%BCzlesmeri>

¹⁷ <http://www.kelebek-turk.com/getphoto.php?pid=7224>

¹⁸ http://www.pyrgus.de/Erebia_ottomana_en.html



Recommended Actions Before Construction

- The top soil in the CH3, CH5 KP's should be scraped at a depth of 10-15 cm.
- Herbaceous plants should be harvested and stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.

Monitoring

- It should be controlled whether species of the *Festuca* genus and other *Poaceae* members, which are the food plants, has returned to the area and it should be compared with the population percentage in the natural area.

Achievement Criteria

- Species of the *Festuca* genus and other *Poaceae* members return to the area and form a healthy population
- Observing larvae on species of the *Festuca* genus and other *Poaceae* members.



Species

- *Eulasia chrysopyga*



The Biological Features

- The head, pronotum and skutellum are black, with long black setae. Elytra is yellow-brown, the tip of the elytra has oblique black setae. Sometimes there are one or two light yellow coloured bands on the elytra. The body of the elytra is with long white setae. The flanks of the abdomen are yellow-orange, sometimes with light yellow setae^{19,20,21}.
- **Food and Food Preferences:** *Eulasia* genus, Composite-Asteraceae, red anemone, purple prickly Onopordum, yellow *Centaurea*, Poppy
- **Distribution:** Erzurum-Tortum, Ağrı-Tahir, Artvin-Yalnızçam, Ankara-Çamlıdere, Erzurum-Aksu.
- It is a Caucasian species and is rare in Anatolia.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Restricted range

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

¹⁹ ROZNER I., 2009, Additional Data to the Lamellicornia Fauna of Turkey (Coleoptera: Lamellicornia).

²⁰ KEASER.T et al., 2009, Red anemone guild flowers as focal places for mating and feeding of Mediterranean glaphyrid beetles.

²¹ <https://www.flickr.com/photos/treblesteph/6002639086>



- CH12 and CH13

Recommended Actions Before Construction

- The top soil in the CH12 and CH13 KP's should be scraped at a depth of 10-15 cm.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.

Monitoring

- Observing the species on plants

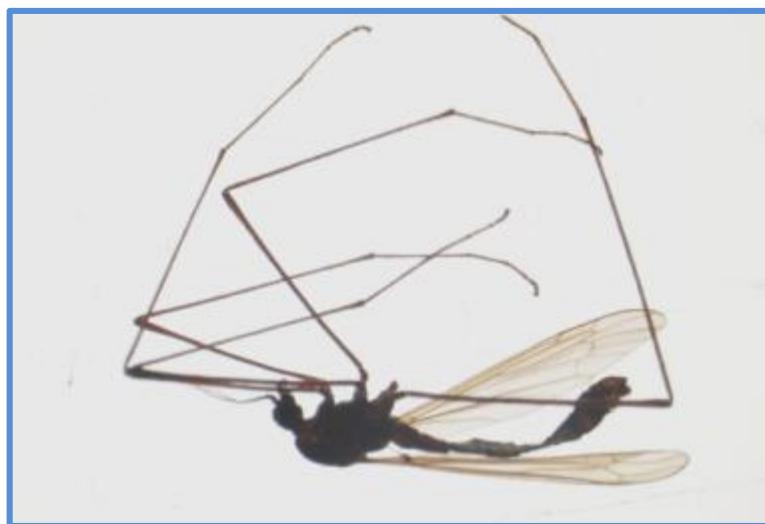
Achievement Criteria

- The population status of the species reaching at least the medium level



Species

- *Hexatoma n. sp.*



The Biological Features

- *Hexatoma* species generally leave their eggs in water, marsh-like soils, organic deposits of plant origin, and moist mosses just like the other Limoniidae species (Savchenko, 1989). Again, like most of the Limoniidae species, the adults of the *Hexatoma* species have adapted to humid and hot environments and are found near the regions where they have passed through the larval stage. The adults are in general found in places where the annual herbaceous plants merge with scrubs at the creek banks or in places where herbaceous plants and ferns are abundant, in the ground vegetation near lakes and streams.
- **Food and Food Preferences:** Feeding is generally herbivorous, some *Hexatoma* species are predators.
- **Distribution:** Endemic

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH31, CH46 and CH47



Recommended Actions Before Construction

- The top soil in the CH31, CH46 and CH47 KP's should be scraped at a depth of 10-15 cm.
- CH46: *Juncus* species individuals between the KP's indicated in Table 10.1 should be removed and transferred at the coordinates given in Table 10.1.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- CH46: *Juncus* species removed individuals should be transferred on the ROW between the KP's indicated in Table 10.1.
- Invasive flora species control should be done.

Monitoring

- Observing the members of the species in wetlands

Achievement Criteria

- Observing the members in the vegetation forming again in wetlands.



Species

- *Hilara n. sp. 1*



The Biological Features

- The larvae are carnivorous and live in woods in moist places. They can also be observed in rotten leaves and woods.
- *Hilara* species are found under trees and over streams or still waters. Some can be seen flying in clusters over lakes, ponds and streams; some species fly higher, under tree trunks. In general males fly like this but there are also mating species²².
- **Food and Food Preferences:** These are carnivorous species; they feed on other insects, especially with small flies.
- **Distribution:** Endemic

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH17
- During the construction activities, route change occurred on the area where CH17 is located. Site survey was conducted on the ROW of the new route on 13.07.2016 in order to determine if above mentioned related species are present or not.

²² LUNDBEC W., 1910, Diptera danica: Empididae, Chapter 3.



According to the observations during site survey, *Hilara n.sp. 1* is not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.

- Since the pre-construction and post-construction mitigation measures stated for *Hilara n.sp. 1* at CH17 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Recommended Actions Before Construction

- The top soil in the CH17 KP's should be scraped at a depth of 10-15 cm as tufts, and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil as tufts should be laid back in 3 months at the latest and the first water should be given.

Monitoring

- Reconstitution of the microhabitat, and consequently, observing members of the species

Achievement Criteria

- The population of the species reaching a high level



Species

- *Hilara n. sp. 3*



The Biological Features

- The larvae are carnivorous and live in woods in moist places. They can also be observed in rotten leaves and woods.
- *Hilara* species are found under trees and over streams or still waters. Some can be seen flying in clusters over lakes, ponds and streams; some species fly higher, under tree trunks. In general males fly like this but there are also mating species²³.
- **Food and Food Preferences:** These are carnivorous species; they feed on other insects, especially with small flies.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH48

²³ LUNDBEC W., 1910, Diptera danica: Empididae, Chapter 3.



Recommended Actions Before Construction

- The top soil in the CH48 KP's should be scraped at a depth of 10-15 cm as tufts, and should be stored along one side of the ROW.

Recommended Actions After Construction

- The stored top soil as tufts should be laid back in 3 months at the latest and the first water should be given.

Monitoring

- Reconstitution of the microhabitat, and consequently, observing members of the species

Achievement Criteria

- The population of the species reaching a high level



Species

- *Neolycaena soezen* (Soezen's Pseudocopper)



The Biological Features

- Upper wingspan of the species is 15-23 mm. Lower wings are brown, upper wings are grey-brown. The wing bases are metallic blue-green. *Neolycaena rhymnus* species and *Neolycaena soezen* species are resemble to the each other. The main difference between them is that *N. rhymnus* has more obvious black and orange dots. In *N. rhymnus* the orange and black dots on the lower edge band is clearly smaller than the white dots. In the *Neolycaena soezen* species these white dots are clearly developed²⁴.
- The larvae of this genus feed on the species of the *Caragana* genus specific to Europe and Asia.
- It is seen at 700-800 m elevations, on sunny slopes and on the steppe. There is one generation and is observed in May.
- **Food and Food Preferences:** *Caragana pygmaea*, *C. spinosa*, *C. microphylla*, *C. murantiaca*, *C. frutex*, *C. jubata*, *C. balchaschensis*, *C. turkestanica*, *C. grandiflora*
- **Distribution:** Eskişehir

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic and restricted range species / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Medium

²⁴ SEVEN, S., 2014, A new species of blue from Turkey, *Neolycaena soezen* Seven, sp. n. (Lepidoptera: Lycaenidae) SHILAP Revta. Lepid., 42 (166), junio 2014: 311-317.



Critical Habitat

- CH57
- During the construction activities, route change occurred on the area where CH57 is located. Site survey was conducted on the ROW in order to determine if above mentioned related species are present or not. According to the observations during site survey, *Neolycaena soezen* and its food plants *Caragana grandiflora* are not located on the ROW of new route. Moreover, there is no additional SCC species determined on the new route during the site surveys.
- Since the pre-construction and post-construction mitigation measures stated for *Neolycaena soezen* at CH57 below and in Table 10.1 are not applicable anymore, they are deleted from the table.

Recommended Actions Before Construction

- The top soil in the CH57 KP's should be scraped at a depth of 10-15 cm.
- The seeds of the *Caragana grandiflora* species which is a food plant of this species should be collected.
- *Caragana grandiflora* individuals should be collected with their soils and planted along one side of the ROW at the coordinates given in Table 10.1.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The collected seeds of the species should be planted on the ROW at the coordinates given in Table 10.1.
- *Caragana grandiflora* species removed individuals should be transferred on the ROW.
- The plantation area should be surrounded by a wire mesh or fence to protect the area from grazing and other pressures.

Monitoring

- Observing butterfly larvae on *Caragana*, observing butterfly members feeding on herbaceous plants in the restored parts on ROW

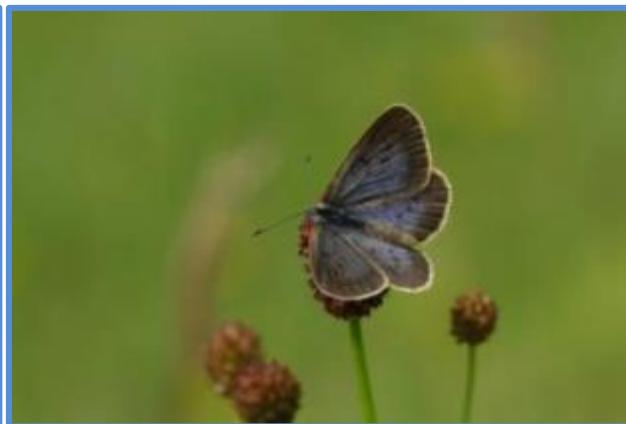
Achievement Criteria

- The *Caragana* plant forming a healthy population, observing larvae on this population formed, observing the members of the species in the restored parts



Species

- *Phengaris nausithous* (Dusky Large Blue)



The Biological Features

- Although the upper surface of its wings looks like the Large Arion Blue, the spots on the front wings are smaller and less obvious. The undersides of both wings are dark cinnamon and bear a middle outer band of black spots of similar length.
- The females leave their eggs on the stigma of big flowers. The number of eggs on each stigma may exceed 20, which increases food competition. In general, on each stigma three or four larvae may pass to the last stage of larva. The larvae fall off the stigma to the ground after about three weeks, to be carried to an ant nest by worker ants of the *Myrmica* genus. They feed on the ant larvae and the food pellets that the worker ants release from their stomachs. They hibernate and pass into the pupa stage at the start of the next summer. As soon as they come out of the cocoon they leave the nest.
- This butterfly gives one generation a year, generally from the middle of July to the middle of August. However, the development of the larvae in the ant nest may take two years. It is observed in moist reeds and meadows in June, July and August between 1800-2800 m elevations^{25,26,27,28,29}.
- **Food and Food Preferences:** It is observed in meadows that are moist and partially rich in food and in vegetation cover where the larva food plant *Sanguisorba officinalis* grows.
- **Distribution:** Ardahan, Artvin, Bayburt, Erzurum, Kars. On the world, it can be found from West Europe to Central Siberia. The populations in the Caucasus and Turkey are widely separated from the main distribution area at the north and west.

Priority for BAP

- High

²⁵ BAYTAŞ, A. 2008. The Butterflies of Turkey, NTV Publishing, Türkiye, pp.222.

²⁶ <http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=15075#.VEYXufmsXyQ>

²⁷ <http://www.trakel.org/kelebekler/?fsx=2fsdl17@d&tur=Esmer%20Korubeni>

²⁸ KARAÇETİN, E. AND WELCH, H.J., 2011. Red Book of Butterflies of Turkey, Nature Conservation Centre, Ankara, 125 pp.

²⁹ http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=25959#.VCCIIJR_vSQ



Conservation Status

- IUCN RED LIST: NT
- RBBT: EN
- Restricted range

Status of the Species along the ROW

- Population Status: Medium
- The food plant is abundant and ant nests are sufficient.

Critical Habitat

- CH5, CH6, CH7, CH8, CH13

Recommended Actions Before Construction

- The top soil in the CH5, CH6, CH7, CH8, CH13 KP's should be scraped at a depth of 10-15 cm with the plants on it as tufts (including *Sanguisorba* sp.), and should be stored along one side of the ROW, and should be irrigated once every two weeks.
- Stones and rocks of 30 cm or larger on the soil should be stored nearby the construction site, without mixing them with the top soil.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The removed individuals of the species as tufts should be planted on the ROW and should be irrigated until they root again.
- The stored stones and rocks should be spread, by embedding them in 5-10 cm soil (in accordance with the original).

Monitoring

- It should be controlled whether *Sangiosorba armena*, which is the food plant of the SCC species, has returned to the area and it should be compared with the population percentage in the natural area.
- The eggs and the larvae of the SCC species on the food plant that has returned back to the area should be monitoring, the achievement of the treatments conducted should be evaluated by comparing with the natural area; in addition, it should be determined whether as a result of stone-rock restoration ant nests have formed under the stones-rocks, where the larvae of the target species pass the winter.

Achievement Criteria

- The *Sangiosorba armena* members return to the area and form a healthy population.
- Observing the *Phengaris nausithous* larvae on *Sangiosorba armena* members.
- Formation of ant nests under stones-rocks.



Species

- *Polyommatus actis* (Actis Blue)



The Biological Features

- The upper side of the wings of the male is a purplish dark blue, with black, thin edge lines. In many individuals, the outer side of the hind wings or veins are covered with black scales. On the underside of the wings, the middle outer bands are complete; the blueness of the basal part is obvious. The edge lower marks of the wings are rather obvious and sometimes there is the trace of an orange spot at the anal angle. The white band on the hind wing is often straight^{30,31,32}.
- They fly at 1000-2000 m elevations, at the end of June to the beginning of August.
- **Food and Food Preferences:** Fabaceae
- **Distribution:** From Afyon and Isparta to Konya and Niğde, also Eskişehir, Erzincan and Erzurum

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: DD
- RBBT: DD
- Endemic and restricted range species

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- CH22 and CH23

³⁰ BAYTAŞ, A. 2008. The Butterflies of Turkey, NTV Publishing, Türkiye, pp.222.

³¹ http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=30705#VEYfc_msXyQ

³² http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=15160#.VEYgH_msXyQ



Recommended Actions Before Construction

- The top soil in the CH22 and CH23 KP's should be scraped together with rocks and stones, at a depth of 20 cm, which is the ant nest depth, and should be stored along one side of the ROW.
- The seeds of the plants of the *Onobrychis* and *Astragalus* genus should be collected between 15 July – 30 August.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The stored stones and rocks should be spread on the ROW. The collected seeds of the *Onobrychis* and *Astragalus* plants should be planted on the ROW at the coordinates given in Table 10.1 own on the project area.

Monitoring

- Observing the larvae of the species on plants
- Observing the ants nests on the ROW
- Observing the *Onobrychis* and *Astragalus* individuals on the ROW

Achievement Criteria

- The population status of the larvae and adult individuals of the species reaching at least the medium level



Species

- *Polyommatus antidolus* (Anatolian Furry Blue)



The Biological Features

- This species is distinguished from the Anatolian White Blue by the broader, dirty brown wing edge lines of the male and much darker black veins on the wings, which have much more black scale scatterings. The ground colour of the underside of the wings is light beige or very light brown, except for the greyish middle part of the front wing. The dots on the middle outer band of the hind leaves are very small. The white band does not exist or off-coloured not to be seen by naked eye^{33,34}.
- They fly in July-August in moist, flowery places, around small creeks and canals at 0-2000 metre elevations.
- **Food and Food Preferences:** *Ononis spinosa*
- **Distribution:** Ağrı, Hakkari, İğdır, Van

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: DD
- Endemic and restricted range

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

³³ BAYTAŞ, A. 2008. The Butterflies of Turkey, NTV Publishing, Türkiye, pp.222.

³⁴ http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=17481#.VEYj0_msXyQ



- CH19

Recommended Actions Before Construction

- The top soil in the CH19 KP's should be scraped at a depth of 20 cm.
- The seeds of the plants of the *Onobrychis* and *Astragalus* genus, which are the food plants of the larvae, should be collected between 15 July – 30 August.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The collected seeds of the *Onobrychis* and *Astragalus* plants should be planted on the ROW at the coordinates given in Table 10.1.

Monitoring

- Observing the larvae of the species on plants.
- Observing the *Onobrychis* and *Astragalus* individuals on the ROW.

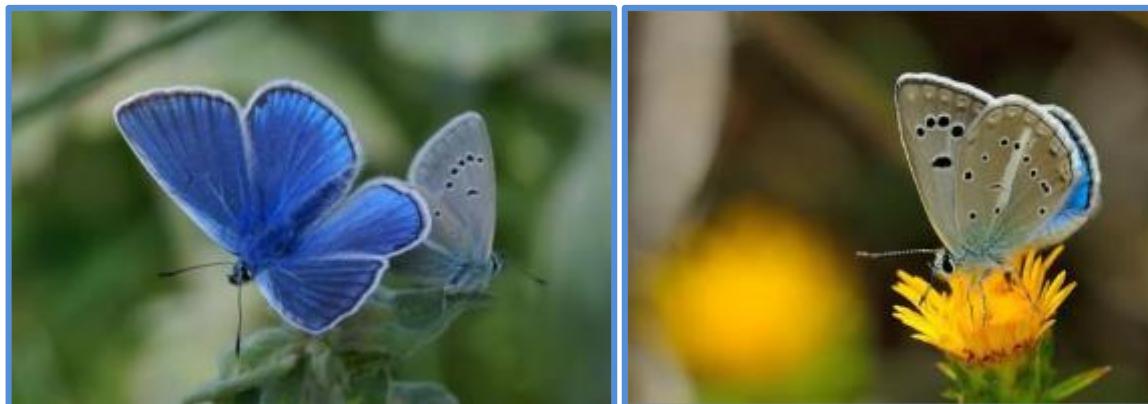
Achievement Criteria

- The population status of the larvae and adult individuals of the species reaching at least the medium level.



Species

- *Polyommatus merhaba* (Hi Blue)



The Biological Features

- The upper side of the male, which flies close to the ground and rapid, resembles the Wagner's Blue. The male and the female can be distinguished by complete and obvious middle outer spot bands on the underside of both wings, darker ground colours and much larger disc shaped spots on the front wing.
- They fly along the Çoruh River valley, over the loose and generally steep slopes where there are steppe-like scarce vegetation (for example *Thymus* sp.) and blackthorn (*Paliurus spinachristi*). Most of the population fly between 670-1.400 m. However, two individuals at 1.800 and 2.000 m were recorded. Generally they fly close to the ground and are very rapid. Flying period is from July to August and the most intensive period is the first two weeks of July^{35,36,37}.
- **Distribution:** Artvin, Erzurum

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: -
- RBBT: EN
- Endemic

Status of the Species along the ROW

- Population Status: Low

³⁵ BAYTAŞ, A. 2008, The Butterflies of Turkey, NTV Publishing, Türkiye, pp.222.

³⁶ <http://www.adamerkelebek.org/gozlemDetay.asp?Uyelid=131&Bilgild=3966>

³⁷ <http://www.trakel.org/kelebekler/?fsx=2fsdl15@d&idx=22173#.VEYnXvmsXyQ>



Critical Habitat

- CH15

Recommended Actions Before Construction

- The top soil in the CH15 KP's should be scraped at a depth of 10-15 cm.
- The seeds of the plants of the *Onobrychis* and *Astragalus* genus, which are the food plants of the larvae, should be collected between 15 July – 30 August.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The collected seeds of the *Onobrychis* and *Astragalus* plants should be planted on the ROW.

Monitoring

- Observing the members of the *Onobrychis* and *Astragalus* plants in the habitat
- Observing the larvae of the species on these plants

Achievement Criteria

- The population status larvae and adult of the species individuals reaching at least the medium level



Species

- *Tipula n. sp.*



The Biological Features

- It has Tipula type larvae; the long, cylindrical larvae have resistant skin and have 12 segments. The head capsule is large and mostly goes into the prothorax (*hemicephal*). The respiration is *metapneustic*. Those living on water firstly have skin respiration, in which body appendages with trachea pipes have an important role. At the ventral of the last body segment there is the ciliated pipe and the respiration pipe. It has 6 stigma appendages in the form of a lobe. These appendages close the stigmas to prevent foreign matters going in when the larva goes to the bottom of the water or enters mud. The larvae may be aquatic, semi-aquatic or completely terrestrial. The suitable habitats for the development of the larvae are root, trunk and leaves of plants rotting in moist places like streams, lakes and marshes, humid field soil, cattle fertilizer, tree cavities, mossy or rotten parts of trees, moist undergrowth soil layer. Majority of the larvae are saprophytes³⁸.
- **Food and Food Preferences:** Very few feed at the adult stage, which is by sucking nectar and free plant saps.
- **Distribution:** Sivas, Ardahan, Gümüşhane (the provinces they were collected in this study)

Priority for BAP

- High

³⁸ <http://www.hasankoc.net/tipulid.html>



Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Endemic / THE NEW SPECIES

Status of the Species along the ROW

- Population Status: Medium
- It was identified generally among wet grassland by creeks with seasonal flow, among scrubs in moist grassland and in riparian vegetations.

Critical Habitat

- CH 3, CH 5, CH 31, CH 32, CH 33, CH 34, CH 35

Recommended Actions Before Construction

- The top soil in the CH 3, CH 5, CH 31, CH 32, CH 33, CH 34, CH 35 KP's should be scraped at a depth of 10-15 cm.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- Habitat should be restored.

Monitoring

- Observing the continuity of the population and habitat.

Achievement Criteria

- Ensuring habitat continuity.



Species

- *Zonitis nigriventris*



The Biological Features

- The larvae feed on grasshopper eggs or leaves on honey bee hive³⁹. Eggs are generally laying on flowers or leaves or underside them⁴⁰.
- In the Palearctic zone almost all species live at low or medium altitude, in open air and mostly on non-moist arid area, in the Mediterranean or steppe and their phonologies generally in late summer and fall^{41,42}.
- *Zonitis nigriventris* adults are polyphagous and daily feed on the pollens of different flowery plant families: Compositae, Capparidaceae, Leguminosae, Asclepiadaceae, Polygonaceae, Malvaceae, Labiateae.
- **Distribution:** İğdir
- **Palearctic Distribution:** Georgia, Türkiye, Armenia, Greece

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Restricted Range

³⁹ HŮRKA K. 2005, Brouci České a Slovenské republiky [Beetles of the Czech and Slovak Republics]. Nakladatelství Kabourek, Zlín.

⁴⁰ BOLOGNA M.A., 1991, Coleoptera Meloidae. Fauna d'Italia. XXVIII. Calderini, Bologna, XIV+541 pp

⁴¹ ÖZBEK AND SZALOKI, 1998, A contribution to the knowledge of the Meloidae (Coleoptera) fauna of Turkey along with new records, Tr. J. of Zoology, 22 (1998): 23-40.

⁴² BOLOGNA, M.A., Meloidae Gyllenhal, 1810, In Löbl, I and Smetana, A. (eds), Catalogue of Palaearctic Coleoptera Volume 5, Apollo Books, 370-412 pp.



Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- CH13, CH14 and CH20

Recommended Actions Before Construction

- The top soil in the CH13, CH14 and CH20 KP's should be scraped at a depth of 10-15 cm.
- Tall plants belonging to the Compositae, Labiateae, Leguminosae families in the area should be harvested at the end of August, at the end of the vegetation period and should be stored nearby the construction site.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The harvested plants, containing eggs should be transferred to the area and spread on the soil.

Monitoring

- Observing the species individuals on plants

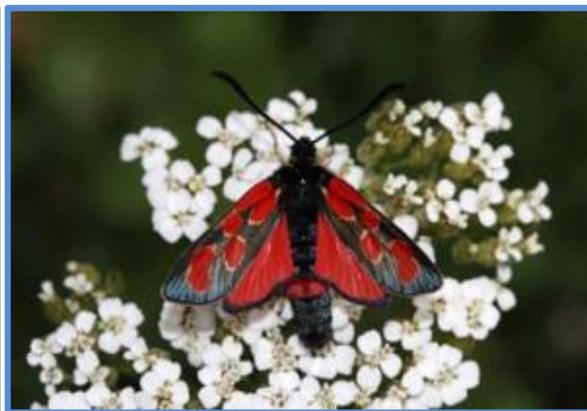
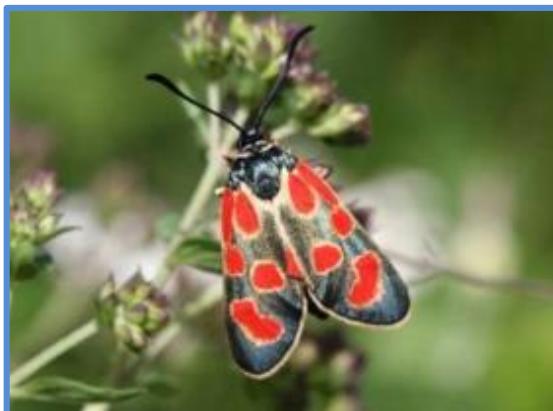
Achievement Criteria

- The population status of the species reaching at least the medium level



Species

- *Zygaena armena*



The Biological Features

- The larvae of some *Zygeana* species feed on *Onobrychis viciifolia*, *Lotus corniculatus* plants. Some adult individuals feed on the nectar of plants with purple flowers such as *Knautia arvensis*, *Scabiosa columbaria*, and *Centaurea*. *Z. filipendula* feeds on the plant *Dorycnium pentaphyllum*⁴³.
- **Distribution:** Ardahan, Artvin

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: -
- RBBT: -
- Restricted Range Species

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- CH1 and CH2

⁴³ KEMAL, M. & KOÇAK, A.Ö., 2010, Illustrated list of the *Zygaena* Fabr. species in Turkey based upon the Info-system of the Cesa (Lepidoptera, Zygaenidae, Zygaeninae). Cesa News 54: 1-35.



Recommended Actions Before Construction

- The top soil in the CH1 and CH2 KP's should be scraped at a depth of 10-15 cm.
- The seeds of the plants of the *Onobrychis* and *Coronilla* genus, which are the food plants of the *Zygaena armena* species, should be collected between 15 July – 30 August.

Recommended Actions After Construction

- The stored top soil should be laid back in 3 months at the latest.
- The collected seeds of the *Onobrychis* and *Coronilla* plants should be planted on the ROW.

Monitoring

- Observing the members of the *Onobrychis* and *Coronilla* plants in the habitat.
- Observing the larvae of the species on these plants.

Achievement Criteria

- Species of the *Onobrychis* and *Coronilla* genus return to the area and form a healthy population.
- Observing *Zygaena armena* larvae on species of the *Onobrychis* and *Coronilla* genus.



6. FRESHWATER CRITICAL HABITATS ACTION PLANS

* Recommended actions for freshwater critical habitats can be seen in the Table 10.2.



FCH1: KURA RIVER, KP: 71+710-71+755



EUNIS Code

- C2.2 (Permanent non-tidal, fast, turbulent watercourses)

Priority for BAP

- Medium

Related Species

- The SCC species could not be identified in the field studies. However, the river hosts many fish species found in the Kura-Aras River System (Kuru, 1975⁴⁴; Anonymous, 2001⁴⁵).

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The riparian zone in this area is covered with aquatic plants that are very important for the reproduction and hiding of fish.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

⁴⁴ KURU, M., 1975, Investigations on Systematic and Zoogeographic Aspects of Fish for Dicle – Firat, Kura – Aras, Van Lake and Freshwater Karadeniz Basin, Atatürk Univ. Publ., Post-Doctoral Thesis, Erzurum.

⁴⁵ ANONYMOUS, 2001; An Assessment of the Wetlands of The Türkiye according to the Fish Criteria by Ramsar Convention Project, T.C. Ministry of Environment, and Environmental Protection General Directorate and T.C. Gazi University Foundation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. The fish species found in the Kura-Aras River System breeding in such shallow waters.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area is stony and rocky.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

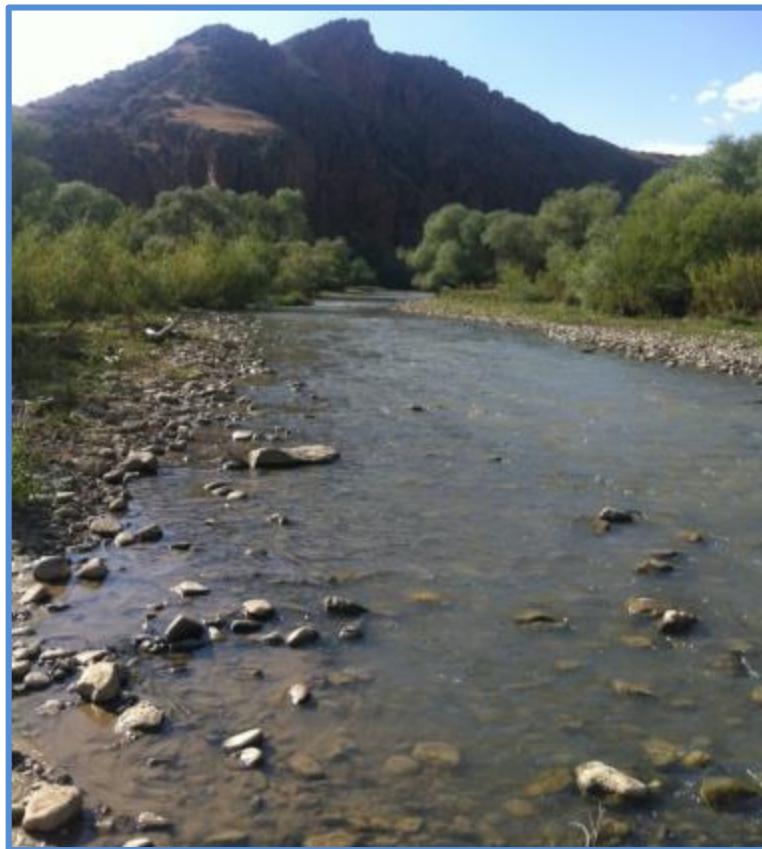


Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. The fish species found in the Kura-Aras River System breeding in such shallow waters.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area is stony and rocky.



Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- The SCC species could not be identified in the field studies. However, the river hosts many fish species found in the Kura-Aras River System.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The riparian zone in this area is covered with aquatic plants that are very important for the reproduction and hiding of fish.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. The fish species found in the Kura-Aras River System breeding in such shallow waters.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area is stony and rocky.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. However, the river hosts many fish species found in the Kura-Aras River System.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of aquatic plants, small stones and sandy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. The fish species found in the Kura-Aras River System breeding in such shallow waters.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of filamentous algae and small stony areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- The SCC species could not be identified in the field studies. However, the river hosts many fish species found in the Kura-Aras River System.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of filamentous algae, aquatic plants, pebbles and sandy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

The SCC species could not be identified in the field studies. However, the river hosts many fish species

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of big stones and pebbles. There are filamentous algae on the stones.

Recommended Actions Before Construction

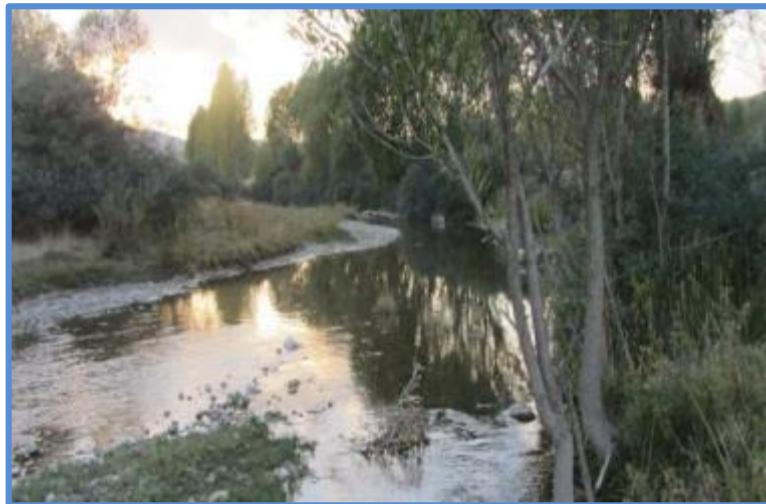
- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Oxyneomacheilus kosswigi; Salmo macrostigma*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of big stones and pebbles. There are aquatic plants and filamentous algae.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Gobio obtusirostris*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas. The habitat is damaged due to sand quarries.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

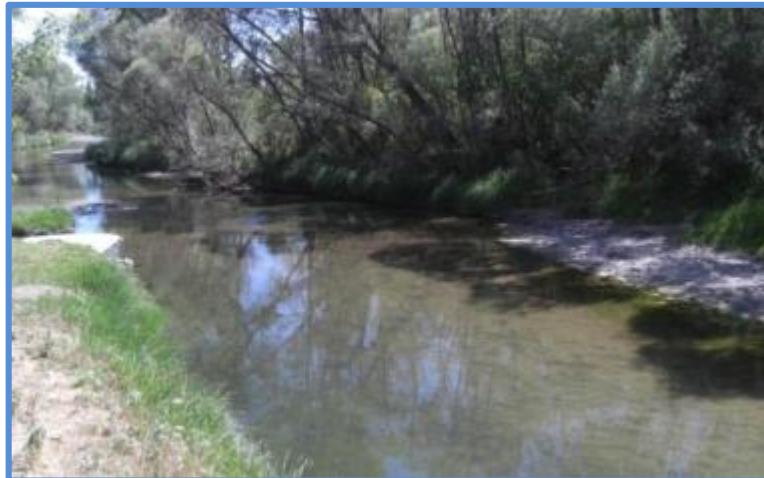
Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- The SCC species could not be identified in the field studies. The fish species found in the Kura-Aras River System breeding in such shallow waters.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Cobitis simplicispinna*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas with pebbles and occasionally big stones.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Cobitis simplicispinna*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas and ooze.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.2 (Permanent non-tidal, fast, turbulent watercourses)

Priority for BAP

- Medium

Related Species

- The SCC species could not be identified in the field studies.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas with stones and pebbles.
- The riparian zone in this area is covered with aquatic plants that are very important for the reproduction and hiding of fish.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- The SCC species could not be identified in the field studies.

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas.
- The riparian zone in this area is covered with aquatic plants that are very important for the reproduction and hiding of fish.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Cobitis simplicispinna; Gobio obtusirostris*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and stony areas. Occasionally muddy areas are observed.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Cobitis simplicispinna; Chondrostoma angorae; Gobio obtusirostris*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and stony areas. Occasionally muddy areas are observed.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Gobio obtusirostris*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas. Occasionally pebbles and small stony areas are observed.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Oxyneomacheilus simavica*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of stones and pebbles. There are sandy areas in coastal regions. Also, filamentous algae have been observed.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Oxyneomacheilus simavica*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy areas. Occasionally, there are big stones in the creek.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Low

Related Species

- *Cobitis fahirae*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of stony areas and sandy areas near the coast.

Recommended Actions Before Construction

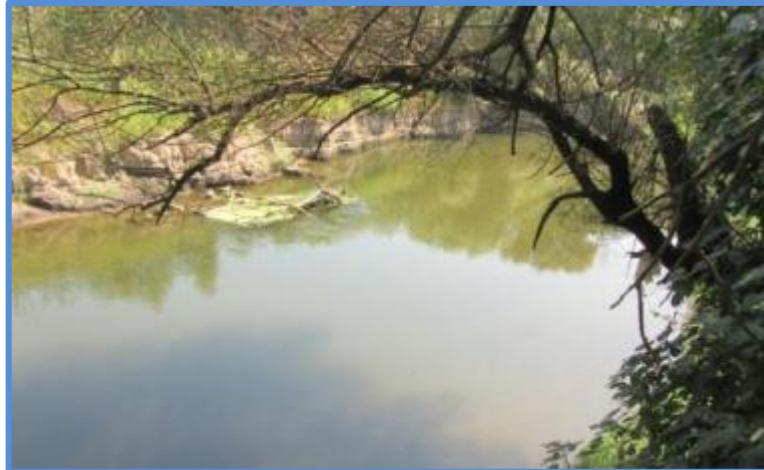
- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Oxyneomacheilus simavica*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas. Occasionally, there are pebbles and filamentous algae.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Cobitis fahirae*; *Cobitis puncticulata*; *Oxyneomacheilus simavica*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Cobitis fahirae; Cobitis puncticulata*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas. Aquatic plants are intensive.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS Code

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Anguilla anguilla*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing.
- Avoid impacts and removal to gravel areas at the crossing.
- Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.



Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



EUNIS CODE

- C2.3 (Permanent non-tidal, smooth-flowing watercourses)

Priority for BAP

- Medium

Related Species

- *Cobitis fahirae*

Does the habitat have the potential to be sustainable or restorable?

- The sustainability and restorability potential of this habitat is high, provided that the following measures are taken.

The Status of the Part of the Habitat that Intersects with the Project

- The bottom structure of this area consists of sandy and muddy areas.

Recommended Actions Before Construction

- Control sediment release into the river bed.
- Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.

Recommended Actions After Construction

- Restore channel bottom (materials and topography) and riparian vegetation (along stream banks) to baseline conditions present prior to construction.

Monitoring

- Periodic annual monitoring studies after the construction concerning the species which this habitat hosts and the state of their populations is recommended.



7. FRESHWATER SPECIES ACTION PLANS



Species

- *Anguilla anguilla* (European eel)



The Biological Features

- Inhabits all types of benthic habitats from streams to shores of large rivers and lakes. Naturally found only in water bodies connected to the sea. Territorial and solitary species; 'schools' of young eels, which are observed from time to time. They enter the estuaries and colonize rivers and lakes, some individuals remain in estuaries and coastal waters to grow into adults.
- The species is catadromous, living in fresh water but migrating to marine waters to breed. While its life in freshwaters is well understood, relatively little is known about its life history at sea. The spawning peaks at the beginning of March continuing until July, and the adults probably die after spawning. There are no concrete data about specific spawning, however, it is assumed that spawning takes place only in an elliptic zone, about 2,000 km wide in the Sargasso Sea, in the West Central Atlantic.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: CR
- BERN CONVENTION: -

Status of the Species along the ROW

- The species is identified as the potential species in the area with literature recordings. It could not be observed during the field studies.

Critical Habitat

- FCH26



Recommended Actions Before Construction

- No activities should be carried out between 1 April – 1 June, when spawning migration is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.

Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Chondrostoma angorensense*



The Biological Features

- This species, generally dispersed in waters with rapid currents, prefers stony bottom structures and/or rocky areas. Juveniles prefer shallow waters. The scales on the body are cycloid and quite obvious. Its mouth structure is ventrally-positioned. It is omnivorous and mostly feeds on benthic invertebrates. This species, reproducing between March and May.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: NE
- BERN CONVENTION: -
- Endemic

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- FCH18

Recommended Actions Before Construction

- No activities should be carried out between 15 March – 30 May, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.



Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Cobitis fahirae* (Aegean spined loach)



The Biological Features

- The body is generally compressed from the sides and is high. There are 4 Gambetta zones situated on the side of the body and the fourth Gambetta zone is shaped as an apparent band.
- This benthic species is distinguished from the other species by the body pattern, mouth structure and the canestrin organ located on pectoral fin in males being single.
- Although their biology is not known very well, it is known that its maximum length is 8-10 cm and its spawning period is between April and June.

Priority for BAP

- Medium

Conservation Status

- IUCN Red List: NE
- BERN CONVENTION:-
- Endemic

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- FCH22, FCH24, FCH25, FCH27

Recommended Actions Before Construction

- No activities should be carried out between 15 April -15 June, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.



Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.

Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Cobitis puncticulata*



The Biological Features

- The body is relatively high. Head is small and eyes placed in anterior part of the head. Color pattern of the body is unusual and consists of small dark-gray dots, throughout body and head.
- Mouth slightly arched with three pairs of long barbels. Lips finely furrowed. Mental lobes developed. One lamina circularis is found.
- The species is generally prefers loamy-muddy bottom structures. Spawning period of this species is between April and June.

Priority for BAP

- High

Conservation Status

- IUCN RED LIST: EN
- BERN CONVENTION: -
- Endemic

Status of the Species along the ROW

- Population Status: Low

Critical Habitat

- FCH24, FCH25

Recommended Actions Before Construction

- No activities should be carried out between 15 April – 15 June, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.



Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Cobitis simplicispinna*



The Biological Features

- The body is compressed from the sides and is high. There are 5 Gambetta zones situated on the side of the body. It prefers loamy-muddy areas of the water systems and lives as benthic. It has three pairs of barbels around the mouth and a spine on the lower part of the eye. Although their biology is not known very well, generally it feeds on benthic invertebrates and detritus. The sexual dimorphism between female and male is very characteristic and there is an organ called bicanestrinia on the pectoral (breast) fins of the male. The spawning period is between the months of April-June.

Priority for BAP

- Medium

Conservation Status

- IUCN Red List: NE
- BERN CONVENTION:-
- Endemic

Critical Habitat

- FCH13, FCH17, FCH18

Status of the Species along the ROW

- Population Status: High

Recommended Actions Before Construction

- No activities should be carried out between 15 April – 15 June, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.



Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Gobio obtusirostris*



The Biological Features

- Its body is round and long. Its mouth is ventrally-structured and there is a pair of barbels around it. On the sides of the body, there are black speckles.
- The species generally prefers slightly flowing, sandy and gravelly areas of the rivers and streams, with slow currents, and it is a species endemic to Turkey.
- This species, reproducing between April-June.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: LC
- BERN CONVENTION: -
- Endemic

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- FCH11, FCH17, FCH18, FCH19

Recommended Actions Before Construction

- No activities should be carried out between 15 April – 15 June, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.



Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Oxyneomacheilus kosswigi*



The Biological Features

- Their bodies are thick and stubby. The head dorso-ventrally enlarged and the body and the right side of tail are bilaterally flattened.
- The cheeks are rather tumid. The mouth is ventrally located and surrounded by prominent lips. There are three pairs of barbels around the mouth.
- Free edges of the dorsal and anal fins are round. There are many black blotches on the body and its lateral full.
- This species which generally maintains its life in sandy and vegetative habitats of streams, with gravelly bottom structures, is quite resistant to pollution and lack of oxygen.
- Generally, it feeds on benthic invertebrates, zooplanktons and algae.
- This species the spawning period of which is between April and May.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: NE
- BERN CONVENTION: -
- Endemic

Status of the Species along the ROW

- Population Status: High

Critical Habitat

- FCH10

Recommended Actions Before Construction

- No activities should be carried out between 15 April – 31 May, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.



Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.

Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Oxyneomacheilus simavica*



The Biological Features

- This species belonging to the Balitoridae family is generally named as the 'Scavenger Fish'. It maintains its life in habitats with slight and/or medium currents, with stony, gravelly and sandy bottom structure.
- The body is thin and tall and slightly compressed from the sides. The front side of the body is generally bare; the scales exist only on the posterior part. The free edge of the dorsal fin is flat, but sometimes slightly rounded. Free edges of the dorsal fin are rounded and the caudal fin is relatively deep indented.
- The body is cylindrical and especially compressed at the back. Generally in the second part of the lateral line, towards the tail piece, there are longitudinal brown strips.
- This species having ventral mouth structure generally feeds on benthic invertebrates, zooplankton and algae.
- The spawning period of which is between the months of April and July.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: CR
- BERN CONVENTION:-
- Endemic

Status of the Species along the ROW

- Medium

Critical Habitat

- FCH20, FCH21, FCH23, FCH24

Recommended Actions Before Construction

- No activities should be carried out between 15 April – 15 June, when reproduction is intensive.



Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.

Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



Species

- *Salmo macrostigma* (Macrostigma trout)



The Biological Features

- This species living in the mountain waters is the typical fish of the Salmon Zone. The species named as brown trout lives in oxygen rich, relatively cold mountain waters with currents. It has carnivorous feeding characteristics.
- For laying eggs, it prefers areas of the streams that are closer to the river origin. The reproduction period is between November – February, and intensive in November and December.

Priority for BAP

- Medium

Conservation Status

- IUCN RED LIST: DD
- BERN CONVENTION: -
- This species is under protection in Türkiye.

Status of the Species along the ROW

- Population Status: Medium

Critical Habitat

- FCH10

Recommended Actions Before Construction

- No activities should be carried out between 15 November – 31 December, when reproduction is intensive.

Recommended Actions After Construction

- The bottom structure of the river bed should be restored after the construction in accordance with the characteristics of this species.

Monitoring

- The population status and the habitat structure of the species should be monitoring periodically after the construction.



Achievement Criteria

- The bottom structure of the river bed should be similar with upstream and downstream habitats.
- Observing the members of the species in the habitat.
- The population status of the species being at the same status as before the construction and/or at a higher status.



8. RECOMMENDED ADDITIONAL STUDIES



Table 8.1. Recommended additional studies

SPECIES	REASON	KP	RECOMMENDED METHODOLOGY	TIME PERIOD	IMPLEMENTERS
<i>Corydalis wendelboi</i> <i>subsp. congesta</i> (Flora)	Vegetation period	1524+417- 1526+560 / 1650+933- 1651+530 / 1458+712- 1459+066 / 1459+131- 1459+766	The area should be investigated using the transect method to gather information on the existence of the species on the ROW.	March	Companies and associations preparing biodiversity projects, experts on this subject with a minimum PhD degree
<i>Mertensiella caucasica</i> (Caucasian Salamander) (Amphibia)	Seasonal restriction	3+500-4+000	<i>Mertensiella caucasica</i> is found on the average at 500-2800 m elevations and generally near flowing waters. In the day time, it hides under the stones and barks near the water. If the hiding place is moist, it may be at a greater distance to water. It is more active at night in the dark. This salamander should be searched for under the stones and barks near the flowing water, and the specimens observed may be caught with bare hands, placed in suitable canvas bags and conveniently transferred to another site.	April-May-June	Companies and associations preparing biodiversity projects, experts on this subject with a minimum PhD students
<i>Muzimes caucasicus</i> (Arthropoda)	Seasonal restriction	201+592- 202+207/ 202+333- 203+000/ 203+609- 204+201/ 204+346- 205+210	This species feeds on the leaves and petals of the <i>Onobrychis spp.</i> , <i>Vicia spp.</i> and <i>Artemisia spp.</i> species. In the ROW, it should be searched for on these plant species. The specimens (at most 5) should be caught with hand or using a trap and placed into bottles containing 70-75% alcohol. A photo of the live specimen should be taken if possible. In addition, the food plant of the species should be determined.	June-July	Companies and associations preparing biodiversity projects, experts on this subject with a minimum PhD students
<i>Dorcadion ardahense</i> (Arthropoda)	Seasonal restriction	85+000- 90+000	This species feeds on plants in the alpine and sub-alpine meadows. In general, it can be observed going around on the site, on the soil and under the stones. The specimens should be caught by hand or by pincers and placed into bottles containing 70-75% alcohol. A photo of the live specimen should be taken if possible.	15 April-30 July	Companies and associations preparing biodiversity projects, experts on this subject with a minimum PhD students



SPECIES	REASON	KP	RECOMMENDED METHODOLOGY	TIME PERIOD	IMPLEMENTERS
<i>Hilara truva</i> (Arthropoda)	Seasonal restriction	1594+547- 1594+585/ 1628+457- 1628+470/ 1669+391- 1669+415/ 1674+153- 1674+172/ 1676+506- 1676+518/ 1685+980- 1685+990	These species should be searched for on the water crossings, the KP intervals of which are given, under the shadow of the willow trees by the water. The specimens should be caught by a trap and should be sucked from the trap by an aspirator. The specimens in the aspirator should be sacrificed poison bottles containing ethyl acetate. The specimens should be preserved in insect envelopes.	April-May	Companies and associations preparing biodiversity projects, experts on this subject with a minimum PhD students



9. RECOMMENDED SOCIAL RESPONSIBILITY PROJECTS



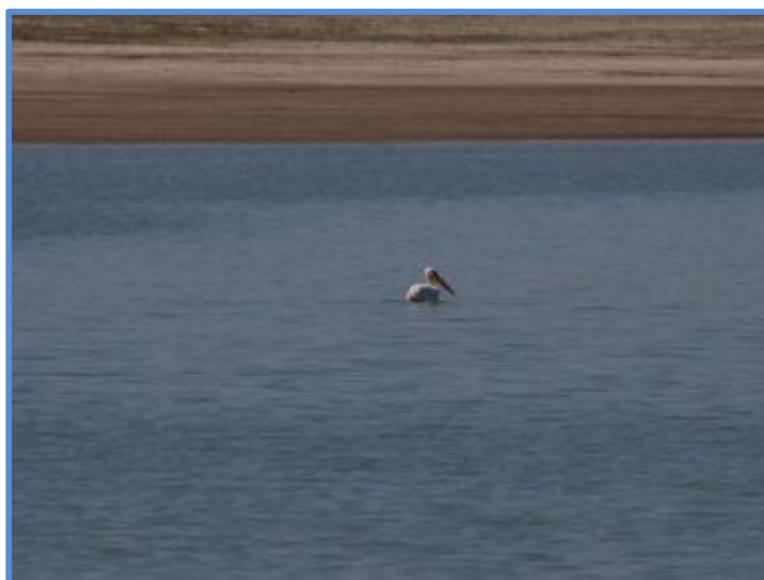
Establishment of the Artvin Çoruh University Gene Bank

- The Artvin province is one of the most important 25 Terrestrial Ecologic Regions of the world as well as being the richest in biodiversity and being endangered. With its 4 Important Plant Area, 1 Biosphere Reserve Area, 2 National Parks, 3 Nature Conservation Areas and 1 Nature Park, Artvin is one of the most important provinces with respect to biodiversity.
- There is no gene bank in the eastern part of Turkey. For this reason, establishment of a gene bank in the Artvin Çoruh University will ensure better protection of the endangered species of the region by the researchers since it will allow for easier transportation.
- It is suggested that the seeds collected from the Ardahan, Kars, Erzurum, Erzincan provinces to conserve the endangered species standing out in the flora field studies carried out within the scope of the TANAP Project are handed over to this gene bank, if construction is completed.

Introduction of the wetland identified within the scope of the TANAP Project as rich in bird population as a bird watch area and increasing the awareness by building a bird watch tower

- It has been determined that the lake region at about 2 to 5 km south of the part of the TANAP route between the 920th and 934th kilometers is visited by aquatic bird groups and has a great potential for bird watchers. During observations, many bird species were identified on the lake, which is two L-shaped lines, each extending for 10 km considering that the time of observation was rather hot and arid and that most of the water had dried up, the potential of visits in the spring months will be more intensive. A useful project will be publishing advertisement brochures, introducing the region actively on the Internet and building a bird watch tower which bird watchers may use.
- Some of the species observed in the area and some of the photographs of the area are given below.
 - *Pelecanus onocrotalus* (The great white pelican)
 - *Phoenicopterus ruber* (The American flamingo)
 - *Platalea leucorodia* (The Eurasian spoonbill)
 - *Tadorna ferruginea* (Ruddy Shelduck)
 - *Larus cachinnans* (Caspian gull)
 - *Aythya nyroca* (Ferruginous duck)
 - *Ciconia nigra* (The black stork)
 - *Ardea cinerea* (The grey heron)
 - *Egretta garzetta* (The little egret)
 - *Actitis hypoleucus* (The Common Sandpiper)





Publishing a guide book covering the endangered and endemic species identified on the TANAP route

- It is suggested that a guide book is published to present the endangered biodiversity along the TANAP route, establishing a source for nature lovers and raising awareness, as well as guiding the project teams in the construction and operation stages.

Support for education

- It is suggested that MSc and PhD students are supported to carry out more detailed studies in areas important in biodiversity along the TANAP route, to ensure that the monitoring work on ROW are routine and detailed and to present the findings to the scientific work.



Supporting the development projects suitable for the region (apiculture, greenhousing, cultivation of herbal-aromatic plants and ornamental plants, etc.)

- It is suggested that along the TANAP route development projects suitable for the region such as apiculture, greenhousing, cultivation of herbal-aromatic plants and ornamental plants, etc. are supported.



10. RECOMMENDED ACTIONS



Table 10.1. Recommended actions for terrestrial critical habitats

CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH 1	003+000-003+735	0,735	<i>Zygaena armena</i> , <i>Reseda armena var. armena</i> , <i>Mertensia caucasica</i>	August-February	<ul style="list-style-type: none"> * If the construction works start in March 2015, the seeds of <i>Coronilla</i> and <i>Onobrychis</i> species, which are the feeding plants of <i>Zygaena armena</i>, and the seeds of <i>Reseda armena var. armena</i> shall be collected along one side of the ROW between 15 July-30 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants of the region shall be collected. * If <i>Mertensia caucasica</i> species is observed in the area, it should be ensured that the habitat is restored by restoring the stones and rocks in and near the aquatic environment. * At the beginning of April, a field study should be carried out by experts, and if this species will be observed, individuals should be carried to the appropriate and close aquatic areas by specialists according to the methodology. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena var. armena</i> species shall be planted according to the methodology and to the (38 T 318801.90-4603885.95/ 38 T 318738.00-4603635.00/38 T 318773.00-4603531.00/ 38 T 318649.00-4603478.00) coordinates between September-November. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants of the region shall be collected. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena var. armena</i> species shall be planted according to the methodology and to the (38 T 318801.90-4603885.95/ 38 T 318738.00-4603635.00/38 T 318773.00-4603531.00/ 38 T 318649.00-4603478.00) coordinates between September-November. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants of the region shall be collected. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena var. armena</i> species shall be planted according to the methodology and to the (38 T 318801.90-4603885.95/ 38 T 318738.00-4603635.00/38 T 318773.00-4603531.00/ 38 T 318649.00-4603478.00) coordinates between September-November. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants of the region shall be collected. 	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH2	003+940-004+051	0,111	<i>Zygaena armena</i> , <i>Reseda armena</i> var. <i>armena</i> , <i>Mertensiella caucasica</i>	August-February	<ul style="list-style-type: none"> * If the construction works start in March 2015, the seeds of <i>Coronilla</i> and <i>Onobrychis</i> species, which are the feeding plants of <i>Zygaena armena</i>, and the seeds of <i>Reseda armena</i> var. <i>armena</i> shall be collected along one side of the ROW between 15 July-30 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants shall be planted on the ROW for erosion control in dip slopes. * If <i>Mertensiella caucasica</i> species will be observed in the ROW, the construction works cannot be done before the April, because this species is going to hibernation. * At the beginning of April, a field study should be carried out by experts, and if this species will be observed, individuals should be carried to the appropriate and close aquatic areas by specialists according to the methodology. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena</i> var. <i>armena</i> species shall be collected according to the methodology and to the (38 T 318421.00-4603425.00 / 38 T 318351.00-4603438.00) coordinates between September-November. * The seeds of the non-endemic native plants of the region shall be collected. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena</i> var. <i>armena</i> species shall be planted according to the methodology and to the (38 T 318421.00-4603425.00 / 38 T 318351.00-4603438.00) coordinates between September-November. * The seeds of the non-endemic native plants shall be planted on the ROW for erosion control in dip slopes. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena</i> var. <i>armena</i> species shall be collected from the ROW between 15 July-30 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of the non-endemic native plants shall be planted on the ROW for erosion control in dip slopes. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Coronilla</i>, <i>Onobrychis</i> and <i>Reseda armena</i> var. <i>armena</i> species shall be planted according to the methodology and to the (38 T 318421.00-4603425.00 / 38 T 318351.00-4603438.00) coordinates between September-November. * The seeds of the non-endemic native plants shall be planted on the ROW for erosion control in dip slopes. 	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints			



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 3	20+700-23+000	2,3	<i>Centorea macrocephala</i> , <i>Lilium kesselringianum</i> , <i>Erebia ottomana</i> , <i>Tipula n.sp</i>	August-February	<ul style="list-style-type: none"> * If the construction works start in March 2015; the seeds of <i>Centorea macrocephala</i> species shall be collected along one side of the ROW between 15 July-30 August. * The bulbs of <i>Lilium kesselringianum</i> shall be collected between (21+529-22+070) KP's before or during the top soil scraping and shall be stored along one side of the ROW. * The areas which <i>Poaceae</i> is very dense (between 20+725-21+078 / 22+235-22+615 KP's) shall be harvested and shall be stored along one side of the ROW. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The habitat shall be rehabilitated. * The collected seeds of <i>Centorea macrocephala</i> species shall be planted according to the methodology and to the (38 T 315863.00-4592192.00 / 38 T315851.00-4592099.00 / 38 T 315844.00-4591982.00) coordinates between September-November. * The bulbs of <i>Lilium kesselringianum</i> shall be planted to the ROW according to the methodology and to the (21+529-22+070) KP's, after the construction. * Harvested herbaceous plants shall be laid on the ROW. 	<ul style="list-style-type: none"> * The seeds of <i>Centorea macrocephala</i> species shall be collected between 15 July-30 August. * The habitat shall be rehabilitated. * The collected seeds of <i>Centorea macrocephala</i> species shall be planted according to the methodology and to the (38 T 315863.00-4592192.00 / 38 T315851.00-4592099.00 / 38 T 315844.00-4591982.00) coordinates between September-November. * The bulbs of <i>Lilium kesselringianum</i> shall be planted to the ROW according to the methodology and to the (21+529-22+070) KP's, after the construction. * Harvested herbaceous plants shall be laid on the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The habitat shall be rehabilitated. * The collected seeds of <i>Centorea macrocephala</i> species shall be planted according to the methodology and to the (38 T 315863.00-4592192.00 / 38 T315851.00-4592099.00 / 38 T 315844.00-4591982.00) coordinates between September-November. * The bulbs of <i>Lilium kesselringianum</i> shall be planted to the ROW according to the methodology and to the (21+529-22+070) KP's, after the construction. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The habitat shall be rehabilitated. * The collected seeds of <i>Centorea macrocephala</i> species shall be planted according to the methodology and to the (38 T 315863.00-4592192.00 / 38 T315851.00-4592099.00 / 38 T 315844.00-4591982.00) coordinates between September-November. * The bulbs of <i>Lilium kesselringianum</i> shall be planted to the ROW according to the methodology and to the (21+529-22+070) KP's, after the construction. 	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints					
CH 4	23+670-27+081	3,411	<i>Prometheomys schaposchnikowi</i>	September-February	<ul style="list-style-type: none"> * If the construction works start in March 2015; <i>Prometheomys schaposchnikowi</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology. * The area shall be restricted between 15 May-15 August because this period is a breeding period for <i>Prometheomys schaposchnikowi</i>. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. 	<ul style="list-style-type: none"> * The area shall be restricted between 15 May-15 August because this period is a breeding period for <i>Prometheomys schaposchnikowi</i>. * The top soil shall be scraped at a depth of 10-15 cm after 15 August and shall be stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. 	<ul style="list-style-type: none"> * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. 	<ul style="list-style-type: none"> * <i>Prometheomys schaposchnikowi</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology. 	15 May-15 August	Construction prohibited from 15 May-15 August			



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH5	62+320-63+140	0,82	<i>Lathyrus karsianus</i> , <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> , <i>Phengaris nausithous</i> , <i>Tipula n.sp.</i> , <i>Erebia ottomana</i>	August-February	<ul style="list-style-type: none"> * The top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * If the construction works start in March 2015; the seeds of <i>Lathyrus karsianus</i> species shall be collected along one side of the ROW between 1 July-1 August; the seeds of <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected along one side of the ROW between 15 July-15 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * Herbaceous plants shall be harvested and stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * The collected seeds of <i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected from the ROW between 1 July-1 August; the seeds of <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected along one side of the ROW between 15 July-15 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * Herbaceous plants shall be harvested and stored along one side of the ROW. 	<ul style="list-style-type: none"> * The top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * The seeds of <i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected from the ROW between 1 July-1 August; the seeds of <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected along one side of the ROW between 15 July-15 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * Herbaceous plants shall be harvested and stored along one side of the ROW. 	<ul style="list-style-type: none"> * The top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * The seeds of <i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected from the ROW between 1 July-1 August; the seeds of <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be collected along one side of the ROW between 15 July-15 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * Herbaceous plants shall be harvested and stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * The collected seeds of <i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be planted according to the methodology and to the (38 T 314559.00-4563256.00 / 38 T 314462.00-4563212.00 / 38 T 314357.00-4563161.00) coordinates between September-November. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (62+560-62+598 / 62+686-62+724) KP's according to the methodology. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil. * The creek rehabilitation shall be done between the (62+845-62+910) KP's. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * The collected seeds of <i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall be planted according to the methodology and to the (38 T 314559.00-4563256.00 / 38 T 314462.00-4563212.00 / 38 T 314357.00-4563161.00) coordinates between September-November. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (62+560-62+598 / 62+686-62+724) KP's according to the methodology. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil. * The creek rehabilitation shall be done between the (62+845-62+910) KP's. 	1 June-15 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints		



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					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 6	84+758-87+000	2,242	<i>Phengaris nausithous</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Sanguisorba</i> , which is the feeding plant of <i>Phengaris nausithous</i> , shall be collected along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (84+758-85+246 / 86+189-87+000) KP's according to the methodology.	* Top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * Stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (84+758-85+246 / 86+189-87+000) KP's according to the methodology.	* The stored top soil shall be laid back in 3 months at the latest. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (84+758-85+246 / 86+189-87+000) KP's according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation between the (84+758-85+246 / 86+189-87+000) KP's according to the methodology.	No restriction	None			
CH 7	115+393-116+000	0,607	<i>Phengaris nausithous</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Sanguisorba sp.</i> , which is the feeding plant of <i>Phengaris nausithous</i> , shall be collected along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.	* The top soil in the shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>) between the (115+393-116+000) KP's and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * Stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.	* The stored top soil shall be laid back in 3 months at the latest. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.	No restriction	None				



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					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 8	116+069-116+637	0,568	<i>Phengaris nausithous</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Sanguisorba sp.</i> , which is the feeding plant of <i>Phengaris nausithous</i> , shall be collected along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.	* Topsoil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba sp.</i>) between the KP's and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The removed individuals of the species as tufts shall be planted on the ROW and shall be irrigated until they root again. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.	* Topsoil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The stones and rocks shall be re-organized on top of the soil for ants nesting at the end of the excavation according to the methodology.			No restriction	None		
CH 9	164+345-164+566	0,221	<i>Darevskia uzzelli</i> , <i>D. unisexualis</i>	Just after the carrying the <i>Darevskia uzzelli</i> and <i>D. unisexualis</i> individuals (After 15 July)	* The construction works cannot be done in the spring, before the June, because this species are going to hibernation.	* If the <i>Darevskia uzzelli</i> and <i>Darevskia unisexualis</i> individuals carried to the appropriate and close areas, there is no restriction.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Darevskia uzzelli</i> and <i>Darevskia unisexualis</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology at the beginning of the July. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The stored stones and rocks shall be spread by embedding them in 5-10 cm soil (in accordance with the original).	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* The stored top soil shall be laid back in 3 months at the latest. * The stored stones and rocks shall be spread by embedding them in 5-10 cm soil (in accordance with the original)		Closed prior to 15th of July	Construction is prohibited from starting prior to 15 July		



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					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 10	167+000-167+154	0,154	<i>Darevskia uzzelli</i> , <i>D. unisexualis</i>	Just after the carrying the <i>Darevskia uzzelli</i> and <i>D. unisexualis</i> individuals (After 15 July)	* The construction works cannot be done in the spring, before the June, because this species are going to hibernation.	* If the <i>Darevskia uzzelli</i> and <i>Darevskia unisexualis</i> individuals carried to the appropriate and close areas, there is no restriction.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Darevskia uzzelli</i> and <i>Darevskia unisexualis</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology at the beginning of the July. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* The stored top soil shall be laid back in 3 months at the latest. * The stored stones and rocks shall be spread by embedding them in 5-10 cm soil (in accordance with the original)	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* The stored top soil shall be laid back in 3 months at the latest. * The stored stones and rocks shall be spread by embedding them in 5-10 cm soil (in accordance with the original)	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* The stored top soil shall be laid back in 3 months at the latest. * The stored stones and rocks shall be spread by embedding them in 5-10 cm soil (in accordance with the original)	Closed prior to 15th of July	Construction is prohibited from starting prior to 15 July		
CH 11	169+000 - 174+000	5	<i>Otis tarda</i>	August-February	* If the <i>Otis tarda</i> individuals will be seen, they shall be removed from the area by specialists. * If the nest, eggs or mature individuals in the incubation will be seen, the construction works shall be stopped until the chicks feed themselves. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Reinstate all habitats to baseline conditions existing prior to construction activities.	* If the nest, eggs or mature individuals of the <i>Otis tarda</i> in the incubation will be seen, the construction works shall be stopped until the chicks feed themselves. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Reinstate all habitats to baseline conditions existing prior to construction activities.	* If the <i>Otis tarda</i> individuals came to the ROW, the construction shall be stopped and the individuals shall be removed. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Reinstate all habitats to baseline conditions existing prior to construction activities.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Reinstate all habitats to baseline conditions existing prior to construction activities.	No restriction	If adult <i>Otis tarda</i> individuals are observed, they shall be removed by specialist. * If incubating adults or nests or eggs of <i>Otis tarda</i> are observed, construction shall be stopped and is prohibited until eggs hatch and the chicks feed themselves			



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH12	174+412 - 176+000	1,588	<i>Eulasia chrysopogya, Hieracium sarykamyschense</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Hieracium sarykamyschense</i> species shall be collected along one side of the ROW between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 295146.00-4471939.00 / 38 T 295058.00-4471934.00 / 38 T 294888.00-4471917.00 / 38 T 294809.00-4471910.00 / 38 T 294403.00-4471874.00) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 295146.00-4471939.00 / 38 T 295058.00-4471934.00 / 38 T 294888.00-4471917.00 / 38 T 294809.00-4471910.00 / 38 T 294403.00-4471874.00) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 295146.00-4471939.00 / 38 T 295058.00-4471934.00 / 38 T 294888.00-4471917.00 / 38 T 294809.00-4471910.00 / 38 T 294403.00-4471874.00) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 295146.00-4471939.00 / 38 T 295058.00-4471934.00 / 38 T 294888.00-4471917.00 / 38 T 294809.00-4471910.00 / 38 T 294403.00-4471874.00) coordinates between September-November.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints			



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH13	187+557 - 193+000	5,443	<i>Lathyrus karsianus</i> , <i>Eulasia chrysopyga</i> , <i>Phengaris nausithous</i> , <i>Zonitis nigritiventris</i> , <i>Hieracium sarykamyschense</i>	August-February	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the seeds of <i>Lathyrus karsianus</i> and <i>Hieracium sarykamyschense</i> species shall be collected along one side of the ROW between 1 July-1 August.</p> <p>* Tall plants belonging to the <i>Compositae</i>, <i>Labiatae</i>, <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period from the between (191+117-191+251 / 191+690-191+947) KP's and shall be stored nearby the construction site.</p> <p>* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Lathyrus karsianus</i> and <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 283458.00-4464029.00 / 38 T 283095.00-4463628.00 / 38 T 282935.00-4463512.00 / 38 T 282714.00-4463366.00 / 38 T 282416.00-4463214.00) coordinates between September-November.</p> <p>* The stored stones and rocks shall be spread on top of the soil and between to the (190+195-190+250 / 190+818-190+882 / 191+034-191+090 / 191+366-191+422 / 191+619-191+673) KP's for ants nesting at the end of the excavation according to the methodology.</p> <p>* The harvested plants, containing eggs shall be transferred to the area and spread on the soil.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Lathyrus karsianus</i> and <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 283458.00-4464029.00 / 38 T 283095.00-4463628.00 / 38 T 282935.00-4463512.00 / 38 T 282714.00-4463366.00 / 38 T 282416.00-4463214.00) coordinates between September-November.</p> <p>* The stored stones and rocks shall be spread on top of the soil and between to the (190+195-190+250 / 190+818-190+882 / 191+034-191+090 / 191+366-191+422 / 191+619-191+673) KP's for ants nesting at the end of the excavation according to the methodology.</p> <p>* The harvested plants, containing eggs shall be transferred to the area and spread on the soil.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Lathyrus karsianus</i> and <i>Hieracium sarykamyschense</i> species shall be planted according to the methodology and to the (38 T 283458.00-4464029.00 / 38 T 283095.00-4463628.00 / 38 T 282935.00-4463512.00 / 38 T 282714.00-4463366.00 / 38 T 282416.00-4463214.00) coordinates between September-November.</p> <p>* The harvested plants, containing eggs shall be transferred to the area and spread on the soil.</p>	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints				



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH14	202+930 - 203+709	0,779	<i>Zonitis nigriventris</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of the vegetation period from the between (202+930-203+709) KP's and shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period from the between (202+930-203+709) KP's and shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period from the between (202+930-203+709) KP's and shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil.	No restriction	None				



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					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH15	214+885-219+641	5,641	<i>Montivipera wagneri</i> , <i>Salvia huberi</i> , <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> , <i>Polyommatus merhaba</i> , <i>Cousinia bicolor</i>	August-February	* The construction works cannot be done in the first spring, because <i>Montivipera wagneri</i> species is going to hibernation.	-	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Montivipera wagneri</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology and to the (38 T 268212.00-4446232.00) coordinates at the beginning of the July. * The seeds of <i>Salvia huberi</i> species shall be collected from the ROW between 1 July-1 August and the seeds of <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> and <i>Cousinia bicolor</i> species shall be collected from the ROW between 15 July-15 August. * The seeds of <i>Onobrychis</i> and <i>Astragalus</i> flora species shall be collected from the ROW between 15 July – 30 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The stored stones and rocks shall be spread between the (214+885-217+053 / 218+457-219+000) KP's by embedding them in 5-10 cm soil, in accordance with the methodology. * The collected seeds of <i>Salvia huberi</i> , <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> , <i>Cousinia bicolor</i> , species shall be planted according to the methodology and to the (38 T 269181.00-4448569.00 / 38 T 269044.00-4448457.00 / 38 T 268916.00-4448352.00 / 38 T 268806.00-4448262.00) coordinates; and <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (38 T 266455.00-4445769.00 / 38 T 267463.00-4446163.00 / 38 T 267677.00-4446406.00) coordinates between September-November. * In the regions between the (219+415-219+540) KP's terracing shall be carried out to prevent erosion.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia huberi</i> species shall be collected from the ROW between 1 July-1 August and the seeds of <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> and <i>Cousinia bicolor</i> species shall be collected from the ROW between 15 July-15 August. * The seeds of <i>Onobrychis</i> and <i>Astragalus</i> flora species shall be collected from the ROW between 15 July – 30 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The stored stones and rocks shall be spread between the (214+885-217+053 / 218+457-219+000) KP's by embedding them in 5-10 cm soil, in accordance with the methodology. * The collected seeds of <i>Salvia huberi</i> , <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> , <i>Cousinia bicolor</i> , species shall be planted according to the methodology and to the (38 T 269181.00-4448569.00 / 38 T 269044.00-4448457.00 / 38 T 268916.00-4448352.00 / 38 T 268806.00-4448262.00) coordinates; and <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (38 T 266455.00-4445769.00 / 38 T 267463.00-4446163.00 / 38 T 267677.00-4446406.00) coordinates between September-November. * In the regions between the (219+415-219+540) KP's terracing shall be carried out to prevent erosion.	1 March - 15 July	Construction is prohibited from starting prior to 01 March				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH 16 (NEW ONE)	232+172-232+787	0,615	<i>Cousinia bicolor</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia bicolor</i> species shall be collected along one side of the ROW between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia bicolor</i> species shall be planted according to the methodology and to the (38 T 255187.77-4440651.70 / 38 T 255020.00-4440629.00 / 38 T 254965.00-4440596.00 / 38 T 254901.00-4440558.00 / 38 T 254835.00-4440523.00) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia bicolor</i> species shall be collected between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia bicolor</i> species shall be planted according to the methodology and to the (38 T 255187.77-4440651.70 / 38 T 255020.00-4440629.00 / 38 T 254965.00-4440596.00 / 38 T 254901.00-4440558.00 / 38 T 254835.00-4440523.00) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia bicolor</i> species shall be collected between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia bicolor</i> species shall be planted according to the methodology and to the (38 T 255187.77-4440651.70 / 38 T 255020.00-4440629.00 / 38 T 254965.00-4440596.00 / 38 T 254901.00-4440558.00 / 38 T 254835.00-4440523.00) coordinates between September-November.	No restriction	None		
CH 17	306+365-312+319 (except highway, 0,081 m)	5,873	<i>Vanellus gregarius</i> , <i>Lepidium caespitosum</i>	August-February	* The construction cannot be done in the migration season (March) for the <i>Vanellus gregarius</i> . * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The top soil between the (306+365-306+460) KP's shall be removed in layers of 10-15 cm depth, together with the plants on it, and shall be stored nearby the construction site and shall be irrigated once every two weeks.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The layers removed shall be appropriately spread over the line and the first water shall be given. * The riparian vegetation, aquatic and semi aquatic areas shall be rehabilitated.	* The top soil shall be scraped at a depth of 10-15 cm and stored along one side of the ROW with harvested wet meadows with their soil. * The seeds of <i>Lepidium caespitosum</i> species shall be collected between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The layers removed shall be appropriately spread over the line and the first water shall be given. * The riparian vegetation, aquatic and semi aquatic areas shall be rehabilitated. * The collected seeds of <i>Lepidium caespitosum</i> species shall be planted according to the methodology and to the (310+150-312+319) KP's between September-November.	* The construction cannot be done in the migration season (15 September-30 October) for the <i>Vanellus gregarius</i> . * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The top soil between the (306+365-306+460) KP's shall be removed in layers of 10-15 cm depth, together with the plants on it, and shall be stored nearby the construction site and shall be irrigated once every two weeks. * The seeds of <i>Lepidium caespitosum</i> species shall be collected between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The layers removed shall be appropriately spread over the line and the first water shall be given. * The riparian vegetation, aquatic and semi aquatic areas shall be rehabilitated. * The collected seeds of <i>Lepidium caespitosum</i> species shall be planted according to the methodology and to the (310+150-312+319) KP's between September-November.	The crossing cannot be done on March, and between 15 September-30 October	March and 15 September-30 October Topsoil shall be removed prior to 01 June		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH18	369+037 - 369+126	0,089	<i>Thymus canoviridis</i>	August-February	<ul style="list-style-type: none"> * If the construction works start in March 2015; the seeds of <i>Thymus canoviridis</i> species shall be collected along one side of the ROW between 15 July-15 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus canoviridis</i> species shall be planted according to the methodology and to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW. 	<ul style="list-style-type: none"> * The <i>Thymus canoviridis</i> species individuals shall be collected as tufts and shall be transferred to the (37 S 642551.00-423058.00) coordinates between 15 July-15 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The translocated individual of the <i>Thymus canoviridis</i> species as tufts shall be planted to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW. 	<ul style="list-style-type: none"> * The <i>Thymus canoviridis</i> species individuals shall be collected as tufts and shall be transferred to the (37 S 642551.00-423058.00) coordinates between 15 July-15 August. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The translocated individual of the <i>Thymus canoviridis</i> species as tufts shall be planted to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW. 	No restriction	None				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH19	385+169-390+000	4,831	<i>Polyommatus</i> <i>antidolus</i>	August-February	* 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped 15 days before the construction works and shall be stored along one side of the ROW. * The stones and rocks shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Stone and rock restoration shall be done according to the methodology and between the (385+509-385+580/ 385+959-386+009/ 386+570-386+627/ 386+759-386+790/ 387+230-387+288/ 387+753-387+814/ 388+237-388+303/ 388+808-388+872/ 389+255-389+326/ 389+746-389+836) KP's.	* 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped 15 days before the construction works and shall be stored along one side of the ROW. * The stones and rocks shall be stored nearby the construction site. * The seeds of the plants of the <i>Onobrychis</i> and <i>Astragalus</i> genus, which are the food plants of the larvae, shall be collected between 15 July – 30 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Stone and rock restoration shall be done according to the methodology and between the (385+509-385+580/ 385+959-386+009/ 386+570-386+627/ 386+759-386+790/ 387+230-387+288/ 387+753-387+814/ 388+237-388+303/ 388+808-388+872/ 389+255-389+326/ 389+746-389+836) KP's. * The collected seeds of the <i>Onobrychis</i> and <i>Astragalus</i> plants shall be planted to the ROW and to the (37 S 625818.65-4418259.08 / 37 S 626292.01-4418397.42 / 37 S 626832.86-4418541.91 / 37 S 627342.77-4418689.28 / 37 S 628381.92-4419157.26) coordinates between September-November.	* 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped 15 days before the construction works and shall be stored along one side of the ROW. * Stone and rock restoration shall be done according to the methodology and between the (385+509-385+580/ 385+959-386+009/ 386+570-386+627/ 386+759-386+790/ 387+230-387+288/ 387+753-387+814/ 388+237-388+303/ 388+808-388+872/ 389+255-389+326/ 389+746-389+836) KP's. * The collected seeds of the <i>Onobrychis</i> and <i>Astragalus</i> plants shall be planted to the ROW and to the (37 S 625818.65-4418259.08 / 37 S 626292.01-4418397.42 / 37 S 626832.86-4418541.91 / 37 S 627342.77-4418689.28 / 37 S 628381.92-4419157.26) coordinates between September-November.	No restriction	None			



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)				IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH 20	393+489-394+339	0,85	<i>Zonitis nigritiventris</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period and shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period and shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The harvested plants, containing eggs shall be transferred to the area and spread on the soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * No restriction	* Topsoil shall be replaced within a maximum of 3 months from removal. * No restriction	No restriction	None				
CH 21	432+592-434+819	2,227	<i>Salvia huberi</i> , <i>Cousinia halensis</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Salvia huberi</i> species shall be collected along one side of the ROW between 1 July-1 August, the seeds of <i>Cousinia halensis</i> species shall be collected along one side of the ROW between 15 July-15 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Salvia huberi</i> and <i>Cousinia halensis</i> species shall be planted according to the methodology and to (37 S 591511.00-4418898.00 / 37 S 590974.00-4418942.00 / 37 S 590452.00-4418838.00 / 37 S 589846.00-4418931.00) coordinates on the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia huberi</i> species shall be collected between 1 July-1 August, the seeds of <i>Cousinia halensis</i> species shall be collected between 15 July-15 August	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Salvia huberi</i> and <i>Cousinia halensis</i> species shall be planted according to the methodology and to (37 S 591511.00-4418898.00 / 37 S 590974.00-4418942.00 / 37 S 590452.00-4418838.00 / 37 S 589846.00-4418931.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia huberi</i> species shall be collected between 1 July-1 August, the seeds of <i>Cousinia halensis</i> species shall be collected between 15 July-15 August	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Salvia huberi</i> and <i>Cousinia halensis</i> species shall be planted according to the methodology and to (37 S 591511.00-4418898.00 / 37 S 590974.00-4418942.00 / 37 S 590452.00-4418838.00 / 37 S 589846.00-4418931.00) coordinates to the ROW between September-November.	No restriction	None				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH22	451+458-454+120	2,662	<i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Polyommatus actis</i>	August-February	<ul style="list-style-type: none"> * If the construction works start in March 2015; the seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be collected along one side of the ROW between 15 July-15 August. * 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 576028.17-4425766.25 / 37 S 576523.38-4425039.53 / 37 S 576546.39-4423957.85) coordinates on the ROW between September-November. * Terracing shall be carried out at the (451+966-452+070/453+894-454+000) KP's to prevent erosion. * The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (452+490-452+602/453+310-453+402) KP's. 	<ul style="list-style-type: none"> * The seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be collected between 15 July-15 August. * 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. 	<ul style="list-style-type: none"> * Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 576028.17-4425766.25 / 37 S 576523.38-4425039.53 / 37 S 576546.39-4423957.85) coordinates on the ROW between September-November. * Terracing shall be carried out at the (451+966-452+070/453+894-454+000) KP's to prevent erosion. * The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (452+490-452+602/453+310-453+402) KP's. 	<ul style="list-style-type: none"> * The seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 576028.17-4425766.25 / 37 S 576523.38-4425039.53 / 37 S 576546.39-4423957.85) coordinates on the ROW between September-November. * Terracing shall be carried out at the (451+966-452+070/453+894-454+000) KP's to prevent erosion. * The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (452+490-452+602/453+310-453+402) KP's. 	No restriction	None			



CH 23	518+154-521+487	3,333	<i>Tanacetum densum ssp. sivasicum, Polymommatus actis</i>	August-February	<p>* If the construction works start in March 2015; the seeds of <i>Tanacetum densum ssp. sivasicum</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be collected along one side of the ROW between 1 July-1 August.</p> <p>* 20 cm of top soil of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Tanacetum densum ssp. sivasicum</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 523732.00-4427059.00 / 37 S 523091.00-4426900.00 / 37 S 522478.00-4426726.00 / 37 S 522307.00-4426273.00 / 37 S 521915.00-4425841.00) coordinates to the ROW between September-November.</p> <p>* The seeds of non-endemic native plants shall be collected and planted on the ROW for erosion control in dip slopes.</p> <p>* The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (518+738-518+818 / 519+242-519+326 / 519+745-519+810 / 520+013-520+111 / 520+742- 520-782 / 521+190- 521+243 / 521+403-521+449) KP's.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Tanacetum densum ssp. sivasicum</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 523732.00-4427059.00 / 37 S 523091.00-4426900.00 / 37 S 522478.00-4426726.00 / 37 S 522307.00-4426273.00 / 37 S 521915.00-4425841.00) coordinates to the ROW between September-November.</p> <p>* The seeds of non-endemic native plants shall be collected and planted on the ROW for erosion control in dip slopes.</p> <p>* The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (518+738-518+818 / 519+242-519+326 / 519+745-519+810 / 520+013-520+111 / 520+742- 520-782 / 521+190- 521+243 / 521+403-521+449) KP's.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Tanacetum densum ssp. sivasicum</i>, <i>Onobrychis</i> and <i>Astragalus</i> species shall be planted according to the methodology and to the (37 S 523732.00-4427059.00 / 37 S 523091.00-4426900.00 / 37 S 522478.00-4426726.00 / 37 S 522307.00-4426273.00 / 37 S 521915.00-4425841.00) coordinates to the ROW between September-November.</p> <p>* The seeds of non-endemic native plants shall be collected and planted on the ROW for erosion control in dip slopes.</p> <p>* The stones and rocks shall be re-organized on top of the soil according to the methodology and to the (518+738-518+818 / 519+242-519+326 / 519+745-519+810 / 520+013-520+111 / 520+742- 520-782 / 521+190- 521+243 / 521+403-521+449) KP's.</p>	1 May-1 June	If all topsoil is removed prior to 1 May, there is no construction time constraint
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CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH24	537+806-543+711	5,905	<i>Tanacetum albipinnosum</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Tanacetum albipinnosum</i> species shall be collected along one side of the ROW between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Tanacetum albipinnosum</i> species shall be planted according to the methodology and to the (37 T 507164.00-4428721.00 / 37 T 506251.00-4428878.00 / 37 T 506682.00-4428782.00 / 37 T 506043.00-429193.00 / 37 T 505799.00-4429399.00 / 37 T 505458.00-4429587.00 / 37 T 505096.00-4429820.00 / 37 T 504828.00-429928.00 / 37 T 504424.00-4429977.00 / 37 T 504079.00-4430096.00 / 37 T 503882.00-4430442.00 / 37 T 503699.00-4430709.00 / 37 T 503404.00-4430891.00 / 37 T 503049.00-4431161.00 / 37 T 502769.00-4431335.00 / 37 T 502556.29-4431464.16) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Tanacetum albipinnosum</i> species shall be collected between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Tanacetum albipinnosum</i> species shall be planted according to the methodology and to the (37 T 507164.00-4428721.00 / 37 T 506251.00-4428878.00 / 37 T 506682.00-4428782.00 / 37 T 506043.00-429193.00 / 37 T 505799.00-4429399.00 / 37 T 505458.00-4429587.00 / 37 T 505096.00-4429820.00 / 37 T 504828.00-429928.00 / 37 T 504424.00-4429977.00 / 37 T 504079.00-4430096.00 / 37 T 503882.00-4430442.00 / 37 T 503699.00-4430709.00 / 37 T 503404.00-4430891.00 / 37 T 503049.00-4431161.00 / 37 T 502769.00-4431335.00 / 37 T 502556.29-4431464.16) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Tanacetum albipinnosum</i> species shall be collected between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Tanacetum albipinnosum</i> species shall be planted according to the methodology and to the (37 T 507164.00-4428721.00 / 37 T 506251.00-4428878.00 / 37 T 506682.00-4428782.00 / 37 T 506043.00-429193.00 / 37 T 505799.00-4429399.00 / 37 T 505458.00-4429587.00 / 37 T 505096.00-4429820.00 / 37 T 504828.00-429928.00 / 37 T 504424.00-4429977.00 / 37 T 504079.00-4430096.00 / 37 T 503882.00-4430442.00 / 37 T 503699.00-4430709.00 / 37 T 503404.00-4430891.00 / 37 T 503049.00-4431161.00 / 37 T 502769.00-4431335.00 / 37 T 502556.29-4431464.16) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil is removed prior to 1 May, there is no construction time constraint		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH25	564+425 - 565+125	0,7	<i>Isatis undulata</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Isatis undulata</i> species shall be collected along one side of the ROW between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Isatis undulata</i> species shall be planted according to the methodology and to the (37 T 484208.00- 4434554.00 / 37 T 484039.00- 4434704.00 /37 T 483877.00- 4434805.00 /37 T 483732.00- 4434817.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The collected seeds of <i>Isatis undulata</i> species shall be planted according to the methodology and to the (37 T 484208.00- 4434554.00 / 37 T 484039.00- 4434704.00 / 37 T 483877.00- 4434805.00 /37 T 483732.00- 4434817.00) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The seeds of <i>Isatis undulata</i> species shall be collected between 1 July-1 August.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Isatis undulata</i> species shall be collected between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Isatis undulata</i> species shall be planted according to the methodology and to the (37 T 484208.00- 4434554.00 / 37 T 484039.00- 4434704.00 / 37 T 483877.00- 4434805.00 /37 T 483732.00- 4434817.00) coordinates to the ROW between September-November.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH26	588+880 - 590+358	1,478	<i>Cochlearia sintenisii</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cochlearia sintenisii</i> species shall be collected along one side of the ROW between 1 July-1 August	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 467562.00- 4423758.00 / 37 S 467327.00- 4423540.00 / 37 S 467222.00- 4423461.00 / 37 S 467060.00- 4423369.00 /37 S 466640.00- 4423271.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be collected between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 467562.00- 4423758.00 / 37 S 467327.00- 4423540.00 / 37 S 467222.00- 4423461.00 / 37 S 467060.00- 4423369.00 / 37 S 466640.00- 4423271.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be collected between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 467562.00- 4423758.00 / 37 S 467327.00- 4423540.00 / 37 S 467222.00- 4423461.00 / 37 S 467060.00- 4423369.00 / 37 S 466640.00- 4423271.00) coordinates to the ROW between September-November.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH27	604+940 - 608+000	3,06	<i>Cochlearia sintenisii</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cochlearia sintenisii</i> species shall be collected along one side of the ROW between 1 July-1 August	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 453088.00-453088.00-4425551.00 / 37 S 453333.00-4425592.00 / 37 S 454270.00-4426118.00 / 37 S 454520.00-4426018.00 / 37 S 454806.00-4425766.00 / 37 S 454909.00-4425685.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 453088.00-453088.00-4425551.00 / 37 S 453333.00-4425592.00 / 37 S 454270.00-4426118.00 / 37 S 454520.00-4426018.00 / 37 S 454806.00-4425766.00 / 37 S 454909.00-4425685.00) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 453088.00-453088.00-4425551.00 / 37 S 453333.00-4425592.00 / 37 S 454270.00-4426118.00 / 37 S 454520.00-4426018.00 / 37 S 454806.00-4425766.00 / 37 S 454909.00-4425685.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 453088.00-453088.00-4425551.00 / 37 S 453333.00-4425592.00 / 37 S 454270.00-4426118.00 / 37 S 454520.00-4426018.00 / 37 S 454806.00-4425766.00 / 37 S 454909.00-4425685.00) coordinates to the ROW between September-November.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints			



CH 28	614+648-626+000	11,352	<i>Bellevalia crassa</i> , <i>Asperula capitellata</i> , <i>Cochlearia sintenisi</i> , <i>Thymus cappadocicus</i> var. <i>pruinosis</i> , <i>Achillea sintenisi</i>	August-February	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the bulbs of <i>Bellevalia crassa</i> species shall be collected along one side of the ROW and carried to out of the ROW.</p> <p>* The seeds of the <i>Asperula capitellata</i>, <i>Cochlearia sintenisi</i>, and <i>Thymus cappadocicus</i> var. <i>pruinosis</i> species shall be collected along one side of the ROW between 1 July-1 August; the seeds of the <i>Achillea sintenisi</i> species shall be collected along one side of the ROW between 15 July-15 August.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Asperula capitellata</i>, <i>Thymus cappadocicus</i> var. <i>pruinosis</i>, <i>Cochlearia sintenisi</i> and <i>Achillea sintenisi</i> species shall be planted according to the methodology and to the (37 S 443666.00-4421745.00/ 37 S 443405.00-4421480.00/ 37 S 44357.00-4421037.00/ 37 S 442990.00-4420861.00/ 37 S 442507.00-4421031.00/ 37 S 441965.00-4421153.00/ 37 S 441483.00-4421840.00/ 37 S 440156.00-4422101.00/ 37 S 438720.00-4422064.00/ 37 S 439346. 52-4422147.31) coordinates to the ROW between September-November.</p> <p>* The collected individuals or bulbs of the <i>Bellevalia crassa</i> species shall be planted on the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Asperula capitellata</i>, <i>Thymus cappadocicus</i> var. <i>pruinosis</i>, <i>Cochlearia sintenisi</i> and <i>Achillea sintenisi</i> species shall be planted according to the methodology and to the (37 S 443666.00-4421745.00/ 37 S 443405.00-4421480.00/ 37 S 44357.00-4421037.00/ 37 S 442990.00-4420861.00/ 37 S 442507.00-4421031.00/ 37 S 441965.00-4421153.00/ 37 S 441483.00-4421840.00/ 37 S 440156.00-4422101.00/ 37 S 438720.00-4422064.00/ 37 S 439346. 52-4422147.31) coordinates to the ROW between September-November.</p> <p>* The collected individuals or bulbs of the <i>Bellevalia crassa</i> species shall be planted on the ROW.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The bulbs of <i>Bellevalia crassa</i> species shall be collected from the ROW between 1 July-1 August.</p> <p>* The seeds of the <i>Asperula capitellata</i>, <i>Cochlearia sintenisi</i>, and <i>Thymus cappadocicus</i> var. <i>pruinosis</i> species shall be collected between 1 July-1 August; the seeds of the <i>Achillea sintenisi</i> species shall be collected between 15 July-15 August.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Asperula capitellata</i>, <i>Thymus cappadocicus</i> var. <i>pruinosis</i>, <i>Cochlearia sintenisi</i> and <i>Achillea sintenisi</i> species shall be planted according to the methodology and to the (37 S 443666.00-4421745.00/ 37 S 443405.00-4421480.00/ 37 S 44357.00-4421037.00/ 37 S 442990.00-4420861.00/ 37 S 442507.00-4421031.00/ 37 S 441965.00-4421153.00/ 37 S 441483.00-4421840.00/ 37 S 440156.00-4422101.00/ 37 S 438720.00-4422064.00/ 37 S 439346. 52-4422147.31) coordinates to the ROW between September-November.</p> <p>* The collected individuals or bulbs of the <i>Bellevalia crassa</i> species shall be planted on the ROW.</p>	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints
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CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH29	632+635 - 634+183	1,548	<i>Isatis undulata</i> , <i>Cochlearia sintenisii</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be collected along one side of the ROW, from the (37 S 431034.20- 4418698.72) coordinates between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 431163.69- 4418762.97 / 37 S 431439.06- 4419180.05 / 37 S 431767.75- 4419424.63) coordinates to the ROW between September-November. * Terracing shall be carried out at the (633+257-633+562) KP's to prevent erosion on the dip slopes.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 431163.69- 4418762.97 / 37 S 431439.06- 4419180.05 / 37 S 431767.75- 4419424.63) coordinates to the ROW between September-November. * Terracing shall be carried out at the (633+257-633+562) KP's to prevent erosion on the dip slopes.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 431163.69- 4418762.97 / 37 S 431439.06- 4419180.05 / 37 S 431767.75- 4419424.63) coordinates to the ROW between September-November. * Terracing shall be carried out at the (633+257-633+562) KP's to prevent erosion on the dip slopes.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 431163.69- 4418762.97 / 37 S 431439.06- 4419180.05 / 37 S 431767.75- 4419424.63) coordinates to the ROW between September-November. * Terracing shall be carried out at the (633+257-633+562) KP's to prevent erosion on the dip slopes.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints			



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH30	634+285 - 634+864	0,579	<i>Isatis undulata</i> , <i>Cochlearia sintenisii</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be collected along one side of the ROW between 1 July-1 August.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 430808.10-4418378.12 / 37 S 430612.02-4418232.81) coordinates to the ROW between September-November. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 430808.10-4418378.12 / 37 S 430612.02-4418232.81) coordinates to the ROW between September-November. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 430808.10-4418378.12 / 37 S 430612.02-4418232.81) coordinates to the ROW between September-November. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 430808.10-4418378.12 / 37 S 430612.02-4418232.81) coordinates to the ROW between September-November. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be planted according to the methodology and to the (37 S 430808.10-4418378.12 / 37 S 430612.02-4418232.81) coordinates to the ROW between September-November. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes.	1 June-1 July	If all topsoil removal is complete prior to 1 June, there are no construction time constraints		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH31	634+906 - 634+932	0,026	<i>Hextoma n. sp., Tipula n.sp</i>	August-February	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The riparian vegetation shall be restored and aquatic and semi-aquatic areas shall be re-created at the (634+906- 634+932) KP's.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The riparian vegetation shall be restored and aquatic and semi-aquatic areas shall be re-created at the (634+906- 634+932) KP's.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The riparian vegetation shall be restored and aquatic and semi-aquatic areas shall be re-created at the (634+906- 634+932) KP's.	No restriction	None				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH32	652+000-654+878	2,878	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> , <i>Tipula n.sp</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected along one side of the ROW between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 416467.82-4414801.73/37 S 416377.69-4414800.92/37 S 416306.80-4414801.76/37 S 416251.56-4414800.98/37 S 416084.26-4414800.34/37 S 415833.94-4414800.57/37 S 415591.47-4414801.24/37 S 413891.73-4414797.64) coordinates to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 416467.82-4414801.73/37 S 416377.69-4414800.92/37 S 416306.80-4414801.76/37 S 416251.56-4414800.98/37 S 416084.26-4414800.34/37 S 415833.94-4414800.57/37 S 415591.47-4414801.24/37 S 413891.73-4414797.64) coordinates to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 416467.82-4414801.73/37 S 416377.69-4414800.92/37 S 416306.80-4414801.76/37 S 416251.56-4414800.98/37 S 416084.26-4414800.34/37 S 415833.94-4414800.57/37 S 415591.47-4414801.24/37 S 413891.73-4414797.64) coordinates to the ROW between September-November. * Gypsum rocks stored nearby the construction site shall be spread over the ROW.	1 May-1 June	If all topsoil removal is completed prior to 01 May, there are no construction time constraints						



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)		PRE-CONSTRUCTION	POST-CONSTRUCTION				
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH33	656+000-656+431	0,431	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> , <i>Tipula n.sp</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 412591.57-4414507.49/ 37 S 412429.08-4414443.13/ 37 S 412246.27-4414412.27) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 412591.57-4414507.49/ 37 S 412429.08-4414443.13/ 37 S 412246.27-4414412.27) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 412591.57-4414507.49/ 37 S 412429.08-4414443.13/ 37 S 412246.27-4414412.27) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 412591.57-4414507.49/ 37 S 412429.08-4414443.13/ 37 S 412246.27-4414412.27) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)				IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)							
					PRE-CONSTRUCTION		POST-CONSTRUCTION		PRE-CONSTRUCTION		POST-CONSTRUCTION					
CH34	660+353 - 660+456	0,103	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> , <i>Tipula n.sp</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected along one side of the ROW between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the construction site.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 408394.58-4414398.36/ 37 S 408331.00-4414381.37) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 408394.58-4414398.36/ 37 S 408331.00-4414381.37) coordinates to the ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. *The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 408394.58-4414398.36/ 37 S 408331.00-4414381.37) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*						Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)					
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH35	661+206 - 661+709	0,503	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sisivisica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sisivisica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i> , <i>Tipula n.sp.</i>	July-March	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015, the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sisivisica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sisivisica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 407582.00-4414160.00/ 37 S 407486.00-4414130.00) coordinates between September-November.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p> <p>* Terracing shall be carried out between the (661+448-661+704) KP's.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sisivisica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sisivisica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 407582.00-4414160.00/ 37 S 407486.00-4414130.00) coordinates between September-November.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p> <p>* Terracing shall be carried out between the (661+448-661+704) KP's.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sisivisica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sisivisica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 407582.00-4414160.00/ 37 S 407486.00-4414130.00) coordinates between September-November.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p> <p>* Terracing shall be carried out between the (661+448-661+704) KP's.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sisivisica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sisivisica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stelleroides</i> species shall be planted according to the methodology and to the (37 S 407582.00-4414160.00/ 37 S 407486.00-4414130.00) coordinates between September-November.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p> <p>* Terracing shall be carried out between the (661+448-661+704) KP's.</p>	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				



CH 36	683+613-683+648	0,035	<i>Dysmachus safranbuluticus, Astragalus zaraensis, Achillea sintenisii, Astragalus aytatchii, Centaurea sivasica, Chrysocamela noeana, Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>	July-March	<p>* Herbaceous plants shall be harvested and 10-15 cm of top soil of the ROW shall be scraped and stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the seeds of <i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be planted according to the methodology and to the (37 S 386761.62-4408728.69) coordinates between September-November.</p> <p>* The transferred individuals of the <i>Astragalus zaraensis</i> species shall be planted to the (37 S 386761.62-4408728.69) coordinates and shall be transferred to the (37 S 386759.46-4408680.42) coordinates.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* Harvested herbaceous plants, which carried <i>Dysmachus safranbuluticus</i>'s eggs, shall be laid on the top soil.</p> <p>* The seeds of <i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be planted according to the methodology and to the (37 S 386751.62-4408725.89) coordinates between September-November.</p> <p>* The transferred individuals of the <i>Astragalus zaraensis</i> species shall be planted to the (37 S 386759.46-4408680.42) coordinates.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>1 May-1 June</p>	<p>If all topsoil removal is complete prior to 01 May, there are no construction time constraints</p>
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CH 38	700+549 - 701+087	0,538	<i>Astragalus aytatchii</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Onobrychis stenostachya</i> ssp. <i>krausei</i> , <i>Achillea</i> <i>sintenisii</i> , <i>Achillea</i> <i>sipikorensis</i> , <i>Centaurea sivasica</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i>	July-March	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the seeds of <i>Astragalus aytatchii</i>, <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Onobrychis stenostachya</i> ssp. <i>krausei</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i>, <i>Centaurea sivasica</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i> and <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June.</p> <p>* The <i>Astragalus zaraensis</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i> and <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (700+757-701+006) KP's and shall be transferred to the (37 S 369839.96-4408605.07 / 37 S 369786.46-4408543.51/37 S 370048.89-4408740.47) coordinates between September-November.</p> <p>* The removed individuals of the <i>Astragalus zaraensis</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i> and <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (700+757-701+006) KP's and shall be transferred to the (37 S 369839.96-4408605.07 / 37 S 369786.46-4408543.51/37 S 370048.89-4408740.47) coordinates between September-November.</p> <p>* Some of the collected seeds of <i>Chrysocamela noeana</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Astragalus aytatchii</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Onobrychis stenostachya</i> ssp. <i>krausei</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i>, <i>Centaurea sivasica</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i> and <i>Chrysocamela noeana</i> species shall be planted according to the methodology and to the (37 S 369839.96-4408605.07 / 37 S 369786.46-4408543.51/37 S 370048.89-4408740.47) coordinates between September-November.</p> <p>* The removed individuals of the <i>Astragalus zaraensis</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i> and <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (700+757-701+006) KP's and shall be transferred to the (37 S 369839.96-4408605.07 / 37 S 369786.46-4408543.51/37 S 370048.89-4408740.47) coordinates between September-November.</p> <p>* Some of the collected seeds of <i>Chrysocamela noeana</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank.</p> <p>* Gypsum rocks excavated during activity shall be irrigated until they root again.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Astragalus aytatchii</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Onobrychis stenostachya</i> ssp. <i>krausei</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i>, <i>Centaurea sivasica</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i> and <i>Chrysocamela noeana</i> species shall be planted according to the methodology and to the (37 S 369839.96-4408605.07 / 37 S 369786.46-4408543.51/37 S 370048.89-4408740.47) coordinates between September-November.</p> <p>* The removed individuals of the <i>Astragalus zaraensis</i>, <i>Achillea</i> <i>sintenisii</i>, <i>Achillea</i> <i>sipikorensis</i> and <i>Thymus pectinatus</i> species shall be planted at the (700+757-701+006) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>If all topsoil removal is complete prior to 01 May, there are no construction time constraints</p>
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CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH39	708+677-708+890	0,213	<i>Achillea sibirica</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Achillea sibirica</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> species shall be planted according to the methodology and to the (37 S 362348.79-4410413.51/ 37 S 362385.09-4410392.30/37 S 362445.47-4410357.19/37 S 362483.09-4410335.10) coordinates between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sibirica</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks stored nearby the construction site shall be spread over the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sibirica</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> species shall be planted according to the methodology and to the (37 S 362348.79-4410413.51/ 37 S 362385.09-4410392.30/37 S 362445.47-4410357.19/37 S 362483.09-4410335.10) coordinates between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sibirica</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> species shall be planted according to the methodology and to the (37 S 362348.79-4410413.51/ 37 S 362385.09-4410392.30/37 S 362445.47-4410357.19/37 S 362483.09-4410335.10) coordinates between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sibirica</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> species shall be planted according to the methodology and to the (37 S 362348.79-4410413.51/ 37 S 362385.09-4410392.30/37 S 362445.47-4410357.19/37 S 362483.09-4410335.10) coordinates between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)				IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)							
					PRE-CONSTRUCTION		POST-CONSTRUCTION		PRE-CONSTRUCTION		POST-CONSTRUCTION					
CH40	713+855-713+956	0,101	<i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be planted according to the methodology and to the (37°S 35°7833.67-44°11°31.936/37°S 35°7807.42-44°11°29.616/37°S 35°7783.72-44°11°27.556) coordinates between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 1 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 15 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be planted according to the methodology and to the (37°S 35°7833.67-44°11°31.936/37°S 35°7807.42-44°11°29.616/37°S 35°7783.72-44°11°27.556) coordinates between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 15 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be planted according to the methodology and to the (37°S 35°7833.67-44°11°31.936/37°S 35°7807.42-44°11°29.616/37°S 35°7783.72-44°11°27.556) coordinates between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 15 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be planted according to the methodology and to the (37°S 35°7833.67-44°11°31.936/37°S 35°7807.42-44°11°29.616/37°S 35°7783.72-44°11°27.556) coordinates between 15 June-15 July; the seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 15 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH41	720+035-720+290	0,255	<i>Gypsophila heteropoda ssp. minutiflora, Astragalus zaraensis, Minuartia corymbulosa var. gypsophiloidea, Achillea sintenisii, Gypsophila aucheri, Onosma sintenisii</i>	July-March	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be collected along one side of the ROW between 1 June-20 June; the seeds of <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July.</p> <p>* Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be planted according to the methodology and to the (37 S 352322.75-4408468.34/37 S 352395.20-4408471.60/37 S 352452.02-4408473.12) coordinates between September-November.</p> <p>* Terracing shall be carried out at the (720+035-720+083) KP's to prevent erosion.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be collected along one side of the ROW between 1 June-20 June; the seeds of <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, and <i>Onosma sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July.</p> <p>* Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank.</p> <p>* Terracing shall be carried out at the (720+035-720+083) KP's to prevent erosion.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be planted according to the methodology and to the (37 S 352322.75-4408468.34/37 S 352395.20-4408471.60/37 S 352452.02-4408473.12) coordinates between September-November.</p> <p>* Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank.</p> <p>* Terracing shall be carried out at the (720+035-720+083) KP's to prevent erosion.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be planted according to the methodology and to the (37 S 352322.75-4408468.34/37 S 352395.20-4408471.60/37 S 352452.02-4408473.12) coordinates between September-November.</p> <p>* Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i>, <i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Onosma sintenisii</i> species shall be planted according to the methodology and to the (37 S 352322.75-4408468.34/37 S 352395.20-4408471.60/37 S 352452.02-4408473.12) coordinates between September-November.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p> <p>* Terracing shall be carried out at the (720+035-720+083) KP's to prevent erosion.</p>	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				



CH 42	729+485-729+571	0,086	<i>Astragalus zaraensis, Achillea sintenisii</i>	July-March	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* If the construction works start in March 2015; the seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July.</p> <p>* The species individuals shall be removed as tufts between the (729+485-729+571) KP's and shall be transferred to the (37 S 343055.79-4409365.90) coordinates.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The collected seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology between September-November.</p> <p>* The removed individuals of the species as tufts shall be planted at the (729+485-729+571) KP's.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July.</p> <p>* The species individuals shall be removed as tufts between the (729+485-729+571) KP's and shall be transferred to the (37 S 343055.79-4409365.90) coordinates.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July.</p> <p>* The species individuals shall be removed as tufts between the (729+485-729+571) KP's and shall be transferred to the (37 S 343055.79-4409365.90) coordinates.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the ROW.</p>	<p>* Topsoil shall be replaced within a maximum of 3 months from removal.</p> <p>* The seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology between September-November.</p> <p>* The removed individuals of the species as tufts shall be planted at the (729+485-729+571) KP's.</p> <p>* Gypsum rocks stored nearby the construction site shall be spread over the ROW.</p>	<p>1 May-1 June</p>	If all topsoil removal is complete prior to 01 May, there are no construction time constraints
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CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)		PRE-CONSTRUCTION	POST-CONSTRUCTION				
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH43	733+201-733+366	0,165	<i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Achillea sintenisii</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July. * The <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's sand shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Some of the collected seeds of <i>Onosma sintenisii</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology and to the (37 S 339593.61-4408086.60/ 37 S 339650.73-4408112.15) coordinates between September-November. * The translocated <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's sand shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Gypsum rocks stored nearby the construction site shall be spread over the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology and to the (37 S 339593.61-4408086.60/ 37 S 339650.73-4408112.15) coordinates between September-November. * The translocated <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's sand shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Some of the collected seeds of <i>Onosma sintenisii</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology and to the (37 S 339593.61-4408086.60/ 37 S 339650.73-4408112.15) coordinates between September-November. * The translocated <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's sand shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Some of the collected seeds of <i>Onosma sintenisii</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Onosma sintenisii</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be planted according to the methodology and to the (37 S 339593.61-4408086.60/ 37 S 339650.73-4408112.15) coordinates between September-November. * The translocated <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's sand shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Some of the collected seeds of <i>Onosma sintenisii</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



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					PRE-CONSTRUCTION		POST-CONSTRUCTION		PRE-CONSTRUCTION		POST-CONSTRUCTION					
CH44	741+301-741+446	0,145	<i>Achillea sibirica</i> , <i>Chrysocamela noeana</i> , <i>Astragalus zaraensis</i> , <i>Cousinia sivasica</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Achillea sibirica</i> , <i>Cousinia sivasica</i> and <i>Astragalus zaraensis</i> species shall be collected along one side of the ROW between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sibirica</i> , <i>Chrysocamela noeana</i> , <i>Cousinia sivasica</i> , <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species shall be planted according to the methodology and to the (37 S 332486.75-4408322.38/37 S 332507.73-4408280.80/37 S 332517.23-4408261.61) coordinates between 1 June-20 June. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sibirica</i> , <i>Cousinia sivasica</i> and <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sibirica</i> , <i>Chrysocamela noeana</i> , <i>Cousinia sivasica</i> , <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species shall be planted according to the methodology and to the (37 S 332486.75-4408322.38/37 S 332507.73-4408280.80/37 S 332517.23-4408261.61) coordinates between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sibirica</i> , <i>Cousinia sivasica</i> , <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Achillea sibirica</i> , <i>Chrysocamela noeana</i> , <i>Cousinia sivasica</i> , <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species shall be planted according to the methodology and to the (37 S 332486.75-4408322.38/37 S 332507.73-4408280.80/37 S 332517.23-4408261.61) coordinates between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. * Gypsum rocks excavated during activity shall be stored nearby the ROW.	1 May-15 July	If all topsoil removal is completed prior to 01 May, there are no construction time constraints				



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH45	746+599-749+672 (in natural habitats)	3,073	<i>Dysmachus safranoluticus</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dysmachus safranoluticus</i> , shall be laid on the top soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dysmachus safranoluticus</i> , shall be laid on the top soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dysmachus safranoluticus</i> , shall be laid on the top soil.	No restriction	None				
CH 46	802+361-802+428	0,067	<i>Hexatoma n. sp., Cousinia halyensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia halyensis</i> species shall be collected along one side of the ROW between 15 June-15 July. * <i>Juncus</i> species individuals between the (802+409-802+422) KP's shall be removed and transferred at the (37 S 276993.99-4415718.69) coordinates.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (37 S 277036.02-4415687.53) coordinates ROW between September-November. * <i>Juncus</i> species removed individuals shall be transferred on the ROW between the (802+409-802+422) KP's.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The seeds of <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July. * <i>Juncus</i> species individuals between the (802+409-802+422) KP's shall be removed and transferred at the (37 S 276993.99-4415718.69) coordinates.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The seeds of <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July. * <i>Juncus</i> species individuals between the (802+409-802+422) KP's shall be removed and transferred at the (37 S 276993.99-4415718.69) coordinates.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The seeds of <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July. * <i>Juncus</i> species individuals between the (802+409-802+422) KP's shall be removed and transferred at the (37 S 276993.99-4415718.69) coordinates.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (37 S 277036.02-4415687.53) coordinates ROW between September-November. * <i>Juncus</i> species removed individuals shall be transferred on the ROW between the (802+409-802+422) KP's.	1 May-15 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				



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					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 47	802+454-802+755	0,301	<i>Hexatoma n. sp., Cousinia halsensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia halsensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (37 S 276937.99-4415685.90/37 S 276803.30-4415655.66/37 S 276720.58-4415638.33) coordinates ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (37 S 276937.99-4415685.90/37 S 276803.30-4415655.66/37 S 276720.58-4415638.33) coordinates ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (37 S 276937.99-4415685.90/37 S 276803.30-4415655.66/37 S 276720.58-4415638.33) coordinates ROW between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Riparian vegetation, aquatic and semi aquatic vegetation shall be restored. * The collected seeds of <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (37 S 276937.99-4415685.90/37 S 276803.30-4415655.66/37 S 276720.58-4415638.33) coordinates ROW between September-November.	1 May-15 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			
CH 48	815+368-815+380	0,012	<i>Hilara n. sp. 3</i>	July-March	* The riparian vegetation at the creek bank between the (815+368-815+380) KP's shall be scraped at a depth of 10-15 cm as a layer and stored at the creek side.	* The stored top soil shall be laid back in 3 months at the latest. * The riparian vegetation shall be restored between the (815+368-815+380) KP's and the creek flow shall be provided again.	* The riparian vegetation at the creek bank between the (815+368-815+380) KP's shall be scraped at a depth of 10-15 cm as a layer and stored at the creek side.	* The stored top soil shall be laid back in 3 months at the latest. * The riparian vegetation shall be restored between the (815+368-815+380) KP's and the creek flow shall be provided again.	* The riparian vegetation at the creek bank between the (815+368-815+380) KP's shall be scraped at a depth of 10-15 cm as a layer and stored at the creek side.	* The riparian vegetation at the creek bank between the (815+368-815+380) KP's shall be scraped at a depth of 10-15 cm as a layer and stored at the creek side.	* The stored top soil shall be laid back in 3 months at the latest. * The riparian vegetation shall be restored between the (815+368-815+380) KP's and the creek flow shall be provided again.	No restriction	None			
CH 49	846+021-846+224	0,203	<i>Dioctria n. sp. 2, Dymachus safranboloticus</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested at the (846+021-846+224) KP's and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dymachus safranboloticus</i> , shall be laid on the top soil.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested at the (846+021-846+224) KP's and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dymachus safranboloticus</i> , shall be laid on the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Herbaceous plants shall be harvested at the (846+021-846+224) KP's and stored along one side of the ROW.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dymachus safranboloticus</i> , shall be laid on the top soil.	* Topsoil shall be replaced within a maximum of 3 months from removal. * Harvested herbaceous plants, which carried the eggs of <i>Dymachus safranboloticus</i> , shall be laid on the top soil.	No restriction	None			



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)		PRE-CONSTRUCTION	POST-CONSTRUCTION				
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 50	945+058-945+445	0,387	<i>Cousinia hylensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia hylensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 663165.43-4391184.04/ 36 S 663018.07-4391201.63/ 36 S 662922.53-4391149.88) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 663165.43-4391184.04/ 36 S 663018.07-4391201.63/ 36 S 662922.53-4391149.88) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 663165.43-4391184.04/ 36 S 663018.07-4391201.63/ 36 S 662922.53-4391149.88) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 663165.43-4391184.04/ 36 S 663018.07-4391201.63/ 36 S 662922.53-4391149.88) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints		
CH 51	993+073-993+795	0,722	<i>Cousinia hylensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia hylensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 617215.12-4393683.66/36 S 616926.44-4393808.19/36 S 616741.98-4393948.53) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 617215.12-4393683.66/36 S 616926.44-4393808.19/36 S 616741.98-4393948.53) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 617215.12-4393683.66/36 S 616926.44-4393808.19/36 S 616741.98-4393948.53) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 617215.12-4393683.66/36 S 616926.44-4393808.19/36 S 616741.98-4393948.53) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			
CH 52	1029+605-1029+804	0,199	<i>Thymus leucostomus</i> , <i>Cousinia hylensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 584017.01-4395503.88/36 S 583929.05-4395490.21) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 584017.01-4395503.88/36 S 583929.05-4395490.21) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 584017.01-4395503.88/36 S 583929.05-4395490.21) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylensis</i> species shall be planted according to the methodology and to the (36 S 584017.01-4395503.88/36 S 583929.05-4395490.21) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
CH 53												1 May-1 June		
	1030+091-1030+310	0,219	<i>Thymus leucostomus</i> , <i>Cousinia halyensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 583553.69-4395479.62/36 S 583442.02-4395487.31) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 583553.69-4395479.62/36 S 583442.02-4395487.31) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 583553.69-4395479.62/36 S 583442.02-4395487.31) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 583553.69-4395479.62/36 S 583442.02-4395487.31) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints	
CH 54												1 May-1 June		
	1139+490-1140+300	0,81	<i>Cousinia halyensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cousinia halyensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 484883.24-4376744.59/36 S 484666.23-4376765.52/36 S 484422.25-4376788.47) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 484883.24-4376744.59/36 S 484666.23-4376765.52/36 S 484422.25-4376788.47) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halyensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 484883.24-4376744.59/36 S 484666.23-4376765.52/36 S 484422.25-4376788.47) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Cousinia halyensis</i> species shall be planted according to the methodology and to the (36 S 484883.24-4376744.59/36 S 484666.23-4376765.52/36 S 484422.25-4376788.47) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints	



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 55																
	1149+730-1149+900	0,17	<i>Thymus leucostomus</i> , <i>Cousinia halsensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be collected along one side of the ROW between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (36 S 475038.74-4376991.91/36 S 474951.33-4376999.24) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (36 S 475038.74-4376991.91/36 S 474951.33-4376999.24) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be planted according to the methodology and to the (36 S 475038.74-4376991.91/36 S 474951.33-4376999.24) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			
CH 56	1208+945 - 1209+108	0,163	<i>Thymus leucostomus</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Thymus leucostomus</i> species shall be collected along one side of the ROW	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 418710.48-4367664.42/36 S 418619.59-4367673.73)	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 418710.48-4367664.42/ 36 S 418619.59-4367673.73) coordinates between	* Topsoil shall be replaced within a maximum of 3 months from removal. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 418710.48-4367664.42/ 36 S 418619.59-4367673.73)	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			



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					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION				
					between 15 June-15 July.	coordinates between September-November.		September-November.		coordinates between September-November.				



CH 57	1223+54 - 1223+506	0,452	<i>Scutellaria yıldırımıli</i> , <i>Achillea ketenoglui</i> , <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Scutellaria yıldırımıli</i> , <i>Achillea ketenoglui</i> , <i>Astragalus kochakii</i> , <i>Onobrychis paucijuga</i> species shall be collected along one side of the ROW between 1 June- 1 July; the seeds of <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> species shall be collected along one side of the ROW between 15 May-15 June; the seeds of <i>Thymus leucostomus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> species shall be collected along one side of the ROW between 15 July-1 August. * Some of the collected seeds of <i>Achillea ketenoglui</i> , <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i> must be given to the seed gene bank.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The area shall be surrounded by a wire mesh or fence to protect the area from grazing and other pressures. * The collected seeds of <i>Scutellaria yıldırımıli</i> , <i>Achillea ketenoglui</i> , <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i> species shall be collected between 1 June- 1 July; the seeds of <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> shall be collected between 15 May-15 June; the seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July; the seeds of <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> shall be collected between 15 July-1 August; the seeds of <i>Cyathobasis fruticulosa</i> species shall be collected between 1 July-1 August. * Some of the collected seeds of <i>Achillea ketenoglui</i> , <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 405549.00-4363042.00/36 S 405621.85-4363058.29/36 S 405679.83-4363074.44/36 S 405784.91-4363093.32/36 S 405844.76-4363108.21/36 S 405912.62-4363121.76) coordinates between September-November.	* Topsoil shall be replaced within a maximum of 3 months from removal. * The area shall be surrounded by a wire mesh or fence to protect the area from grazing and other pressures. * The collected seeds of <i>Scutellaria yıldırımıli</i> , <i>Achillea ketenoglui</i> , <i>Astragalus phystodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 405549.00-4363042.00/36 S 405621.85-4363058.29/36 S 405679.83-4363074.44/36 S 405784.91-4363093.32/36 S 405844.76-4363108.21/36 S 405912.62-4363121.76) coordinates between September-November.	1 May-30 June	Construction prohibited from 01 May - 30 June



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)		PRE-CONSTRUCTION	POST-CONSTRUCTION				
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH 58	1362+917-1363+753	0,836	<i>Thymus leucostomus</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Thymus leucostomus</i> species shall be collected along one side of the ROW between 15 June-15 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 279214.33-4394348.83/36 S 278842.86-4394361.93/36 S 278571.49-4394453.64) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 279214.33-4394348.83/36 S 278842.86-4394361.93/36 S 278571.49-4394453.64) coordinates between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July.	* The top soil shall be laid again in 3 months. * The collected seeds of <i>Thymus leucostomus</i> species shall be planted according to the methodology and to the (36 S 279214.33-4394348.83/36 S 278842.86-4394361.93/36 S 278571.49-4394453.64) coordinates between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				
CH 59	1366+493 - 1366+692	0,199	<i>Salvia tchihatcheffii</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Salvia tchihatcheffii</i> species shall be collected along one side of the ROW between 1 June-1 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and to the (1366+512-1366+537) KP's, to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia tchihatcheffii</i> species shall be collected between 1 June-1 July. * The <i>Salvia tchihatcheffii</i> species individuals shall be collected as tufts between the (1366+512-1366+537) KP's and shall be transferred to the (36 S 276899.00-4396448.00) coordinates.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia tchihatcheffii</i> species shall be collected between 1 June-1 July. * The <i>Salvia tchihatcheffii</i> species individuals shall be collected as tufts between the (1366+512-1366+537) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and to the (36 S 276971.00-4396421.00/ 36 S 276939.00-4396478.00) coordinates between September-November. * The translocated individuals of the <i>Salvia tchihatcheffii</i> species as tufts shall be planted at the (1366+512-1366+537) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and to the (36 S 276971.00-4396421.00/ 36 S 276939.00-4396478.00) coordinates between September-November. * The translocated individuals of the <i>Salvia tchihatcheffii</i> species as tufts shall be planted at the (1366+512-1366+537) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)				IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)							
					PRE-CONSTRUCTION		POST-CONSTRUCTION		PRE-CONSTRUCTION		POST-CONSTRUCTION					
CH60	1372+340-1372+683	0,343	<i>Dioclea n. sp. 1, Cephalaria aytachii, Gypsophila osmangaziensis, Alyssum niveum, Scabiosa hololeuca, Salvia tchihatcheffii</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and between the (1372+552-1372+683) KP's and to the (36 S 272726.00-4399906.00/36 S 272758.00-4399896.00) coordinates between September-November. * In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be collected between 1 July-August, the seeds of <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be collected between 15 July-15 August.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and between the (1372+552-1372+683) KP's and to the (36 S 272726.00-4399906.00/36 S 272758.00-4399896.00) coordinates between September-November. * In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and between the (1372+552-1372+683) KP's and to the (36 S 272726.00-4399906.00/36 S 272758.00-4399896.00) coordinates between September-November. * In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and between the (1372+552-1372+683) KP's and to the (36 S 272726.00-4399906.00/36 S 272758.00-4399896.00) coordinates between September-November. * In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion.	* The top soil shall be laid again in 3 months. * The collected seeds of <i>Cephalaria aytachii</i> , <i>Gypsophila osmangaziensis</i> , <i>Scabiosa hololeuca</i> , <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be planted according to the methodology and between the (1372+552-1372+683) KP's and to the (36 S 272726.00-4399906.00/36 S 272758.00-4399896.00) coordinates between September-November. * In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion.	1 May-1 June	Construction prohibited from 1 May-1 June				
CH61	1430+920-1432+305	1,385	<i>Erodium sibirianum ssp. sibirianum, Astragalus densifolius ssp. ayashensis</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Erodium sibirianum</i> ssp. <i>sibirianum</i> and <i>Astragalus densifolius</i> ssp. <i>ayashensis</i> species shall be planted according to the methodology and to the (35 S 732388.00-4404501.00/35 S 732171.00-4404907.00/35 S 731635.00-4405086.00) coordinates to the ROW between September-November.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Erodium sibirianum</i> ssp. <i>sibirianum</i> and <i>Astragalus densifolius</i> ssp. <i>ayashensis</i> species shall be collected between 1 June-1 July.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Erodium sibirianum</i> ssp. <i>sibirianum</i> and <i>Astragalus densifolius</i> ssp. <i>ayashensis</i> species shall be planted according to the methodology and to the (35 S 732388.00-4404501.00/35 S 732171.00-4404907.00/35 S 731635.00-4405086.00) coordinates to the ROW between September-November.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Erodium sibirianum</i> ssp. <i>sibirianum</i> and <i>Astragalus densifolius</i> ssp. <i>ayashensis</i> species shall be planted according to the methodology and to the (35 S 732388.00-4404501.00/35 S 732171.00-4404907.00/35 S 731635.00-4405086.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Erodium sibirianum</i> ssp. <i>sibirianum</i> and <i>Astragalus densifolius</i> ssp. <i>ayashensis</i> species shall be planted according to the methodology and to the (35 S 732388.00-4404501.00/35 S 732171.00-4404907.00/35 S 731635.00-4405086.00) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints					



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH62	1477+452 - 1477+833	0,381	<i>Onosma briquetii</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Onosma briquetii</i> species shall be collected along one side of the ROW between 1 June-1 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Onosma briquetii</i> species shall be planted according to the methodology and to the (35 S 692106.00-4399251.00/35 S 691979.00-4399305.00/35 S 691815.00-4399375.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Onosma briquetii</i> species shall be collected between 1 June-1 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Onosma briquetii</i> species shall be planted according to the methodology and to the (35 S 692106.00-4399251.00/35 S 691979.00-4399305.00/35 S 691815.00-4399375.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Onosma briquetii</i> species shall be collected between 1 June-1 July.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The collected seeds of <i>Onosma briquetii</i> species shall be planted according to the methodology and to the (35 S 692106.00-4399251.00/35 S 691979.00-4399305.00/35 S 691815.00-4399375.00) coordinates to the ROW between September-November.	* The top soil shall be laid again in 3 months. * The collected seeds of <i>Onosma briquetii</i> species shall be planted according to the methodology and to the (35 S 692106.00-4399251.00/35 S 691979.00-4399305.00/35 S 691815.00-4399375.00) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints			
CH63	1491+767 - 1496+340	4,573	<i>Alyssum dudleyi</i> , <i>Dianthus goekayi</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Alyssum dudleyi</i> species shall be collected along one side of the ROW between 1 June-1 July; <i>Dianthus goekayi</i> species shall be collected along one side of the ROW between 15 June-15 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Alyssum dudleyi</i> and <i>Dianthus goekayi</i> species shall be planted according to the methodology and to the (35 S 677213.00-4403775.00/ 35 S 677793.00-4403410.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Alyssum dudleyi</i> species shall be collected between 1 June-1 July; <i>Dianthus goekayi</i> species shall be collected between 15 June-15 July.	* The stored top soil shall be laid again in 3 months. * The collected seeds of <i>Alyssum dudleyi</i> and <i>Dianthus goekayi</i> species shall be planted according to the methodology and to the (35 S 677213.00-4403775.00/ 35 S 677793.00-4403410.00) coordinates to the ROW between September-November.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Alyssum dudleyi</i> species shall be collected between 1 June-1 July; <i>Dianthus goekayi</i> species shall be collected between 15 June-15 July.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The collected seeds of <i>Alyssum dudleyi</i> and <i>Dianthus goekayi</i> species shall be planted according to the methodology and to the (35 S 677213.00-4403775.00/ 35 S 677793.00-4403410.00) coordinates to the ROW between September-November.	1 May-1 June	If all topsoil removal is complete prior to 01 May, there are no construction time constraints				



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH64	1736+000 - 1738+300	2,3	<i>Phalacrocorax carbo</i> , <i>Phalacrocorax pygmeus</i>	01 July-31 January	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The construction shalln't be done between February-March because of the flood season which constitute a wetland for congregatory bird species.	* The stored top soil shall be laid again in 3 months. * The habitat shall be rehabilitated.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	* The stored top soil shall be laid again in 3 months. * No restriction	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	* The stored top soil shall be laid again in 3 months. * No restriction	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	01 February-30 March	Construction prohibited from February-March		
CH65	1741+100 - 1741+500	0,4	<i>Spermophilus citellus</i>	July-January	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; and if <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be laid again in 3 months. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be laid again in 3 months. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	If the precaution measures taken for <i>Spermophilus citellus</i> , there is no restriction	None		
CH66	1788+300 - 1788+500	0,2	<i>Myomimus roachi</i>	July-March	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; and if <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be laid again in 3 months. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be laid again in 3 months. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	* The stored top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Myomimus roachi</i> individuals will be seen, they shall be carried to the appropriate and close areas by specialists according to the methodology.	If the precaution measures taken for <i>Myomimus roachi</i> , there is no restriction	None		



CRITICAL HABITATS	KP	Total Length (km)	CRITICAL SPECIES	THE IDEAL TIME FOR SOIL STRIPPING	MITIGATION MEASURES*								Closed Construction Period	Construction allowed if following condition(s) are met		
					IF CONSTRUCTION WORKS STARTS AT SPRING / (March-May)		IF CONSTRUCTION WORKS STARTS AT SUMMER / (June-August)		IF CONSTRUCTION WORKS STARTS AT AUTUMN / (September-November)							
					PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION	PRE-CONSTRUCTION	POST-CONSTRUCTION						
CH67	1800 + 600 -1805+000	4,4	<i>Phalacrocorax carbo</i> , <i>Phalacrocorax pygmeus</i> , <i>Cygnus olor</i> , <i>Cygnus cygnus</i> , <i>Pelecanus onocrotalus</i>	01 July-31 January	* The construction shalln't be done between February-March because of the flood season which constitute a wetland for congregatory bird species. * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	* The stored top soil shall be laid again in 3 months. * The habitat shall be rehabilitated.	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	* The stored top soil shall be laid again in 3 months. * No restriction	* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * No restriction	* The stored top soil shall be laid again in 3 months. * No restriction	01 February-30 March	Construction prohibited from February-March				

The top soil scrapping should be done in all critical habitats.

The habitat rehabilitation should be done in all critical habitats.

Some of the collected seeds of endemic species must be given to the seed gene bank.

Invasive flora species control should be done in all critical habitats.



Table 10.2. Recommended actions for freshwater critical habitats

CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 1	Kura River	71+710-71+755	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 2	Unknown Creek	166+450-166+571	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 3	Süngütaşı River	220+177-220+211	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 4	Kızılararkı River	269+680-269+696	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 5	Büyükdere River	280+401-280+414	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 6	Abitçayırlığı River	332+830-332+845	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 7	Baş River	353+584-353+613	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 8	Karasu River	372+760-372+903	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 9	Değirmendere River	504+756-504+770	-	end of April-begining of July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 10	Unknown Creek-Oğütü village	508+498-508+510	<i>Oxyneomacheilus kosswigi, Salmo macrostigma</i>	May-June; December-November	<ul style="list-style-type: none"> *No activities should be carried out for Salmonid between December-November; for <i>Oxyneomacheilus kosswigi</i> between May-June in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 11	Hafik	709+815-709+897	<i>Gobio obtusirostris</i>	April-July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 12	Yıldız River	763+361-763+381	-	April-July	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 13	Delice Stream	983+388-983+432	<i>Cobitis simplicispinna</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 14	Kılıçözü River	1035+368-1035+377	<i>Cobitis simplicispinna</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 15	Kızılırmak River	1087+890+1087+980	-	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 16	Sakarya River	1214+260-1214+290	-	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 17	Seydi Stream	1315+643-1315+665	<i>Cobitis simplicispinna, Gobio obtusirostris</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 18	Seydi Stream	1323+270-1323+300	<i>Cobitis simplicispinna</i> , <i>Gobio obtusirostris</i> , <i>Chondrostoma angoranse</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 19	Tributary of Uludere	1396+221-1396+237	<i>Gobio obtusirostris</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 20	Tributary of Kocasu Stream-Soğucak	1461+293-1461+349	<i>Oxyneomacheilus simavica</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 21	Aliova Stream	1553+697-1553+730	<i>Oxyneomacheilus simavica</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 22	Sarp Creek	1565+865-1565+885	<i>Cobitis fahirae</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 23	Simav Stream	1590+290-1590+362	<i>Oxyneomacheilus simavica</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 24	Mürvetler Stream	1605+400-1605+425	<i>Oxyneomacheilus simavica</i> , <i>Cobitis puncticulata</i> , <i>Cobitis fahirae</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 25	Manyas-Koçay Stream	1613+360-1613+419	<i>Cobitis puncticulata</i> , <i>Cobitis fahirae</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.
FCH 26	Gönen Stream	1651+548-1651+598	<i>Anguilla anguilla</i>	April-June	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.	*Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



CRITICAL HABITATS	CRITICAL HABITAT NAME (RIVER NAME)	KP	CRITICAL SPECIES	TIME CONSTRAINT	MITIGATION MEASURES	
					PRE-CONSTRUCTION	POST-CONSTRUCTION
FCH 27	Biga Stream	1689+784-1689+838	<i>Cobitis fahirae</i>	April-June	<ul style="list-style-type: none"> *No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation. 	<ul style="list-style-type: none"> *Restore channel bottom (materials and topography) and riparian vegetation (along river banks) to baseline conditions present prior to construction.



ANNEX 1

**ASSESSMENT OF THE NATURAL HABITAT TYPES WHICH
INTERSECT WITH THE TANAP PROJECT ROUTE**



Assessment of the natural habitat types which intersect with the TANAP Project route

EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
B1.6 Coastal dune scrub	H	6,124	0,2373	3,87	L	* Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise scrub clearance	Along the entire TANAP Project route, this habitat type can be seen only in semi-humid areas right behind the coastal dunes within the borders of Tekirdağ. EUNIS Level III classification for whole Turkey isn't known for now. We know that dune habitats are present along to the Blacksea, Marmara Sea, Aegean Sea and Mediterranean Sea ¹ . Top soil management is sufficient for the recovery of this habitat according to the local experts.
B2.2 Unvegetated mobile shingle beaches above the driftline		0,182	0,041	22,53	L	* Top soil management (Topsoil stripping at full depth before construction with shingles on it, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase)	Along the entire TANAP Project route of 500m study corridor, this habitat type exists only in the seaside of Çanakkale, which is located near the Marmara Sea. However, regarding the literature data ¹ , it is known that dune habitats are present along the Blacksea, Marmara Sea, Aegean Sea and Mediterranean Sea, despite the EUNIS Level III classification for whole Turkey is not currently available. Therefore, top soil management is sufficient for the recovery of this habitat according to the local experts.
B3.3 Rock ledges, and		0,703573	-	-	-	-	36 m ROW corridor no longer intersects with B3.3 habitat.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
shores, with angiosperms							
E1.00 Anatolian gypsum steppes	H	1483,487	78,45	5,29	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Implement strategies for soil protection * Storing the gypsum rocks without mixing them with the top soil (for some parts) * Seed collection from endemic flora species * Translocation for some endemic flora species * Relocation for some endemic flora species 	<p>This habitat type is quite common around Sivas, Çankırı and Erzincan in Turkey. It can also be seen in small fragments in several provinces of the Central Anatolia, including Eskişehir and Kırşehir. Along the route, this habitat type was identified in Sivas, Eskişehir and Kırşehir. As gypsum habitat differs slightly from province to province, the endemic species distributed in the gypsum habitats in each province vary as well. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
E1.01 Marl Steppe	H	477,819	27,304	5,71	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Terracing to prevent erosion (for some parts) * Seed collection from endemic flora species * Implementation of re-vegetation 	Marl steppe habitat can be seen in discrete forms in several parts of the Central Anatolia. The composition of plant communities differ from region to region. It can be seen in Ankara and Eskişehir along the project route. The soil is very poor in organic matter. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
E1.22 Arid subcontinental steppic grassland	H	576,032	42,768	7,42	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) 	Arid subcontinental steppic grassland habitat can be seen in Bursa, Balıkesir, Çanakkale and Edirne along the route. This habitat type is the Marmara Region vicariant of the Irano-Turanian-Anatolian Steppe habitat, widely distributed in the Central and East Anatolia Regions. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
E1.2B Serpentine steppes	H	800,674	54,594	6,82	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Implement strategies to minimize impacts to soil structure, quality and capability * Seed collection from endemic flora species * Implementation of re-vegetation 	Serpentine steppe is found in Erzincan and Sivas along the route. This habitat type is also present in Burdur Province ³ . Vegetation cover of the plants growing in this habitat is poor, whereas the rate of endemism is quite high. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
E1.2E Irano-Anatolian steppes	H	14409,69	941,7738	6,54	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Seed collection from endemic flora species * Stones and rocks should be stored nearby the construction site (for some parts) 	Irano-Anatolian steppe, one of the most frequent habitat types along the route, can be seen in Erzurum, Kars, Erzincan, Sivas, Gümüşhane, Bayburt, Giresun, Yozgat, Kırşehir, Ankara, Eskişehir and Bilecik. This habitat type is also present in Burdur Province ³ . Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows	M	2073,965	153,263	7,39	L	<ul style="list-style-type: none"> * Terracing to prevent erosion (for some parts) * Implementation of re-vegetation 	This habitat type is quite common in the East Anatolia Region. Natural mesotrophic pastures are harvested by local people in late June and July each year to provide winter feed for livestock. Therefore, this habitat can be considered as a modified habitat. This habitat type can be seen in the Ardahan, Kars and Erzurum along the TANAP Project route. Top soil management is sufficient for the recovery of this habitat according to the local experts.
	H	287,2358	16,049	5,59	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Seed collection from endemic flora species * Implementation of re-vegetation 	This habitat type can be seen in Erzincan, Sivas, Ankara and Tekirdağ along the route. It develops around small water sources within the Irano-Turanian steppe and is characterised by herbaceous species. The water demand of these species is more than those of the steppe species. In this habitat, in general, cosmopolitan species are distributed. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
E3.4 Moist or wet eutrophic and mesotrophic grassland	M	587,3364	33,598	5,72	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Seed collection from endemic flora species * Minimise riparian disturbance wherever practicable * Rehabilitation of the riparian vegetation, aquatic and semi aquatic areas (Plant nursery trees of minimum 2 years old up to 5 years old, transplantation, translocation etc.) 	Moist or wet eutrophic and mesotrophic grassland formations can be seen in Ardahan, Kars, Erzurum, Sivas and Çanakkale along the route. Plants with a high water demand grow in this habitat. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
E4.4 Calcareous alpine and subalpine grassland	M	3934,294	283,532	7,21	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) 	Calcareous alpine and subalpine grassland formations can be seen in Ardahan, Kars and Erzurum along the route. This habitat type is very common particularly above 2,000 m in Ardahan. The E4.4 habitat type covers wide areas in the East Anatolia Region. Occasionally, the subalpine grassland and wet grassland habitats merge into each other depending upon



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
E6.2 Continental inland salt steppes and marshes	H	81,662	5,351	6,55	L	<ul style="list-style-type: none"> * Seed collection from endemic flora species * Implementation of re-vegetation 	<p>the level of the groundwater. Both habitat types can be observed in this area nearby a temporary creek, fed by the waters of this creek. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>
						<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Top soil stripping in layers of 10-15 cm depth, together with the plants on it, and storing nearby the ROW * Seed collection from endemic flora species * Rehabilitation of the riparian vegetation, aquatic and semi aquatic areas (Plant nursery trees of minimum 2 years old up to 5 years old, transplantation, translocation etc.) 	<p>Along the project route, one of the most interesting, most sensitive and most important (in terms of biodiversity) habitat is the continental inland salt steppes. This habitat type can only be seen in the Erzurum Plain along the TANAP Project route. But according to the literature studies, E6.2 habitat type is distributed in Ankara². Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
F2.2 Evergreen alpine and subalpine heath and scrub	M	24,009	0,748	3,12	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise scrub clearance * Seed collection from endemic flora species * Implementation of re-vegetation 	This habitat type is seen only in Erzincan along the route. This habitat type is observed in elevations of the northern part of the Central Anatolia Region and in the elevations of the East Anatolia Region. This habitat type, characterised by short and creeping plants and shrubs. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
F5.3 Pseudomaquis	M	77,806	4,409	5,67	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) 	Pseudomaquis formation can be seen only in Balıkesir along the route. In consequence of the destruction of the maquis vegetation in the Marmara Region, a pseudomaquis habitat developed, which is mainly dominated by species in the form of thornbush. Top soil management is sufficient for the recovery of this habitat according to the local experts.
G1.1 Riparian and gallery woodland, with dominant [Alnus],	M	31,65	1,86	5,89	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread 	Such woodlands are distributed only around Posof in Ardahan along the route. This habitat type is also present in Burdur Province ³ . This habitat found along river banks. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
[<i>Betula</i>], [<i>Populus</i>] or [<i>Salix</i>]	or					<p>properly on ROW in reinstatement phase)</p> <ul style="list-style-type: none"> * Minimise tree felling * Minimise riparian disturbance wherever practicable * Seed collection from non-endemic natural plants of the region to control erosion * Rehabilitation of the riparian vegetation, aquatic and semi aquatic areas (Plant nursery trees of minimum 2 years old up to 5 years old, transplantation, translocation etc.) * Implementation of biorestoration techniques soon after construction prevents erosion * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G1.3 Mediterranean riparian woodland	M	839,895	53,58	6,38	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Minimise riparian disturbance wherever practicable * Implementation of biorestoration techniques soon after construction to prevent erosion * Rehabilitation of the riparian vegetation, aquatic and semi aquatic areas (Plant nursery trees of minimum 2 years old up to 5 years old, transplantation, translocation etc.) * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	Mediterranean riparian woodlands, one of the most frequent habitat types along the route, can be seen in Erzurum, Sivas, Gümüşhane, Yozgat, Bilecik, Bursa, Balıkesir, Çanakkale and Edirne along the route. This habitat found along river banks. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G1.7 Thermophilous deciduous woodland	M	3497,033	165,92	4,74	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Store stones and rocks nearby the ROW (for some parts) * Seed collection from endemic flora species * Translocation (for some endemic flora species) * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry * Implementation of re-vegetation 	Thermophilous deciduous woodland habitat, one of the most frequent habitat types along the route, was observed in Sivas, Gümüşhane, Yozgat, Eskişehir, Bilecik, Kütahya, Bursa, Balıkesir, Çanakkale, and Kırklareli along the route. The characteristic tree species of such woodlands are oaks. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
G1.9 Non-riverine woodland with [<i>Betula</i>], [<i>Populus tremula</i>] or	H	202,86	9,94	4,9	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread 	Natural <i>Betula pendula</i> woodlands are distributed only in Ardahan in along the project route. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
[<i>Sorbus aucuparia</i>]						<p>properly on ROW in reinstatement phase)</p> <ul style="list-style-type: none"> * Narrowed down the construction corridor (in Posof WDA) * Time constraint (Complete construction works between August-October) * Minimise tree felling * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	
G1.A Meso- and eutrophic [<i>Quercus</i>], [<i>Carpinus</i>], [<i>Fraxinus</i>], [<i>Acer</i>], [<i>Tilia</i>], [<i>Ulmus</i>] and related woodland	H	211,075	12,032	5,70	L	<p>* Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase)</p> <ul style="list-style-type: none"> * Minimise tree felling * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	<p>This habitat type is rather seen around Posof, Ardahan along the route. This habitat is more arid compared to <i>Betula pendula</i> woodlands. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G2.1 Mediterranean evergreen [Quercus] woodland	M	1800,649	7,172	3,97	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	Although this habitat is widespread in the Mediterranean Basin and in Turkey in the Mediterranean and the Aegean Regions, it is seen in the Thrace Region, Çanakkale, Edirne and Tekirdağ along the route. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
G3.4 [Pinus sylvestris] woodland south of the taiga	H	1038,144	54,265	5,23	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Seed collection from endemic flora species * Reforest at least equal to the cut trees appointed by the 	Natural <i>Pinus sylvestris</i> woodlands can be seen in Ardahan, Erzincan, Kars and Sivas along the route. One of the best representatives of this habitat is the Sankamış Forest. The dominant tree species of this habitat is <i>Pinus sylvestris</i> . However, <i>Populus tremula</i> woodlands can also be found, albeit infrequently, in the openings of <i>Pinus sylvestris</i> woodlands. This habitat is locally important both for their habitat characteristics and the local range species they host. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G3.5 [<i>Pinus nigra</i>] woodlands						<p>Regional Directorates of Forestry</p> <ul style="list-style-type: none"> * Implementation of re-vegetation * Store stones and rocks of 30 cm or larger without mixed them with the top soil (for some parts of the habitat) 	
	H	997,723	52,73	5,28	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Seed collection from endemic flora species * Terracing to prevent erosion (for some parts) * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry * Implementation of re-vegetation 	<p><i>Pinus nigra</i> woodlands can be seen in Bilecik and Bursa along the route. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G3.75 [<i>Pinus brutia</i>] forests	M	281,1905	16,54	5,88	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Seed collection from endemic flora species * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry * Implementation of re-vegetation 	<p>This habitat type is widespread in the Mediterranean Basin in the world, and in Turkey in the Mediterranean and the Aegean Regions between 0-1,000 m. <i>Pinus brutia</i> forests can be seen in Bursa and Edirne along the route. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>
G3.9 <i>Juniperus</i> woodland	M	175,186	9,2129	5,26	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling 	<p><i>Juniperus</i> woodlands can be seen only in Kars and Kütahya along the route. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.</p>



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G3.F Highly artificial coniferous plantations	L	2146,199	140,79	6,56	L	<ul style="list-style-type: none"> * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry * Implementation of re-vegetation 	
G4.B Mixed mediterranean [Pinus] - thermophilous [Quercus] woodland	M	674,463	37,24	5,52	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry 	Highly artificial coniferous plantation habitat can be seen in Ardahan, Erzincan, Bursa, Çanakkale, Edirne and Tekirdağ along the TANAP Project route. The planted pines vary from region to region. While plantations of <i>Pinus sylvestris</i> are common in Ardahan and Erzincan, <i>Pinus pinaster</i> , <i>Pinus pinea</i> , <i>Pinus brutia</i> and <i>Cupressus sempervirens</i> plantations exist in the western provinces. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
						<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) 	Along the route, in the Bursa province the <i>Pinus nigra</i> woodlands developing on serpentine main rock and the mixed oak woodlands are locally important, both for their habitat characteristics and the local range species they host. In Bursa section of the route, black pine and deciduous mixed oak forests form pure communities at some points, while black pines



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
G5.1 Line of trees on field and roadside	L	121,8357	7,70	6,32	L	<ul style="list-style-type: none"> * Minimise tree felling * Seed collection from endemic flora species * Reforest at least equal to the cut trees appointed by the Regional Directorates of Forestry * Implementation of re-vegetation 	and deciduous oaks together form mixed forests in some other areas. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.
H5.3 Sparsely-vegetated habitats	M	10,2148	-	-	-	-	36 m ROW corridor no longer intersects with H5.3 habitat.



EUNIS HABITAT TYPE	Sensitivity *	Coverage in 500 m Corridor (ha)	Coverage in 36 m (ha)	Degree of Degradation for 36 m in 500 m Corridor (%)	Impact Level	Mitigation Measures	Remarks
X18 Wooded step	L	789,0951	50,56	6,41	L	<ul style="list-style-type: none"> * Top soil management (Topsoil stripping at full depth before construction, storing along one side of the ROW appropriately during the construction and spread properly on ROW in reinstatement phase) * Minimise tree felling * Seed collection from endemic flora species * Implementation of re-vegetation 	This habitat type is widespread in Turkey, can be seen in Erzincan, Giresun, Kütahya and Bursa along the route. The trees are sparse and the openings are steppes. Thus, steppe species are more widespread. Mitigation measures are sufficient for the recovery of this habitat according to the local experts.

¹ Ertek, A., Formation of coastal dunes, their progression, distribution and some problematic dune areas from Türkiye, 7th Coastal Engineering Symposium, 15-22 pp.

² Mergen, O, Karacaoğlu, C, 2015, Tuz Lake Special Environment Protection Area, Central Anatolia, Turkey: The EUNIS Habitat Classification and Habitat Change Detection between 1987 and 2007, Ecology, 24, 95, 1-9 (In Turkish).

³ Özçelik, H, Çinbilgel, İ, Muca, B, Koca, A, Tavuç, İ, Bebekli, Ö, 2014, Burdur İli Karasal ve İç Su Ekosistem Çeşitliliği, Koruma ve İzleme Çalışmaları, SDU Journal of Science (E-Journal), 9 (2): 12-43 (In Turkish).

* The sensitivity levels of habitats are defined in accordance with National Biological Diversity Strategy and Action Plan.

H: High

M: Medium

L: Low

NOTE: EUNIS Level III classification for whole Turkey isn't known for now. The Level 3 EUNIS Habitat Map for 500 m study corridor, created from CORINE Land Cover, satellite imagery, aerial photos and existing literature. Baseline data collection was collected to confirm the distribution of the habitats defined at desktop level adopting the EUNIS standardized habitat system within the 500 m corridor.



ANNEX 2

**ASSESSMENT OF THE PROTECTED AND CONSERVATION
AREAS WHICH INTERSECTS WITH THE TANAP PROJECT
ROUTE**



Assessment of the protected and conservation areas which intersects with the TANAP Project route

Protected and conservation area name	National or International Status	Province	Area size [ha]	Area intersected by the 36 m corridor [ha]	Degree of habitat loss/degradation/conversion pre mitigation %	Impact Level
Posof Wildlife Development Area (Posof Forests) including Posof PBA	Wildlife Development Area, KBA, PBA	Ardahan	65666,81	117,25	0,18	L
Ardahan Forests	IBA, KBA	Ardahan	25562,01	66,69	0,26	L
Putka Gölbaşı Wetland (buffer zone)	Wetland	Ardahan	4181,536	25,28	0,60	L
Allahuekber Mountains	KBA	Erzurum, Kars	295918,9	127,589	0,04	L
Sarıkamış National Park (Sarıkamış Forests) including Sarıkamış PBA	National Park, Wildlife Protection Area, IBA, KBA, PBA	Kars, Erzurum	78927	80,86	0,10	L
Erzurum Marsh Wetland	Wetland, KBA	Erzurum	15911,13	70,68	0,44	L
Gölova Lake(s)	Wetland, KBA	Sivas	4932	6,19	0,13	L
Refahiye Forests	KBA	Erzincan, Sivas	240610,78	117,77	0,05	L
Hafik and Zara Hills	IBA, KBA, IPA	Sivas	103108,95	199,1	0,19	L



Protected and conservation area name	National or International Status	Province	Area size [ha]	Area intersected by the 36 m corridor [ha]	Degree of habitat loss/degradation/conversion pre mitigation %	Impact Level
Mağara Lake Buffer Zone	Wetland	Sivas	1310,68	8,85	0,68	L
Batakılıkdüzü 2 Wetland	Wetland	Sivas	674,96	8,52	1,26	L
Çoraklık Lake Wetland	Wetland	Sivas	391,44	7,81	2,00	L
Tuzlu Lake Wetland	Wetland	Sivas	55,05	1,63	2,96	L
Balıklıkaya Wetland	Wetland	Sivas	1129,03	2,7	0,24	L
Açıkır Steppe	KBA, IPA	Eskişehir, Ankara	98399,99	148,25	0,15	L
Manyas Lake (row, buffer zone)	National Park, Ramsar Area, Natural Sit Area, IBA, KBA	Balıkesir	43462,18	18,18	0,04	L
Saros Gulf	SEPA, IBA, KBA	Çanakkale	81971,12	11,07	0,01	L



ANNEX 3

TERRESTRIAL CRITICAL HABITAT ASSESSMENT



Terrestrial Critical Habitat Assessment

CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	Mitigation Measures
CH1	003+000-003+735	0,735	M	Ardahan	POSOF WDA + POSOF PBA+POSOF FOREST (KBA)	Criterion 4	G1.A	H	Zygaena armena (Arthropoda)	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (Reseda armena var. armena) * The top soil between 003+000-003+735 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW. The seeds of Reseda armena var. armena shall be collected along one side of the ROW between 15 July-30 August. For Arthropoda species (Zygaena armena) * The seeds of Coronilla and Onobrychis species, which are the feeding plants of Zygaena armena shall be collected along one side of the ROW between 15 July-30 August. For Amphibia Species (Mertensiella caucasica) * At the beginning of April, a field study should be carried out by experts, and if Mertensiella caucasica will be observed, individuals should be carried to the appropriate and close aquatic areas by specialists according to the methodology. * If Mertensiella caucasica species will be observed in the ROW, the construction works cannot be done before the April, because this species is going to hibernation. * If Mertensiella caucasica species is observed in the area, it should be ensured that the habitat is restored by restoring the stones and rocks in and near the aquatic environment after construction. For Habitat * The top soil between 003+000-003+735 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW.
							G1.1	M	Reseda armena var. armena (Flora)	M	Criterion 2	Tier 2 (b)			
									Mertensiella caucasica Caucasian Salamander (Amphibia)	M	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
															* The seeds of the non-endemic native plants of the region shall be collected. * The seeds of non-endemic native plants shall be planted on the ROW for erosion control in dip slopes after construction works.



CH2	003+940-004+051	0,111	M	Ardahan	POSOF WDA + POSOF PBA+POSOF FOREST (KBA)	Criterion 4	G1.A	H	Zygaena armena (Arthropoda)	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Reseda armena</i> var. <i>armena</i>) * The top soil between 003+000-003+735 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW. The seeds of <i>Reseda armena</i> var. <i>armena</i> shall be collected along one side of the ROW between 15 July-30 August. For Arthropoda species (<i>Zygaena armena</i>) * The seeds of Coronilla and Onobrychis species, which are the feeding plants of <i>Zygaena armena</i> shall be collected along one side of the ROW between 15 July-30 August. For Amphibia Species (<i>Mertensiella caucasica</i>) * At the beginning of April, a field study should be carried out by experts, and if <i>Mertensiella caucasica</i> will be observed, individuals should be carried to the appropriate and close aquatic areas by specialists according to the methodology. * If <i>Mertensiella caucasica</i> species will be observed in the ROW, the construction works cannot be done before the April, because this species is going to hibernation. * If <i>Mertensiella caucasica</i> species is observed in the area, it should be ensured that the habitat is restored by restoring the stones and rocks in and near the aquatic environment after construction. * The seeds of non-endemic native plants shall be planted on the ROW for erosion control in dip slopes after construction works. For Habitat * The top soil between 003+940-004+051 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW. * The seeds of the non-endemic native plants of the region shall be collected.
							G1.1	M	Reseda armena var. armena (Flora)			Tier 2 (b)			
							E4.4	M	Mertensiella caucasica (Amphibia)			Criterion 2			
									Caucasian Salamander						



																	* The seeds of non-endemic native plants shall be planted on the ROW for erosion control in dip slopes after construction works.
CH3	20+700-23+000	2,3	H	Ardahan		Criterion 4	G1.9	H	<i>Tipula n.sp</i> (<i>Arthropoda</i>)	H	Criterion 2	Tier 1 (a)	Criterion 2 & 4	L		* Closed construction period: 1 June-1 July because of the vegetation period of flora species.	



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
					POSOF WDA + POSOF FOREST (KBA)										For Flora Species (<i>Centaurea macrocephala</i> and <i>Lilium kesselringianum</i>) * The top soil shall be scraped at a depth of 10-15 cm between 20+700-23+000 KP's and shall be stored along one side of the ROW. * The seeds of <i>Centaurea macrocephala</i> species shall be collected along one side of the ROW between 15 July-30 August. * The bulbs of <i>Lilium kesselringianum</i> shall be collected between (21+529-22+070) KP's before or during the top soil scraping and shall be stored along one side of the ROW. For Arthropoda Species (<i>Erebia ottomana</i>) * The areas which Poaceae is very dense (between 20+725-21+078 / 22+235-22+615 KP's) shall be harvested and shall be stored along one side of the ROW. For Habitat * The top soil shall be scraped at a depth of 10-15 cm between 20+700-23+000 KP's and shall be stored along one side of the ROW.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH4	23+670-27+081	3,411	M	Ardahan	POSOF WDA + POSOF FOREST (KBA)	Criterion 4	E4.4	M	<i>Prometheomys schaposchnikowi</i> Long-clawed Mole Vole (Mammalia)	H	Criterion 2	Tier 2 (b)	Criterion 2 & 4	L	* Closed construction period: 15 May-15 August because of breeding period for <i>Prometheomys schaposchnikowi</i> For Mammalian Species (<i>Prometheomys schaposchnikowi</i>) * The top soil shall be scraped at a depth of 10-15 cm between 23+670-27+081KP's and shall be stored along one side of the ROW. * <i>Prometheomys schaposchnikowi</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology. * When the nest gallery system is being excavated, the nest material and the stored food found in the nest should also be carried to the new transferred nesting area and should be placed inside the gallery entrance so that the members can take them in their new nests they are building. For Habitat * The top soil shall be scraped at a depth of 10-15 cm between 23+670-27+081KP's and shall be stored along one side of the ROW.
CH5	62+320-63+140	0,82	H	Ardahan	ARDAHAN FOREST (IBA, KBA)	Criterion 4	E4.4	M	<i>Lathyrus karsianus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 June-15 July because of the vegetation period of flora species For Flora Species (<i>Lathyrus karsianus</i>, <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i>) * The top soil between 62+320-63+140 KP's shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. *The seeds of <i>Lathyrus karsianus</i> species shall be collected along one side of the ROW between 1 July-1 August; the seeds of <i>Tanacetum coccineum</i> ssp. <i>chamaemelifolium</i> species shall



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH6		2,242	H	Ardahan	-	-	E4.4	M	(Arthropoda) <i>Erebia ottoman</i> Ottoman Ringlet (Arthropoda)	H	Criterion 1	Tier 2 (e)	L	be collected along one side of the ROW between 15 July-15 August. For Arthropoda Species (<i>Phengaris nausithous</i>, <i>Erebia ottomana</i>, <i>Tipula n.sp</i>) * The top soil between 62+320-63+140 KP's shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * Herbaceous plants shall be harvested and stored along one side of the ROW. For Habitat * The top soil between 62+320-63+140 KP's shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
	84+758-87+000								Dusky Large Blue (Arthropoda / Butterfly)		Criterion 2	Tier 2 (b)	Criterion 1 & 2		<p>For Arthropoda Species (<i>Phengaris nausithous</i>)</p> <p>* The top soil between 84+758-87+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Sanguisorba</i>, which is the feeding plant of <i>Phengaris nausithous</i>, shall be collected along one side of the ROW.</p> <p>* Top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks if the construction works start at summer.</p> <p>* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.</p> <p>For Habitat</p> <p>* The top soil between 84+758-87+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.</p>



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH7	115+393-116+000	0,607	H	Kars	ALLAHUEKBER MOUNTAINS (KBA)	Criterion 4	E4.4	M	<i>Phengaris nausithous</i> <i>Dusky Large Blue</i> <i>(Arthropoda / Butterfly)</i>	H	Criterion 1	Tier 2 (e)	Criterion 1, 2 & 4	L	<p>For Arthropoda Species (<i>Phengaris nausithous</i>)</p> <p>* The top soil between 115+393-116+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Sanguisorba</i>, which is the feeding plant of <i>Phengaris nausithous</i>, shall be collected along one side of the ROW.</p> <p>* Top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks if the construction works start at summer.</p> <p>* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.</p> <p>For Habitat</p> <p>* The top soil between 115+393-116+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.</p>



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH8	116+069-116+637	0,568	H	Kars	ALLAHUEKBER MOUNTAINS (KBA)	Criterion 4	E4.4	M	<i>Phengaris nausithous</i> <i>Dusky Large Blue</i> <i>(Arthropoda / Butterfly)</i>	H	Criterion 1	Tier 2 (e)	Criterion 1, 2 & 4	L	For Arthropoda Species (<i>Phengaris nausithous</i>) * The top soil between 116+069-116+637 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
															* The seeds of <i>Sanguisorba</i> , which is the feeding plant of <i>Phengaris nausithous</i> , shall be collected along one side of the ROW.
															* Top soil shall be scraped at a depth of 10-15 cm with the plants on it as tufts (including <i>Sanguisorba</i> sp.), and shall be stored along one side of the ROW, and shall be irrigated once every two weeks if the construction works start at summer.
CH9	164+345-164+566	0,221	M	Kars	-	-	E1.2E	H	<i>Darevskia uzzelli</i> <i>Uzzell's Lizard</i> <i>(Reptilia)</i>	H	Criterion 1	Tier 2 (e)	Criterion 1 & 2	L	For Habitat * The top soil between 116+069-116+637 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
															* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.
															* Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil.
														* Closed prior to 15th of July because of the species hibernation period	



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH10	167+000-167+154	0,154	M	Kars	-	-	E1.2E	H	<i>Darevskia unisexualis</i> Unisexual Lizard (Reptilia)	H	Criterion 2	Tier 2 (b)			For Reptilian Species (<i>Darevskia uszelli</i>, <i>Darevskia unisexualis</i>) * The top soil between 164+345-164+566 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Darevskia uszelli</i> and <i>Darevskia unisexualis</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology at the beginning of the July. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil For Habitat * The top soil between 164+345-164+566 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil
CH10	167+000-167+154	0,154	M	Kars	-	-	E1.2E	H	<i>Darevskia uszelli</i> Uzzell's Lizard (Reptilia)	H	Criterion 1	Tier 2 (e)	Criterion 1 & 2	L	* Closed prior to 15th of July because of the species hibernation period



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Darevskia unisexualis</i> <i>Unisexual Lizard</i> <i>(Reptilia)</i>	H	Criterion 2	Tier 2 (b)			For Reptilian Species (<i>Darevskia uzzelli</i>, <i>Darevskia unisexualis</i>) * The top soil between 167+000-167+154 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Darevskia uzzelli</i> and <i>Darevskia unisexualis</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology at the beginning of the July. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil For Habitat * The top soil between 167+000-167+154 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil
CH11	169+000-174+000	5	M	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	E3.4	M	<i>Otis tarda</i> <i>The great bustard</i>	M	Criterion 1	Tier 2 (d)	Criterion 1 & 4	L	For Bird Species (<i>Otis tarda</i>) * If the <i>Otis tarda</i> individuals will be seen, they shall be removed from the area by specialists.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
						G3.F	L	(Bird)							* If the nest, eggs or mature individuals in the incubation will be seen, the construction works shall be stopped until the chicks feed themselves. * The top soil between 169+000 - 174+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If adult <i>Otis tarda</i> individuals are observed, they shall be removed by specialist. * If incubating adults or nests or eggs of <i>Otis tarda</i> are observed, construction shall be stopped and is prohibited until eggs hatch and the chicks feed themselves * If adult <i>Otis tarda</i> individuals are observed, they shall be removed by specialist. * If incubating adults or nests or eggs of <i>Otis tarda</i> are observed, construction shall be stopped and is prohibited until eggs hatch and the chicks feed themselves
CH12	174+412-176+000	1,588	H	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	G3.4	H	<i>Eulasia chrysopyga</i> (Arthropoda)	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 June-1 July because of the vegetation period of flora species For Flora Species (<i>Hieracium sarykamyschense</i>) * The top soil between 174+412-176+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Hieracium sarykamyschense</i> species shall be collected along one side of the ROW between 15 July-15 August. For Arthropod Species (<i>Eulasia chrysopyga</i>) and for habitat * The top soil between 174+412-176+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH13	187+557-193+000	5,443	M	Kars	SARIKAMIŞ FOREST (IBA, KBA)	Criterion 4	E4.4	M	<i>Lathyrus karsianus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 June-1 July because of vegetation period of the flora species For Flora Species (<i>Lathyrus karsianus</i> , <i>Hieracium sarykamyschense</i>) * The top soil between 187+557 - 193+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Lathyrus karsianus</i> and <i>Hieracium sarykamyschense</i> species shall be collected along one side of the ROW between 1 July-1 August For Fauna Species (<i>Eulasia chrysopyga</i> , <i>Phengaris nausithous</i> , <i>Zonitis nigritravis</i>) * The top soil between 187+557 - 193+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August, at the end of the vegetation period from the between (191+117-191+251 / 191+690-191+947) KP's and shall be stored nearby the construction site. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil For Habitat * The top soil between 187+557 - 193+000 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil
							G3.4	H	<i>Eulasia chrysopyga</i> (Arthropoda)	M	Criterion 2	Tier 2 (b)			
							E2.1	M	<i>Phengaris nausithous</i> Dusky Large Blue (Arthropoda / Butterfly)	H	Criterion 1 Criterion 2	Tier 2 (e) Tier 2 (b)			
							E3.4	M	<i>Zonitis nigritravis</i> (Arthropoda)	M	Criterion 2	Tier 2 (b)			
							G3.F	L	<i>Hieracium sarykamyschense</i> (Flora)	H	Criterion 1	Tier 2 (d)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH14	202+930-203+709	0,779	M	Kars	-	-	E4.4	M	<i>Zonitis nigritravis</i> (Arthropoda)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	For Arthropoda species (<i>Zygaena armena</i>) * The top soil between 202+930-203+709 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of the vegetation period from the between (202+930-203+709) KP's and shall be stored nearby the construction site. For Habitat * The top soil between 202+930-203+709 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW
CH15	214+885-219+641	5,641	M	Erzurum	-	-	E1.2E	H	<i>Montivipera wagneri</i> Wagner's Viper (Reptilia)	H	Criterion 1	Tier 2 (c)	Criterion 1 & 2	L	* Closed construction period: 1 March – 15 July because of the vegetation period of flora species and hibernation period of reptilian species For Flora Species (<i>Salvia huberi</i>, <i>Cephalaria sparsipilosa</i>, <i>Eryngium wanaturi</i>, <i>Cousinia bicolor</i>) * The top soil between 214+885-219+641 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia huberi</i> species shall be collected from the ROW between 1 July-1 August and the seeds of <i>Cephalaria sparsipilosa</i> , <i>Eryngium wanaturi</i> and <i>Cousinia bicolor</i> species shall be collected from the ROW between 15 July-15 August. For Reptilia Species (<i>Montivipera wagneri</i>) * <i>Montivipera wagneri</i> individuals shall be carried to the appropriate and close areas by specialists according to the methodology and to the (38 T
							E2.1	M	<i>Salvia huberi</i> (Flora)	H	Criterion 2	Tier 2 (b)			
							E4.4	M	<i>Cephalaria sparsipilosa</i> (Flora)	M	Criterion 2	Tier 2 (b)			
									<i>Eryngium wanaturi</i> (Flora)	M	Criterion 2	Tier 2 (b)			
									<i>Polyommatus merhaba</i> Hi Blue (Arthropoda – Butterfly)	H	Criterion 1	Tier 2 (e)			
									<i>Cousinia bicolor</i>	H	Criterion 1	Tier 2 (d)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH16	232+172-232+787	0,615	M	Erzurum	-	-	E1.2E	H	(Flora) <i>Cousinia bicolor</i> (Flora)	H	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)	Criterion 1 & 2	L	268212.00-4446232.00) coordinates at the begining of the July. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. For Arthropoda Specie (<i>Polyommatus merhaba</i>) * The seeds of <i>Onobrychis</i> and <i>Astragalus</i> flora species shall be collected from the ROW between 15 July – 30 August. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. For Habitat * The top soil between 214+885-219+641 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Stones and rocks of 30 cm or larger on the soil shall be stored nearby the construction site, without mixing them with the top soil. * In the regions between the (219+415-219+540) KP's terracing shall be carried out to prevent erosion.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH17	306+365-312+319 (except highway)	5,873	H	Erzurum	ERZURUM MARSHES BUFFER ZONE (WETLAND, KBA)	Criterion 4	E6.2	M	<i>Vanellus gregarius</i> The sociable lapwing (Bird)	H	Criterion 1 Criterion 3	Tier 2 (c) Tier 2 (b)	Criterion 1, 2, 3 & 4	L	* The top soil between 232+172-232+787 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Closed construction period: March and between 15 September-30 October because of the migration period of bird specie For Flora Species (<i>Lepidium caespidosum</i>) * The top soil between 306+365-312+319 (except highway, 0,081 m) shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW with harvested wet meadows with their soil if construction works starts in spring. * The top soil between the (306+365-306+460) KP's shall be removed in layers of 10-15 cm depth, together with the plants on it, and shall be stored nearby the construction site and shall be irrigated once every two weeks if construction works start at spring or autumn. * The seeds of <i>Lepidium caespidosum</i> species shall be collected between 15 July-15 August. For Bird Species (<i>Vanellus gregarius</i>) No construction activities should be carried out in March and between 15 September-30 October, when it is the migration periods. For Habitat * The top soil between 306+365-312+319 (except highway, 0,081 m) shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW with harvested wet meadows with their soil if construction works starts in spring.
							E1.2E	H	<i>Lepidium caespidosum</i> (Flora)	M	Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH18															* The top soil between the (306+365-306+460) KP's shall be removed in layers of 10-15 cm depth, together with the plants on it, and shall be stored nearby the construction site and shall be irrigated once every two weeks if construction works start at spring or autumn.
CH18	369+037-369+126	0,089	H	Erzurum	-	-	E1.00	H	<i>Thymus canoviridis</i> (Flora)	H	Criterion 2	Tier 2 (b)	Criterion 2	L	<p>For Flora Species (<i>Thymus canoviridis</i>)</p> <p>* The top soil between 369+037-369+126 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* <i>Thymus canoviridis</i> species shall be collected along one side of the ROW between 15 July-15 August.</p> <p>* The <i>Thymus canoviridis</i> species individuals shall be collected as tufts and shall be transferred to the (37 S 642551.00-423058.00) coordinates between 15 July-15 August.</p> <p>For Habitat</p> <p>* The top soil between 369+037-369+126 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the construction site.</p>
CH19		4,831	M	Erzurum	-	-	E1.2E	H	<i>Polyommatus antidolus</i>	H	Criterion 2	Tier 2 (b)	Criterion 2	L	



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
	385+169-390+000					G1.7	M	Anatolian Furry Blue (Arthropoda – Butterfly)							For Arthropoda Species (<i>Polyommatus antidolus</i>) * 20 cm of top soil between 385+169-390+000 KP's of the ROW (which is ant's nest depth) shall be scraped 15 days before the construction works and shall be stored along one side of the ROW. * The stones and rocks shall be stored nearby the construction site. * The seeds of the plants of the <i>Onobrychis</i> and <i>Astragalus</i> genus, which are the food plants of the larvae, shall be collected between 15 July – 30 August. For Habitat * 20 cm of top soil between 385+169-390+000 KP's of the ROW (which is ant's nest depth) shall be scraped 15 days before the construction works and shall be stored along one side of the ROW. * The stones and rocks shall be stored nearby the construction site.
CH20	393+489-394+339	0,85	M	Erzincan	-	-	E1.2E	H	Zonitis nigritravis (Arthropoda)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	For Arthropoda Species (<i>Zonitis nigritravis</i>) * The top soil between 393+489-394+339 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Tall plants belonging to the <i>Compositae</i> , <i>Labiatae</i> , <i>Leguminosae</i> families in the area shall be harvested at the end of August; at the end of the vegetation period and shall be stored nearby the construction site. For Habitat * The top soil between 393+489-394+339 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH21		2,227	M	Erzincan	-	-	E1.2E	H	Salvia huberi	H	Criterion 2	Tier 2 (b)	Criterion 2	L	



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH22	432+592-434+819								(Flora)						For Flora Species (<i>Salvia huberi</i> , <i>Cousinia halyensis</i>) * The top soil between 432+592-434+819 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Salvia huberi</i> species shall be collected between 1 July-1 August, the seeds of <i>Cousinia halyensis</i> species shall be collected between 15 July-15 August. For Habitat * The top soil between 432+592-434+819 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW
									<i>Cousinia halyensis</i>	M	Criterion 2	Tier 2 (b)			
CH22	451+458-454+120	2,662	M	Erzincan	-	-	E1.2E	H	<i>Isatis glauca</i> ssp. <i>sivasica</i>	M	Criterion 2	Tier 2 (b)	Criterion 2	L	For Flora Species (<i>Isatis glauca</i> ssp. <i>sivasica</i>) * 20 cm of top soil between 451+458-454+120 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. * The seeds of <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Onobrychis</i> and <i>Astragalus</i> species shall be collected between 15 July-15 August. For Arthropoda Species (<i>Polyommatus actis</i>) * 20 cm of top soil between 451+458-454+120 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. For Habitat * 20 cm of top soil between 451+458-454+120 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW.
									<i>Polyommatus actis</i>	H	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH23															* Terracing shall be carried out at the (451+966-452+070/ 453+894-454+000) KP's to prevent erosion.
	518+154-521+487	3,333	M	Gümüşhane	-	-	E1.2E	H	<i>Tanacetum densum ssp. sivasicum</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Tanacetum densum ssp. sivasicum</i>) * The seeds of <i>Tanacetum densum ssp. sivasicum</i> , <i>Onobrychis</i> and <i>Astragalus</i> species shall be collected between 1 July-1 August. * 20 cm of top soil between 518+154-521+487 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. For Arthropoda Species (<i>Polyommatus actis</i>) * 20 cm of top soil between 518+154-521+487 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. For Habitat * 20 cm of top soil between 518+154-521+487 KP's of the ROW (which is ant's nest depth) shall be scraped together with rocks and stones 15 days before the construction works and shall be stored along one side of the ROW. * The seeds of non-endemic native plants shall be collected and planted on the ROW for erosion control in dip slopes after construction.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH24	537+806-543+711	5,905	M	Erzincan-Gümüşhane	-	-	E1.2E	H	<i>Tanacetum albipannosum</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Tanacetum albipannosum</i>) * The top soil between 537+806-543+711 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Tanacetum albipinnosum</i> species shall be collected between 1 July-1 August. For Habitat * The top soil between 537+806-543+711 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH25	564+425-565+125	0,7	M	Erzincan	-	-	X18	L	<i>Isatis undulata</i> (Flora)	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Isatis undulata</i>) * The top soil between 564+425-565+125 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Isatis undulata</i> species shall be collected between 1 July-1 August. For Habitat * The top soil between 564+425-565+125 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW
CH26	588+880-590+358	1,478	M	Erzincan	REFAHİYE FOREST (KBA)	Criterion 4	G3.F	L	<i>Cochlearia sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4	L	* Closed construction period: 1 June – 1 July because of the vegetation period of flora species For Flora Species (<i>Cochlearia sintenisii</i>) * The top soil between 588+880-590+358 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be collected between 1 July-1 August. For Habitat



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
															* The top soil between 588+880- 590+358 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW
CH27	604+940-608+000	03.Haz	M	Erzincan-Sivas	REFAHİYE FOREST (KBA)	Criterion 4	E1.2B	H	<i>Cochlearia sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2 & 4	L	* Closed construction period: 1 June – 1 July because of the vegetation period of flora species For Flora Species (<i>Cochlearia sintenisii</i>) * The top soil between 604+940-608+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cochlearia sintenisii</i> species shall be collected between 1 July-1 August For Habitat * The top soil between 604+940-608+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW
CH28	614+648-626+000	11,352	H (E1.2B), M (G3.4, F2.2, G1.7)	Sivas	REFAHİYE FOREST (KBA)	Criterion 4	E1.2B	H	<i>Bellevalia crassa</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4	L	* Closed construction period: 1 June – 1 July because of the vegetation period of flora species For Flora Species (<i>Bellevalia crassa</i>, <i>Asperula capitellata</i>, <i>Cochlearia sintenisii</i>, <i>Thymus cappadocicus</i> var. <i>pruinosus</i>, <i>Achillea sintenisii</i>) * The top soil between 614+648-626+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The bulbs of <i>Bellevalia crassa</i> species shall be collected along one side of the ROW and carried to out of the ROW. * The seeds of the <i>Asperula capitellata</i> , <i>Cochlearia sintenisii</i> , and <i>Thymus cappadocicus</i> var. <i>pruinosus</i> species shall be collected along one



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures	
CH29	632+635-634+183	1,548	M	Sivas	-	-	E1.2E	H	<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 1 & 2	L	side of the ROW between 1 July-1 August; the seeds of the <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 July-15 August. For Habitat * The top soil between 614+648-626+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.	
									<i>Isatis undulata</i> (Flora)		Criterion 1	Tier 2 (d)				* Closed construction period: 1 June – 1 July because of the vegetation period of flora species
									<i>Cochlearia sintenisii</i> (Flora)		Criterion 2	Tier 2 (b)				For Flora Species (<i>Isatis undulata</i>, <i>Cochlearia sintenisii</i>) 632+635 - 634+183 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be collected along one side of the ROW, from the (37 S 431034.20-4418698.72) coordinates between 1 July-1 August. For Habitat 632+635 - 634+183 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Terracing shall be carried out at the (633+257-633+562) KP's to prevent erosion on the dip slopes after construction works.
CH30	634+285-634+864	0,579	M	Sivas	-	-	E1.2E	H	<i>Isatis undulata</i> (Flora)	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 June – 1 July because of the vegetation period of flora species	



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH31	634+906-634+932	0,026	H	Sivas	-	-	G1.3	M	<i>Cochlearia sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)			For Flora Species (<i>Isatis undulata</i> , <i>Cochlearia sintenisii</i>) 634+285- 634+864KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Isatis undulata</i> and <i>Cochlearia sintenisii</i> species shall be collected between 1 July-1 August. For Habitat 634+285- 634+864KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Terracing shall be carried out at the (634+736-634+858) KP's to prevent erosion on the dip slopes after construction.
							E1.2E	H	<i>Hexatoma n. sp.</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 2	L	For Arthropoda Species (<i>Hexatoma n. sp.</i> , <i>Tipula n.sp</i>) and for Habitat * The top soil between 634+906- 634+932 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH32	652+000-654+878	2,878	H	Sivas	-	-	E1.00	H	<i>Gypsophila heteropoda ssp. minutiflora</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Gypsophila heteropoda ssp. minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa var. gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca ssp. sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stelleroides</i>) * The top soil between 652+000-654+878 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Gypsophila heteropoda ssp. minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 1	Tier 2 (d)			
										H	Criterion 2	Tier 2 (b)			
										H	Criterion 1	Tier 2 (d)			
										H	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Minuartia corymbulosa var. gypsophiloides</i> (Flora)		Criterion 2	Tier 2 (b)			seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa var. gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stellerooides</i> species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank.

For Arthropoda Species (*Tipula n.sp*)

* The top soil between 652+000-654+878 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.

* Gypsum rocks excavated during activity shall be stored nearby the construction site.

For Habitat

* The top soil between 652+000-654+878 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.

* Gypsum rocks excavated during activity shall be stored nearby the construction site.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH33	656+000-656+431	0,431	H	Sivas	-	E1.00	H		<i>Tipula n.sp</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 1 & 2	L	<p>* Closed construction period: 1 May – 1 June because of the vegetation period of flora species</p> <p>For Flora Species (<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sivasica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stellerooides</i>)</p> <p>* The top soil between 656+000-656+431 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sivasica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stellerooides</i></p>
									<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> (Flora)	H	Criterion 2	Tier 2 (b)			
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 2	Tier 2 (b)			
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 2	Tier 2 (b)			
									<i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> (Flora)	H	Criterion 2	Tier 2 (b)			
									<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)			
									<i>Centaurea sivasica</i> (Flora)	M	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Gypsophila aucheri</i> (Flora)	M	Criterion 2	Tier 2 (b)			species shall be collected between 15 June-15 July. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. For Arthropoda Species (<i>Tipula n.sp</i>) * The top soil between 656+000-656+431 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. For Habitat



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH34	660+353-660+456	0,103	H	Sivas	-	-	E1.00	H	<i>Tipula n.sp</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)			* The top soil between 656+000-656+431 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site.
									<i>Gypsophila heteropoda ssp. minutiflora</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>, <i>Achillea sintenisii</i>, <i>Centaurea sivasica</i>, <i>Gypsophila aucheri</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Scorzonera aucherana</i>, <i>Scrophularia lepidota</i>, <i>Thesium stellerooides</i>)
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 1	Tier 2 (d)			* The top soil between 660+353 - 660+456 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Gypsophila heteropoda ssp.</i>
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>	H	Criterion 1	Tier 2 (d)			
											Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
									(Flora)						<p><i>Achillea sintenisii</i> M Criterion 2 Tier 2 (b)</p> <p><i>Centaurea sivasica</i> M Criterion 2 Tier 2 (b)</p> <p><i>Gypsophila aucheri</i> M Criterion 2 Tier 2 (b)</p> <p><i>Isatis glauca ssp. sivasica</i> M Criterion 2 Tier 2 (b)</p> <p><i>Scorzonera aucherana</i> M Criterion 2 Tier 2 (b)</p> <p><i>Scrophularia lepidota</i> M Criterion 2 Tier 2 (b)</p> <p><i>Thesium stelleroides</i> M Criterion 2 Tier 2 (b)</p>

minutiflora and *Chrysocamela noeana* species shall be collected between 1 June-20 July; the seeds of *Astragalus zaraensis* and *Minuartia corymbulosa* var. *gypsophiloidea*, *Achillea sintenisii*, *Centaurea sivasica*, *Gypsophila aucheri*, *Isatis glauca* ssp. *sivasica*, *Scorzonera aucherana*, *Scrophularia lepidota*, *Thesium stelleroides* species shall be collected between 15 June-15 July.

* Some of the collected seeds of *Chrysocamela noeana*, *Isatis glauca* ssp. *sivasica* species must be given to the seed gene bank.

For Arthropoda Species (*Tipula n.sp*)

* The top soil between 660+353 - 660+456 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.

* Gypsum rocks excavated during activity shall be stored nearby the construction site.

For Habitat

* The top soil between 660+353 - 660+456 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Tipula n.sp</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)			* Gypsum rocks excavated during activity shall be stored nearby the construction site.
CH35	661+206-661+709	0,503	H	Sivas	-	-	E1.00	H	Gypsophila heteropoda ssp. <i>minutiflora</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Chrysocamela noeana</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stellerooides</i>) * The top soil between 661+206 - 661+709 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									(Flora)						* The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> and <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 July; the seeds of <i>Astragalus zaraensis</i> and <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Achillea sintenisii</i> , <i>Centaurea sivasica</i> , <i>Gypsophila aucheri</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> , <i>Scorzonera aucherana</i> , <i>Scrophularia lepidota</i> , <i>Thesium stellerooides</i> species shall be collected along one side of the ROW between 15 June-15 July. * The <i>Astragalus zaraensis</i> , <i>Achillea sintenisii</i> , <i>Scorzonera aucherana</i> , <i>Thymus pectinatus</i> , <i>Gypsophila eriocalyx</i> species individuals shall be removed as tufts from the (661+236-661+267 / 661+353-661+387 / 661+432-661+461 / 661+531-661+576) KP's and shall be transferred to the (37 S 407182.00-4414267.00) coordinates. * Some of the collected seeds of <i>Chrysocamela noeana</i> , <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. For Arthropoda Species (<i>Tipula n.sp</i>) * The top soil between 661+206 - 661+709 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. For Habitat * The top soil between 661+206 - 661+709 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the construction site. <i>Thymus pectinatus</i> , <i>Gypsophila eriocalyx</i> species individuals shall be removed as tufts from the (661+236-661+267 / 661+353-661+387 / 661+432-661+461 / 661+531-661+576) KP's and shall be transferred to the (37 S 407182.00-



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
															4414267.00) coordinates. * Terracing shall be carried out between the (661+448-661+704) KP's.
CH36	683+613-683+648	0,035	H	Sivas	HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	<i>Dysmachus safranboliticus</i> (<i>Arthropoda</i>)	H	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species For Flora Species (<i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>) * The top soil between 683+613-683+648 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Astragalus zaraensis</i> , <i>Achillea sintenisii</i> , <i>Astragalus aytatchii</i> , <i>Centaurea sivasica</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> ,



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 1	Tier 2 (d)			<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 1 June-20 June. * The <i>Astragalus zaraensis</i> species individuals shall be removed as tufts from the (37 S 386761.62 4408728.69) coordinates and shall be transferred to the (37 S 386759.46-4408680.42) coordinates. * The individuals of the <i>Achillea sintenisii</i> species shall be transferred to the (37 S 386759.46-4408680.42) coordinates. * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH37	683+924-683+963	0,039	H	Sivas	HAFIK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	<i>Dysmachus safranboliticus</i> (<i>Arthropoda</i>)	H	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	<p>* Closed construction period: 1 May – 1 June because of the vegetation period of flora species</p> <p>For Flora Species (<i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i>)</p> <p>* The top soil between 683+613-683+648 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Astragalus aytatchii</i>, <i>Centaurea sivasica</i>, <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> and <i>Thymus pectinatus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i>, <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 1 June-20 June.</p> <p>* The <i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>, <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (683+934-683+954) KP's and shall be transferred to the (37 S 386463.44-4408686.64)</p> <p>* Some of the collected seeds of <i>Chrysocamela</i></p>
									<i>Astragalus zaraensis</i> (<i>Flora</i>)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
									<i>Achillea sintenisii</i> (<i>Flora</i>)	M	Criterion 2	Tier 2 (b)			
									<i>Astragalus aytatchii</i> (<i>Flora</i>)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
									<i>Centaurea sivasica</i> (<i>Flora</i>)	M	Criterion 2	Tier 2 (b)			
									<i>Chrysocamela noeana</i> (<i>Flora</i>)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
									<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> (<i>Flora</i>)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
										H	Criterion 1	Tier 2 (d)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Minuartia corymbulosa var. gypsophiloides</i> (Flora)		Criterion 2	Tier 2 (b)			<p><i>noeana</i> species must be given to the seed gene bank.</p> <p>For Arthropoda Species (<i>Dysmachus safranboliticus</i>)</p> <p>* The top soil between 683+613-683+648 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* Herbaceous plants shall be harvested and 10-15 cm of top soil of the ROW shall be scraped and stored along one side of the ROW.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the construction site.</p> <p>For Habitat</p> <p>* The top soil between 683+613-683+648 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* Herbaceous plants shall be harvested and 10-15 cm of top soil of the ROW shall be scraped and stored along one side of the ROW.</p> <p>* Gypsum rocks excavated during activity shall be stored nearby the construction site.</p>



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH38	700+549-701+087	0,538	H	Sivas	MAGARA LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	Astragalus aytatchii (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May – 1 June because of the vegetation period of flora species
									Gypsophila heteropoda ssp. minutiflora (Flora)	H	Criterion 1	Tier 2 (d)			For Flora Species (Astragalus aytatchii, Gypsophila heteropoda ssp. minutiflora, Astragalus zaraensis, Chrysocamela noeana, Minuartia corymbulosa var. gypsophiloidea, Onobrychis stenostcahya ssp. krausei, Achillea sintenisii, Achillea sipikorensis, Centaurea sivasica, Isatis glauca ssp. sivasica)
									Astragalus zaraensis (Flora)	H	Criterion 1	Tier 2 (d)			* The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									Chrysocamela noeana (Flora)	H	Criterion 1	Tier 2 (d)			* The seeds of Astragalus aytatchii, Astragalus zaraensis, Minuartia corymbulosa var. gypsophiloidea, Onobrychis stenostcahya ssp. krausei, Achillea sintenisii, Achillea sipikorensis, Centaurea sivasica, Isatis glauca ssp. sivasica species shall be collected along one side of the ROW between 15 June-15 July; the seeds of Gypsophila heteropoda ssp. minutiflora, Chrysocamela noeana species shall be collected along one side of the ROW between 1 June-20 June.
									Minuartia corymbulosa var. gypsophiloidea (Flora)	H	Criterion 1	Tier 2 (d)			* The seeds of Astragalus aytatchii, Astragalus zaraensis, Minuartia corymbulosa var. gypsophiloidea, Onobrychis stenostcahya ssp. krausei, Achillea sintenisii, Achillea sipikorensis, Centaurea sivasica, Isatis glauca ssp. sivasica species shall be collected along one side of the ROW between 15 June-15 July; the seeds of Gypsophila heteropoda ssp. minutiflora, Chrysocamela noeana species shall be collected along one side of the ROW between 1 June-20 June.
									Onobrychis stenostcahya ssp. krausei (Flora)	H	Criterion 1	Tier 2 (d)			* The seeds of Astragalus aytatchii, Astragalus zaraensis, Minuartia corymbulosa var. gypsophiloidea, Onobrychis stenostcahya ssp. krausei, Achillea sintenisii, Achillea sipikorensis, Centaurea sivasica, Isatis glauca ssp. sivasica species shall be collected along one side of the ROW between 15 June-15 July; the seeds of Gypsophila heteropoda ssp. minutiflora, Chrysocamela noeana species shall be collected along one side of the ROW between 1 June-20 June.
									Achillea sintenisii (Flora)	M	Criterion 2	Tier 2 (b)			* The Astragalus zaraensis, Achillea sintenisii, Achillea sipikorensis and Thymus pectinatus species individuals shall be removed as tufts between the (700+757-701+006) KP's and shall be transferred to the (37 S 370016.63-4408569.92 /37 S 370096.00-4408596.00) coordinates.
									Achillea sipikorensis (Flora)	M	Criterion 2	Tier 2 (b)			* Some of the collected seeds of Chrysocamela noeana and Isatis glauca ssp. sivasica species
									Centaurea sivasica (Flora)	M	Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
									<i>Isatis glauca ssp. sivasica</i> (Flora)	M	Criterion 2	Tier 2 (b)			must be given to the seed gene bank. For Habitat * The top soil shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the ROW. * The <i>Astragalus zaraensis</i> , <i>Achillea sintenisii</i> , <i>Achillea sipikorensis</i> and <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (700+757-701+006) KP's and shall be transferred to the (37 S 370016.63-4408569.92 /37 S 370096.00-4408596.00) coordinates. * The removed individuals of the <i>Astragalus zaraensis</i> , <i>Achillea sintenisii</i> , <i>Achillea sipikorensis</i> and <i>Thymus pectinatus</i> species as tufts shall be planted at the (700+757-701+006) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again after construction works.
CH39	708+677-708+890	0,213	H	Sivas	BATAKLIKDÜZÜ 2 BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Achillea sintenisii</i>, <i>Astragalus zaraensis</i>, <i>Chrysocamela noeana</i>, <i>Minuartia corymbulosa var. gypsophiloides</i>) * The top soil between 708+677-708+890 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa var.</i>
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
									<i>Chrysocamela noeana</i> (Flora)	H	Criterion 1	Tier 2 (d)			
										Criterion 2	Tier 2 (b)				
										H	Criterion 1	Tier 2 (d)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Minuartia corymbulosa var. gypsophilooides</i> (Flora)		Criterion 2	Tier 2 (b)			<i>gypsophilooides</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June * Some of the collected seeds of <i>Chrysocamela noeana</i> species must be given to the seed gene bank. For Habitat * The top soil between 708+677-708+890 KP's should be scraped at a depth of 10-15 cm and should be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the ROW.
CH40	713+855-713+956	0,101	H	Sivas	ÇETME LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Achillea sintenisii</i>, <i>Gypsophila aucheri</i>, <i>Gypsophila heteropoda ssp. minutiflora</i>, <i>Onosma sintenisii</i>, <i>Centaurea sivasica</i>) * The top soil between 713+855- 713+956 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> , <i>Centaurea sivasica</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Gypsophila heteropoda ssp. minutiflora</i> species
									<i>Gypsophila aucheri</i> (Flora)	M	Criterion 2	Tier 2 (b)			
									<i>Gypsophila heteropoda ssp. minutiflora</i> (Flora)	H	Criterion 1	Tier 2 (d)			
											Criterion 2	Tier 2 (b)			
									<i>Onosma sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Centaurea sivasica</i> (Flora)	M	Criterion 2	Tier 2 (b)			shall be collected along one side of the ROW between 1 June-20 June. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. For Habitat * The top soil between 713+855- 713+956 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the ROW.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH41	720+035-720+290	0,255	H	Sivas	TUZLU LAKE BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> , <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i>)
									<i>Astragalus zaraensis</i> (Flora)	H	Criterion 1	Tier 2 (d)			* The top soil between 720+035-720+290 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. *The seeds of <i>Gypsophila heteropoda</i> ssp. <i>minutiflora</i> species shall be collected along one side of the ROW between 1 June-20 June; the seeds of <i>Astragalus zaraensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> , <i>Achillea sintenisii</i> , <i>Gypsophila aucheri</i> , <i>Onosma sintenisii</i> species shall be collected along one side of the
									<i>Minuartia corymbulosa</i> var. <i>gypsophiloidea</i> (Flora)	H	Criterion 1	Tier 2 (d)			
									<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)			
									<i>Gypsophila aucheri</i>	M	Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH42	729+485-729+571	0,086	H	Sivas	BALIKLIKAYA BUFFER ZONE (WETLAND) + HAFİK ZARA HILLS (IBA, KBA, IPA)	Criterion 4	E1.00	H	(Flora) <i>Onosma sintenisii</i>	M	Criterion 2	Tier 2 (b)	Criterion 1, 2 & 4	L	ROW between 15 June-15 July. * Some of the collected seeds of <i>Onosma sintenisii</i> species must be given to the seed gene bank. For Habitat * The top soil between 720+035-720+290 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the ROW. * Terracing shall be carried out at the (720+035-720+083) KP's to prevent erosion after construction.
CH43		0,165	H	Sivas		Criterion 4	E1.00	H	(Flora) <i>Astragalus zaraensis</i> (Flora) <i>Achillea sintenisii</i>	H	Criterion 1 Criterion 2	Tier 2 (d) Tier 2 (b)		L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Astragalus zaraensis</i>, <i>Achillea sintenisii</i>) * The top soil between 729+485-729+571 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Astragalus zaraensis</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July. * The species individuals shall be removed as tufts between the (729+485-729+571) KP's and shall be transferred to the (37 S 343055.79-4409365.90) coordinates. For Habitat * The top soil between 729+485-729+571 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW." * Gypsum rocks excavated during activity shall be stored nearby the ROW.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
	733+201-733+366				HAFIK ZARA HILLS (IBA, KBA, IPA)				(Flora) <i>Isatis glauca ssp. sivasica</i>				Criterion 2 & 4		* Closed construction period: 1 May-1 June because of the vegetation period of flora species



CH44									<i>Achillea sintenisii</i> (Flora)	M	Criterion 2	Tier 2 (b)				For Flora Species (<i>Onosma sintenisii</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i>, <i>Achillea sintenisii</i>)
	0,145	H	Sivas	-	-	E1.00	H							L		<ul style="list-style-type: none"> * The top soil between 733+201- 733+366 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Onosma sintenisii</i>, <i>Isatis glauca</i> ssp. <i>sivasica</i> and <i>Achillea sintenisii</i> species shall be collected along one side of the ROW between 15 June-15 July. * The <i>Onosma sintenisii</i> and <i>Achillea sintenisii</i> species individuals shall be collected between the (733+205-733+234 / 733+262-733+292 / 733+327-733+350) KP's and shall be transferred to the (37 S 339751.11-4407877.07) coordinates. * Some of the collected seeds of <i>Onosma sintenisii</i> and <i>Isatis glauca</i> ssp. <i>sivasica</i> species must be given to the seed gene bank. * The removed individuals of the <i>Astragalus zaraensis</i>, <i>Gypsophila eriocalyx</i>, <i>Thymus pectinatus</i> species as tufts shall be planted at the (741+305-741+339) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again after construction works <p>For Habitat</p> <ul style="list-style-type: none"> * The top soil between 733+201- 733+366 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Gypsum rocks excavated during activity shall be stored nearby the ROW. * The removed individuals of the <i>Astragalus zaraensis</i>, <i>Gypsophila eriocalyx</i>, <i>Thymus pectinatus</i> species as tufts shall be planted at the (741+305-741+339) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again after construction works



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
	741+301-741+446								(Flora)				Criterion 1 & 2		* Closed construction period: 1 May-15 July because of the vegetation period of flora species For Flora Species (<i>Chrysocamela noeana</i> , <i>Astragalus zaraensis</i> , <i>Achillea sintenisii</i> , <i>Cousinia sivasica</i>) * The top soil between 741+301-741+446 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Cousinia sivasica</i> and <i>Astragalus zaraensis</i> species shall be collected along one side of the ROW (for erosion control) between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates. * Some of the collected seeds of <i>Cousinia sivasica</i> and <i>Chrysocamela noeana</i> species must be given to the seed gene bank. For Habitat * The top soil between 741+301-741+446 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Achillea sintenisii</i> , <i>Cousinia sivasica</i> and <i>Astragalus zaraensis</i> species shall be collected along one side of the ROW (for erosion control) between 15 June-15 July, the seeds of <i>Chrysocamela noeana</i> species shall be collected along one side of the ROW between 1 June-20 June. * The <i>Astragalus zaraensis</i> , <i>Gypsophila eriocalyx</i> , <i>Thymus pectinatus</i> species individuals shall be removed as tufts between the (741+305-741+339) KP's and shall be transferred to the (37 S 332575.24-4408252.16) coordinates.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH45															* Gypsum rocks excavated during activity shall be stored nearby the ROW.
	746+599-749+672	3,073	M	Sivas	-	-	E1.2E	H	<i>Dysmachus safranboliticus</i> (Arthropoda)	H	Criterion 2	Tier 2 (b)	Criterion 2		For Arthropoda Species (<i>Dysmachus safranboliticus</i>) * The top soil between 746+599-749+672 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested and stored along one side of the ROW. For Habitat * The top soil between 746+599-749+672 shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH46	802+361-802+428	0,067	H	Sivas	-	-	E2.5	H	<i>Hexatoma n. sp.</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 2	L	* Closed construction period: 1 May-15 July because of the vegetation period of flora species For Flora Species (<i>Cousinia halsensis</i>) * The top soil between 802+361-802+428 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halsensis</i> species shall be collected along one side of the ROW between 15 June-15 July. For Arthropoda Species (<i>Hexatoma n. sp.</i>) * The top soil between 802+361-802+428 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * <i>Juncus</i> species individuals between the (802+409-802+422) KP's shall be removed and transferred at the (37 S 276993.99-4415718.69) coordinates. For Habitat * The top soil between 802+361-802+428 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
							E1.2E	H	<i>Cousinia halsensis</i> (Flora)	M	Criterion 2	Tier 2 (b)			



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH47	802+454-802+755	0,301	H	Sivas	-	-	E1.2E	H	<i>Hexatoma n. sp.</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 2	L	* Closed construction period: 1 May-15 July because of the vegetation period of flora species For Flora Species (<i>Cousinia halysensis</i>) * The top soil between 802+454-802+755 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halysensis</i> species shall be collected between 15 June-15 July. For Arthropoda Species (<i>Hexatoma n. sp.</i>) and for habitat * The top soil between 802+454-802+755 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Cousinia halysensis</i> (Flora)	M	Criterion 2	Tier 2 (b)			
CH48	815+368-815+380	0,012	H	Sivas	-	-	E1.2E	H	<i>Hilara n. sp. 3</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 2	L	 For Arthropoda Species (<i>Hilara n. sp 3</i>) and for habitat * The top soil between 815+368-815+380KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The riparian vegetation at the creek bank between the (815+368-815+380) KP's shall be scraped at a depth of 10-15 cm as a layer and stored at the creek side.
CH49	846+021-846+224	0,203	H	Yozgat	-	-	G1.7	M	<i>Dioctria n. sp. 2</i> (Arthropoda)	H	Criterion 2	Tier 1 (a)	Criterion 2		 For Arthropoda Species (<i>Dioctria n. sp. 2, Dysmachus safranboliticus</i>) * The top soil between 846+021-846+224 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * Herbaceous plants shall be harvested at the (846+021-846+224) KP's and stored along one side of the ROW. For Habitat * The top soil between 846+021-846+224 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Dysmachus safranboliticus</i> (Arthropoda)	H	Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH50	945+058-945+445	0,387	M	Yozgat	-	-	E1.2E	H	<i>Cousinia hylsensis</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Cousinia hylsensis</i>) * The top soil between 945+058-945+445 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. *The seeds of <i>Cousinia hylsensis</i> species shall be collected along one side of the ROW between 15 June-15 July. For Habitat * The top soil between 945+058-945+445 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH51	993+073-993+795	0,722	M	Yozgat	-	-	E1.2E	H	<i>Cousinia hylsensis</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2		* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Cousinia hylsensis</i>) * The top soil between 993+073-993+795 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia hylsensis</i> species shall be collected between 15 June-15 July For Habitat * The top soil between 993+073-993+795 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH52	1029+605-1029+804	0,199	M	Yozgat	-	-	E1.00	H	<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Cousinia hylsensis, Thymus leucostomus</i>) * The top soil between 1029+605-1029+804 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia hylsensis</i> species shall be collected between 15 June-15 July.



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH53	1030+091-1030+310	0,219	M	Yozgat	-	-	E1.00	H	<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	For Habitat * The top soil between 993+073-993+795 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Cousinia halysensis</i> (Flora)	M	Criterion 2	Tier 2 (b)			* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Cousinia halysensis</i>, <i>Thymus leucostomus</i>) * The top soil between 1030+091-1030+310 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halysensis</i> species shall be collected between 15 June-15 July.
CH54	1139+490-1140+300	0,81	M	Ankara	-	-	E1.2E	H	<i>Cousinia halysensis</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	For Habitat * The top soil between 1030+091-1030+310 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)			* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Cousinia halysensis</i>) * The top soil between 1139+490-1140+300 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Cousinia halysensis</i> species shall be collected between 15 June-15 July.
CH55	1149+730-1149+900	0,17	M	Ankara	-	-	E1.01	H	<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH56	1208+945-1209+108	0,163	M	Ankara	-	-	E1.01	H	<i>Cousinia halsensis</i> (Flora)	M	Criterion 2	Tier 2 (b)			For Flora Species (<i>Cousinia halsensis</i> , <i>Thymus leucostomus</i>) * The top soil between 1149+730-1149+900 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> and <i>Cousinia halsensis</i> species shall be collected between 15 June-15 July. For Habitat * The top soil between 1149+730-1149+900 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Thymus leucostomus</i>) * The top soil between 1208+945 - 1209+108 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July. For Habitat * The top soil between 1208+945 - 1209+108 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH57	1223+54-1223+506	0,452	H	Eskişehir	ACIKIR STEPPE (KBA, IPA)	Criterion 4	E1.01	H	<i>Scutellaria yildirimli</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1, 2 & 4	L	* Closed construction period: 1 May-30 June because of the vegetation period of flora species For Flora Species (<i>Scutellaria yildirimli</i> , <i>Achillea ketenoglu</i> , <i>Astragalus physodes</i> ssp. <i>acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> , <i>Thymus leucostomus</i>) * The top soil between 1223+54 -1223+506 KP's shall be scraped at a depth of 10-15 cm and shall
									<i>Achillea ketenoglu</i> (Flora)		Criterion 1	Tier 2 (d)			
											Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
									<i>Astragalus physodes ssp. acikirensis</i> (Flora)		Criterion 2	Tier 2 (b)			be stored along one side of the ROW. * The seeds of <i>Scutellaria yildirimli</i> , <i>Achillea ketenoglui</i> , <i>Astragalus kochakii</i> , <i>Onobrychis paucijuga</i> species shall be collected along one side of the ROW between 1 June- 1 July; the seeds of <i>Astragalus physodes ssp. acikirensis</i> species shall be collected along one side of the ROW between 15 May-15 June; the seeds of <i>Thymus leucostomus</i> species shall be collected along one side of the ROW between 15 June-15 July; the seeds of <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> species shall be collected along one side of the ROW between 15 July-15 August; the seeds of <i>Cyathobasis fruticulosa</i> species shall be collected along one side of the ROW between 1 July-1 August. * Some of the collected seeds of <i>Achillea ketenoglui</i> , <i>Astragalus physodes ssp. acikirensis</i> , <i>Minuartia corymbulosa</i> var. <i>gypsophiloides</i> , <i>Astragalus kochakii</i> , <i>Cyathobasis fruticulosa</i> , <i>Onobrychis paucijuga</i> species must be given to the seed gene bank.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH58	1362+917-1363+753	0,836	L	Eskişehir	-	-	E1.2E	H	<i>Thymus leucostomus</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Thymus leucostomus</i>) * The top soil between 1362+917- 1363+753 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The seeds of <i>Thymus leucostomus</i> species shall be collected between 15 June-15 July. For Habitat * The top soil between 1362+917- 1363+753 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH59	1366+493-1366+692	0,199	M	Eskişehir	-	-	G1.7	M	<i>Salvia tchihatcheffii</i> (Flora)	M	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Salvia tchihatcheffii</i>) * The top soil between 1366+493 - 1366+692 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the construction works start in March 2015; the seeds of <i>Salvia tchihatcheffii</i> species shall be collected along one side of the ROW between 1 June-1 July. * The <i>Salvia tchihatcheffii</i> species individuals shall be collected as tufts between the (1366+512-1366+537) KP's and shall be transferred to the (36 S 276899.00-4396448.00) coordinates. * The translocated individuals of the <i>Salvia tchihatcheffii</i> species as tufts shall be planted at the (1366+512-1366+537) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again after construction works. For Habitat



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH60		0,343	H	Eskişehir	-	-	E1.01	H	<i>Dioclea n. sp. 1</i>	H	Criterion 2	Tier 1 (a)		L	* The top soil between 1366+493 - 1366+692 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * The <i>Salvia tchihatcheffii</i> species individuals shall be collected as tufts between the (1366+512-1366+537) KP's and shall be transferred to the (36 S 276899.00-4396448.00) coordinates. * The translocated individuals of the <i>Salvia tchihatcheffii</i> species as tufts shall be planted at the (1366+512-1366+537) KP's, where the terracing shall be carried out to prevent erosion and shall be irrigated until they root again after construction works.



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH61	1372+340-1372+683					G3.5	H		(Arthropoda)				Criterion 1 & 2		<p>* Closed construction period: 1 May-15 June because of the vegetation period of flora species</p> <p>For Flora Species (<i>Cephalaria aytachii</i>, <i>Gypsophila osmangaziensis</i>, <i>Alyssum niveum</i>, <i>Scabiosa hololeuca</i>, <i>Salvia tchihatcheffii</i>)</p> <p>* The top soil between 1372+340- 1372+683 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* The seeds of <i>Cephalaria aytachii</i>, <i>Gypsophila osmangaziensis</i>, <i>Scabiosa hololeuca</i> species shall be collected between 1 July-August, the seeds of <i>Alyssum niveum</i> and <i>Salvia tchihatcheffii</i> species shall be collected between 15 July-15 August.</p> <p>For Habitat</p> <p>* The top soil between 1372+340- 1372+683 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>* In the regions between the (1372+552-1372+683) KP's terracing shall be carried out to prevent erosion after construction works.</p>
									<i>Cephalaria aytachii</i>	H	Criterion 1	Tier 2 (d)			
									(Flora)		Criterion 2	Tier 2 (b)			
									<i>Gypsophila osmangaziensis</i>	H	Criterion 1	Tier 2 (d)			
									(Flora)		Criterion 2	Tier 2 (b)			
									<i>Alyssum niveum</i>	H	Criterion 1	Tier 2 (d)			
									(Flora)		Criterion 2	Tier 2 (b)			
									<i>Scabiosa hololeuca</i>	H	Criterion 1	Tier 2 (d)			
									(Flora)		Criterion 2	Tier 2 (b)			
									<i>Salvia tchihatcheffii</i>	M	Criterion 1	Tier 2 (d)			
									(Flora)		Criterion 2	Tier 2 (b)			
CH61	1430+920-1432+305	1,385	M	Kütahya	-	-	G1.7	M	<i>Erodium sibthorpiatum ssp. sibthorpiatum</i>	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	<p>* Closed construction period: 1 May-1 June because of the vegetation period of flora species</p> <p>For Flora Species (<i>Erodium sibthorpiatum ssp. sibthorpiatum</i>, <i>Astragalus densifolius ssp. ayashensis</i>)</p> <p>* The top soil between 1430+920- 1432+305 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.</p> <p>*The seeds of <i>Erodium sibthorpiatum ssp. sibthorpiatum</i> and <i>Astragalus densifolius ssp. ayashensis</i> species shall be collected between 1 June-1 July.</p> <p>For Habitat</p>
									(Flora)		Criterion 2	Tier 2 (b)			
							G3.5	H	<i>Astragalus densifolius ssp. ayashensis</i>	M	Criterion 2	Tier 2 (b)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH62	1477+452-1477+833	0,381	M	Bursa	-	-	G4.B	M	<i>Onosma briquetii</i> (Flora)	M	Criterion 2	Tier 2 (b)	Criterion 2		* The top soil between 1430+920- 1432+305 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. For Flora Species (<i>Onosma briquetii</i>) * The top soil between 1477+452 - 1477+833 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. *The seeds of <i>Onosma briquetii</i> species shall be collected between 1 June-1 July. For Habitat * The top soil between 1477+452 - 1477+833 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH63	1491+767-1496+340	4,573	H (G3.75, E1.22 G4.B), M (E3.4, G3.F, G3.5)	Bursa	-	-	G3.F	L	<i>Alyssum dudleyi</i> (Flora)	H	Criterion 1	Tier 2 (d)	Criterion 1 & 2	L	* Closed construction period: 1 May-1 June because of the vegetation period of flora species For Flora Species (<i>Alyssum dudleyi</i>, <i>Verbascum n.sp.</i>, <i>Dianthus goekayi</i>) * The top soil between 1491+767 - 1496+340 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
							G3.75	M			Criterion 2	Tier 2 (b)			
							E3.4	M							
							G4.B	M	<i>Dianthus goekayi</i>	H	Criterion 1	Tier 2 (d)			



Critical Habitat No	KP	Total Length (km)	Priority*	Province	Protected Area / High Biodiversity Area (If Intersects)	Criterion	EUNIS Habitat	Habitat Sensitivity*	SCC Species	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Final Criterion	Impact Level (Quantitative Assessment)*	Mitigation Measures
CH64	1736+000-1738+300	2,3	M	Çanakkale	-	-	Modified habitats (I1.1, I1.4, J5.4)	L	(Flora)		Criterion 2	Tier 2 (b)			* The seeds of <i>Alyssum dudleyi</i> species shall be collected between 1 June-1 July; <i>Dianthus goekayi</i> species shall be collected between 15 June-15 July. For Habitat * The top soil between 1491+767 - 1496+340 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
									<i>Phalacrocorax carbo</i> The great cormorant (Bird)	M	Criterion 3	Tier 2 (e)	Criterion 3	L	* Closed construction period: 1 February-30 March because of the flood season which constitute a wetland for congregatory bird species. For Bird Species (<i>Phalacrocorax carbo</i>, <i>Phalacrocorax pygmeus</i>) * The top soil between 1736+000 - 1738+300 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the populations, construction should be stopped until the species leave the site. For Habitat * The top soil between 1736+000 - 1738+300 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH65	1741+100-1741+500	0,4	M	Çanakkale	-	-	E1.22	H	<i>Spermophilus citellus</i> The European ground squirrel (Mammalia)	L	Criterion 2	Tier 2 (b)	Criterion 2	L	For Mammalian Species (<i>Spermophilus citellus</i>) * The top soil between 1741+100 - 1741+500 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If <i>Spermophilus citellus</i> individuals will be seen, they shall be carried to the appropriate and close



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
CH66	1788+300-1788+500	0,2	M	Edirne	-	-	G2.1	M	<i>Myomimus roachi</i> Mouse-tailed Dormouse (Mammalia)	L	Criterion 2	Tier 2 (b)	Criterion 2	L	areas by specialists according to the methodology. For Habitat * The top soil between 1741+100 - 1741+500 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.
CH67	1800+600-1805+000	4,4	H	Edirne	-	-	G1.3	M	<i>Phalacrocorax carbo</i> The great cormorant (Bird)	M	Criterion 3	Tier 2 (e)	Criterion 3	L	* Closed construction period: 1 February-30 March because of the flood season which constitute a wetland for congregatory bird species. For Bird Species (Phalacrocorax carbo, Phalacrocorax pygmeus, Cygnus olor, Cygnus Cygnus, Pelecanus onocrotalus) * The top soil between 1800 + 600 -1805+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW. * If the activity is intensive on the construction site and if the construction works have the risk of disturbing the members of the populations,
									<i>Phalacrocorax pygmeus</i> Pygmy cormorant (Bird)						
									<i>Cygnus olor</i> The mute swan (Bird)						



CRITICAL HABITAT NO	KP	TOTAL LENGTH (km)	PRIORITY*	PROVINCE	PROTECTED AREA / HIGH BIODIVERSITY AREA (IF INTERSECTS)	CRITERION	EUNIS HABITAT	HABITAT SENSITIVITY*	SCC SPECIES	PRIORITY	CRITERION	INDICATIVE TIER (QUANTITATIVE ASSESSMENT)	FINAL CRITERION	IMPACT LEVEL (QUANTITATIVE ASSESSMENT)*	MITIGATION MEASURES
									<i>Cygnus cygnus</i> The whooper swan (Bird)	M	Criterion 3	Tier 2 (e)			construction should be stopped until the species leave the site. For Habitat * The top soil between 1800 + 600 -1805+000 KP's shall be scraped at a depth of 10-15 cm and shall be stored along one side of the ROW.



ANNEX 4

FRESHWATER CRITICAL HABITAT ASSESSMENT



Freshwater Critical Habitat Assessment

Critical Habitat No	Critical Habitat Name (River Name)	KP	Province	Protected Area / High Biodiversity Area (If Intersects)	EUNIS Habitat	Priority	SCC (If Any)	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Impact Level (Quantitative Assessment)	Mitigation Measures
FCH1	Kura River	71+710-71+755	Ardahan	PUTKA-GÖLBAŞI BUFFER ZONE	C2.2	M	-	-	Criterion 4	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH2	Unknown Creek	166+450-166+571	Kars	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH3	Süngütaşı River	220+177-220+211	Erzurum	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH4	Kızıllarlık River	269+680-269+696	Erzurum		C2.3	M	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH5	Büyükdere River	280+401-280+414	Erzurum	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH6	Abitçayırlığı River	332+830-332+845	Erzurum	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH7	Baş River	353+584-353+613	Erzurum	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH8	Karasu River	372+760-372+903	Erzurum	-	C2.3	M	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH9	Değirmendere River	504+756-504+770	Gümüşhane	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (end of April-beginning of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH10	Unknown Creek-Oğütlü village	508+498-508+510	Gümüşhane	-	C2.3	M	<i>Oxyneomacheilus kosswigi</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out for Salmonid between December-November; for Oxynevamechelus kosswigi between May-June in the spawning periods (end of April-begining of July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
							<i>Salmo macrostigma</i> Macrostigma trout (Fish)	M	Criterion 2	Tier 2 (b)		
FCH11	Hafik	709+815-709+897	Sivas	HAFİK ZARA HILLS (KBA, IPA, IBA)	C2.3	L	<i>Gobio obtusirostris</i> (Fish)	M	Criterion 2, 4	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH12	Yıldız River	763+361-763+381	Sivas	-	C2.3	L	-	-	-	-	L	*No activities should be carried out in the spawning periods (April-July). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH13	Delice Stream	983+388-983+432	Yozgat	-	C2.3	M	<i>Cobitis simplicispinna</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH14	Kılıçözü River	1035+368-1035+377	Kırıkkale	-	C2.3	L	<i>Cobitis simplicispinna</i> (Fish)	-	-	-	L	*No activities should be carried out in the spawning periods (April-June) *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.
FCH15	Kızılırmak River	1087+890+1087+980	Kırıkkale	-	C2.2	M	-	-	-	-	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH16	Sakarya River	1214+260-1214+290	Eskişehir	ACIKIR STEPPEs (KBA, IPA)	C2.3	M	-	-	Criterion 4	-	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH17	Seydi Stream	1315+643-1315+665	Eskişehir	-	C2.3	L	<i>Cobitis simplicispinna</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
							<i>Gobio obtusirostris</i> (Fish)	M	Criterion 2	Tier 2 (b)		
FCH18	Seydi Stream	1323+270-1323+300	Eskişehir	-	C2.3	L	<i>Cobitis simplicispinna</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
							<i>Gobio obtusirostris</i> (Fish)	M	Criterion 2	Tier 2 (b)		
							<i>Chondrostoma angoranse</i> (Fish)	M	Criterion 2	Tier 2 (b)		



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FCH19	Tributary of Uludere	1396+221-1396+237	Eskişehir	-	C2.3	L	<i>Gobio obtusirostris</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH20	Tributary of Kocasu Stream-Soğucak	1461+293-1461+349	Kütahya	-	C2.3	M	<i>Oxyneomacheilus simavica</i> (Fish)	H	Criterion 1	Tier 1 (a/b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.
FCH21	Aliova Stream	1553+697-1553+730	Bursa	-	C2.3	M	<i>Oxyneomacheilus simavica</i> (Fish)	H	Criterion 1	Tier 1 (a/b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.



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FCH22	Sarp Creek	1565+865-1565+885	Bursa	-	C2.3	L	<i>Cobitis fahirae</i> <i>Aegean spined loach</i> (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.
FCH23	Simav Stream	1590+290-1590+362	Balikesir	-	C2.3	M	<i>Oxyneomacheilus simavica</i> (Fish)	H	Criterion 1	Tier 1 (a/b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.
FCH24	Mürvetler Stream	1605+400-1605+425	Balikesir	-	C2.3	M	<i>Oxyneomacheilus simavica</i> (Fish)	H	Criterion 1	Tier 1 (a/b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH25	Manyas-Kocacay Stream	1613+360-1613+419	Balikesir	-	C2.3	M	<i>Cobitis puncticulata</i> (Fish)	H	Criterion 1	Tier 1 (a/b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Manage all construction activities to the maximum extent possible in order to avoid or minimize soil



Critical Habitat No	Critical Habitat Name (River Name)	KP	Province	Protected Area / High Biodiversity Area (If Intersects)	EUNIS Habitat	Priority	SCC (If Any)	Priority	Criterion	Indicative Tier (Quantitative Assessment)	Impact Level (Quantitative Assessment)	Mitigation Measures
FCH26							<i>Cobitis fahirae</i> Aegean spined loach (Fish)	M	Criterion 2	Tier 2 (b)		erosion, sedimentation and impacts to aquatic and riparian vegetation at the crossing.
	Gönen Stream	1651+548-1651+598	Balıkesir	-	C2.3	M	<i>Anguilla</i> <i>European eel (Fish)</i>	H	Criterion 1 Criterion 3	Tier 2 (c) Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.
FCH27	Biga Stream	1689+784-1689+838	Çanakkale	-	C2.3	M	<i>Cobitis fahirae</i> Aegean spined loach (Fish)	M	Criterion 2	Tier 2 (b)	L	*No activities should be carried out in the spawning periods (April-June). *Control sediment release into the river bed. *Minimize construction activities to avoid or minimize soil erosion, sedimentation and impacts to riparian vegetation at the crossing. *Avoid impacts and removal to gravel areas at the crossing. *Install silt screens and sediment traps prior to initiating construction crossing activities and maintain the screens and traps during the crossing to prevent or minimize downstream sedimentation.

ANNEX 5

ALIEN INVASIVE SPECIES GUIDANCE DOCUMENT

ALIEN INVASIVE SPECIES GUIDANCE DOCUMENT



ÇINAR ENGINEERING & CONSULTANCY CO.

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PREFACE

This guidance document prepared for TANAP Project. Several sources have been reviewed and this document has been prepared synthetically.

TANAP Project Contractor's should develop management plans for Alien Invasive Species under the light of this document.

BIOLOGIST DR. ELİF MANAV TÜFEKÇİ

BIOLOGIST TUĞÇE ATAÇ



1. INTRODUCTION

Biological diversity faces many threats throughout the world. One of the major threats to native biological diversity is now acknowledged by scientists and governments to be biological invasions caused by Alien Invasive Species (AIS). The impacts of AIS are immense and insidious. They may be as damaging to native species and ecosystems on a global scale as the loss and degradation of habitats.

The spread of AIS is now recognised as one of the greatest threats to the ecological and economic well-being of the planet. These species are causing damage to biodiversity and the valuable natural agricultural systems upon which we depend. The effects are exacerbated by global change and chemical and physical disturbance to species and ecosystems.

Preventing introduction of potentially alien invasive species is by far the preferred strategy. To prevent spread, every alien species should be treated as potentially invasive unless and until convincing evidence indicates that this is not so. For deliberate introductions it is recommended that standardised risk analysis and risk management procedures be developed. Preventive measures must be taken at both the source and the destination of the invasion.

Invasive species already alter nutrient cycling, hydrology, fire regimes, light penetration levels, regeneration of native species populations and physical habitat structure throughout once healthy ecosystems. The long-term effects of these changes are unknown, but their rate of occurrence raises concern about the ability of native species to adapt, particularly in the face of reducing habitat availability, increasing human encroachment and the effects of climate change. We have anecdotal evidence that a number of species of special concern are declining and may be lost in the state as a result of invasive species. Recent research has shown that some invasive species can interact to cause the populations of even common species to collapse¹.



Transportation and utility corridors are at-risk sites for the introduction and spread of invasive plants. A corridor is a strip of land upon which linear facilities such as pipelines, roads, and power or communication lines are built and maintained. Regular use and the associated potential for soil disturbance within corridors provide opportunities for the movement of invasive plants through the landscape. Transportation and utility corridors may even cross geographic barriers that previously limited the spread of invasive plants².

In marine and coastal environments, invasive species have been identified as one of the four greatest threats to the world's oceans along with:

- land-based sources of pollution,
- over-exploitation of living resources, and
- physical alteration / destruction of habitats.

Invasive species also impact on commercial fisheries, including mariculture, and other natural-resource based industries, with serious economic implications for those communities dependent on them. In addition, fouling of physical structures by introduced species has major impacts on other industries by, for example, decreasing the speed of vessels and clogging water intake pipes³.



2. OBJECTIVES

This guidance document is intended to be comprehensive and therefore contain many objectives, but it is not suggested that implementers need to carry out everything. The goal of this document is to be guide on the prevention of losses of biological diversity due to the effects of alien invasive species.

This document recognized the following aspects of the problem;

- Shortage and inaccessibility of information on AIS and best practice management,
- Lack of awareness of the impacts of AIS,
- Insufficient networking, coordination and collaboration,
- Shortage of trained personnel and inadequate facilities⁴

and outlined measures to address them:

- Identifying actions that may affect the status of AIS,
- Preventing the introduction of AIS,
- Tracking status and locations of AIS in a timely and on-going manner,
- Controlling populations of AIS,
- Restoring invaded habitats,
- Managing vegetation along the ROW and its edge and other unpaved areas,
- Managing vegetation around safety devices and signs,
- Managing erosion on slopes,
- Maintaining ROW plantings and desired vegetation (and avoiding or reducing undesirable vegetation such as AIS),
- Maintaining environmental quality, including reducing AIS and promoting native communities⁵.

AIS List for Turkey taken from Global Invasive Species Database is given in Annex. Since there is no available information on regional distribution of AISs in Turkey,



the list given in Annex do not include information about AIS distribution on the regions where TANAP Project route is located. However Marmara Sea AIS list is reviewed for TANAP ESIA Report and this list is given in the Annex. This list can be used as reference species list in the preparation of LOT specific alien invasive species management plans.



3. DEFINITIONS⁶

Alien species: Alien species (also known as non-native, non-indigenous, foreign or exotic) means a species, subspecies or lower taxon occurring outside its natural range (past or present) and dispersal potential, i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans; it includes any part, gamete or propagule of such species that might survive and subsequently reproduce.

Biofouling: Defined as biological growth on man-made structures in the aquatic environment.

Endemic: Native to, and restricted to, a particular geographical region. Highly endemic species, i.e. those with very restricted natural ranges, are especially vulnerable to extinction if their natural habitat is eliminated or significantly disturbed.

Establishment: Refers to the process of an alien species in a new habitat successfully producing viable offspring with the likelihood of continued survival.

Introduction: Refers to the movement by human agency, indirect or direct, of an alien species outside its natural range (past or present). This movement can be within a country or between countries.

Intentional introduction: Refers to deliberate movements and/or release by humans of an alien species outside its natural range (such as pets, or ornamental or landscape plants).

Midstream: The midstream industry processes, stores, markets and transports commodities such as crude oil, natural gas, natural gas liquids and sulphur.

Native species: Also known as indigenous species, means a species, sub-species or lower taxon occurring within its natural range (past or present) and dispersal potential, i.e. within the range it occupies naturally or could occupy without direct or indirect introduction or care by humans.



Pathway—direct: Defined as an activity that can introduce AIS organisms themselves (such as transmission by vehicles, vessels, containers, etc. that may carry and transfer fauna and flora or any viable part, gamete or propagule).

Pathway—indirect: Defined as an activity that, while not actually introducing AIS organisms itself, creates favourable conditions that facilitate the introduction and/or establishment of AIS (e.g. activities that result in habitat disturbance, increased access, a new habitat type, etc.).

Receiving environment: An area to which AIS are introduced and subsequently where AIS impact, if any, will occur. Examples of receiving environments might be an island, an administrative district or area, a (semi-) enclosed water body, an area of an open water body.

Source environment: The environment (or environments) from which equipment, materials, vehicles and personnel (and potential AIS) originate.

Taxon (plural = taxa): A taxonomic group of living organisms, such as a species, genus or family, in a formal system of classification.

Unintentional introduction: Refers to all AIS introductions that are not intentional.

Vessel: In this document, the term vessel is used to define any man-made mobile structure that comes into contact with water, including normally stationary facilities, e.g. production platforms, that are usually towed to a site.

Best Management Practices (BMPs): Best Management Practices are methods or techniques found to be the most effective and practical in achieving an objective, such as preventing or minimizing invasive species spread, while making optimal use of resources².



4. ALIEN INVASIVE SPECIES PATHWAYS⁶

The means and routes by which invasive species are imported and introduced into new environments are called “pathways”.

The diversity of known and potential AIS is enormous and includes all taxonomic groups from micro-organisms to mammals and species from across the terrestrial, freshwater and marine plant and animal kingdoms.

AIS are generally spread of direct and indirect pathways:

Direct pathways may result from intentional and unintentional activities. Many species have been intentionally introduced to new environments for agricultural, horticultural, commercial and recreational purposes and, in many instances, for aesthetic reasons. Others have been unintentionally introduced as ‘hitchhikers’ on goods such as fresh produce and nursery stock, or as ‘stowaways’ on aircraft, vessels, in packing material, sea containers, ballast water and hull fouling.

Indirect pathways relate principally to habitat alteration and degradation, which allow AIS to gain a foothold and become established. Examples include the removal of vegetation, changes to drainage or land contours and actions that eliminate certain key predator species.

In practice, indirect ecological disturbance and the direct introduction of AIS often happen concurrently, such as in the movement of tracked construction vehicles over exposed soil. This can greatly increase the risk of invasion.

The oil and gas industry is certainly not unique in its potential to create direct and indirect pathways for AIS. However, it often works in remote areas with little or no previous human activity, moving specialized equipment and personnel between sites and developing large-scale linear features such as trans-boundary pipelines. These characteristics set it apart from many other sectors and increase the likelihood and potential severity/consequences of invasion if appropriate measures are not implemented.

Spread of onshore and offshore pathways of the AIS are given below.



4.1. ONSHORE PATHWAYS⁶

There are five main pathways for the introduction of AIS into new environments associated with onshore operations:

1. Physical introduction

2. Ecological disturbance

3. Corridor/physical pathways

4. Inappropriate reinstatement/reclamation

5. Personnel-related pathways

4.1.1. Physical introduction

- This includes the direct accidental introduction of reproductive bodies (e.g. seeds/eggs/spores) or whole organisms (e.g. insects/snakes) via personnel, temporary accommodation and vehicles (e.g. on tyres and tracked vehicles, and in supplies).
- Containers and packaging material used to transport equipment, materials, vehicles and supplies may also carry these bodies.
- Containers carry a high risk of AIS introduction: microorganisms, seeds, molluscs, insects and other small animals can stow away or 'hitchhike', and containers are difficult to inspect adequately. In one extreme case, a raccoon survived for about five weeks in a container while it was shipped from the USA to Europe, and was still able to walk out of the container.
- AIS can be found in or on the containers themselves, in the materials used for packaging and in the goods.



- Raw, untreated wood used in wooden crates, pallets and other timber supports is commonly found in shipments, and serves as a pathway for insects and plant diseases. Other packaging materials include plant material such as straw, hay or rice husks that may also harbour alien insect pests and diseases.
- While physical introduction is not unique to the oil and gas industry, it is significant because oil and gas activities may operate both on a large scale (e.g. cross-country pipelines) and, potentially, in remote, pristine or sensitive areas.

4.1.2. Ecological disturbance

- Human-induced imbalance in environmental systems may facilitate the establishment of AIS, which are, by their very nature, opportunistic and best able to establish themselves in degraded habitats. An example is the vine/climber AIS; its seeds can persist in undisturbed forest environments without growing, but once (anthropogenic) canopy removal causes changes in conditions, it can become invasive and smother native vegetation.
- Similarly, clearance of vegetation, and soil disturbance, can encourage colonization of the disturbed areas by invasive plants, and subsequent spreading of these species into undisturbed areas.
- Storage of soil is often necessary where excavations occur, such as in pipeline construction. Bare soil presents a prime habitat for opportunistic AIS.

4.1.3. Corridor/physical pathways

- Certain onshore oil and gas activities, such as construction/burial of long-distance pipelines can create the same AIS risk associated with all major linear disturbances (for example, highways and railroads). Pipeline ROW is thought to be one of the main ways for some AIS flora species.
- Linear disturbances may also facilitate movement of more motile AIS, such as feral cats, pigs and rats, and open up new areas to human hunters, affecting predator/prey dynamics and thus creating new opportunities for AIS.



4.1.4. Inappropriate reinstatement/ reclamation

- Some oil and gas activities create large-scale soil disturbance and it is common for such developments to be reinstated/reclaimed by reseeding of the soil, replanting and other techniques to promote the growth of vegetation and soil stabilization.
- Use of inappropriate seed mixes, for example, can result in the introduction of AIS seeds either directly or indirectly through the creation of a native plant community that is more prone to AIS invasion via other pathways.
- This aspect interacts closely with the ecological disturbances described above, which may exacerbate the effects of AIS introduction. Use of certain equipment during reclamation activities can aggravate, rather than address, ecological disturbance. For example, standard earthmoving equipment may cause compaction, resulting in a higher level of disturbance and increased opportunities for AIS to become established in preference to native plants. Finally, the timing of reinstatement/reclamation activities is important; for example, performing work in a season better suited to AIS than native vegetation may increase the risk of AIS establishment.

4.1.5. Personnel-related pathways

- In general, the health, safety and environmental restrictions for oil and gas projects and operations prevent the deliberate introduction of AIS by personnel. However, apparently innocuous activities at, for example, staff accommodation facilities (e.g. keeping cats and/or birds as pets or for pest control; growing ornamental or food plants; keeping fish in aquaria; or stocking water bodies with ornamental or game fish) may represent potential AIS pathways.
- In addition, while facilities such as base camps may not directly introduce AIS, they can provide refuges (and an initial ‘staging post’) for rats and mice moving towards new environments.

Also water is a potential AIS pathway for onshore operations. It may be moved on, off and between sites for a number of purposes, including:

- drainage;



- dust abatement on pipeline spreads;
- hydrotesting;
- vehicle/facility cleaning; and
- irrigation of vegetation (e.g. on-site landscaping or restoration of habitats).

A number of potential pathways exist for the transmission of smaller AIS such as fungal spores, plant seeds, and micro-invertebrates, particularly where water is collected from 'open' sources such as rivers or lakes⁷.

Watercraft and trailers are probably major contributors to the spread of invasive aquatic plants and animals (figure 1). New infestations of exotic aquatic plants and animals are often first discovered near boat ramps. Detailed inspections must be made before vehicles, trailers, and facility equipment in contact with raw water are moved from one water body to another⁷.



Figure 1. It is possible for mussel veligers and adults to attach to aquatic weeds; this photo shows aquatic weeds (macrophytes) caught on a boat trailer⁷

Zebra mussel is a complex inspection problem for river and lake ecosystems. Plant material is likely to be visually identified; however, the mussel veliger (the immature life stage) can attach to watercraft hulls, trailers, anchor ropes, and anything else that contacts an infested water body without being visually identified. Since the veliger is microscopic and cannot be seen without laboratory equipment, do not rely on visual inspection alone. Veligers can attach to a surface when they are "as small as a sesame seed"; therefore, they are detectable only by



feeling by hand along all surfaces and inside holes and crevices. On a smooth surface, mussel veligers will feel gritty, like sandpaper. As the veliger ages and grows, it may become visible to the unaided eye, appearing as a nondescript speck. Equipment that has been in water for a long period of time can become infested with adult mussels (figure 2).



Figure 2. Mussels on the lower unit of an inboard/outboard engine⁷

4.2. OFFSHORE PATHWAYS⁶

There are three main pathways for the introduction of AIS into new environments associated with offshore operations:

1. Biofouling

2. Ballast

3. Physical introduction

4.2.1. Biofouling

- Biofouling can be defined as biological growth on man-made structures in the aquatic environment.



- While biofouling communities are normal parts of the marine environment in their native range, they present a significant threat when they contain AIS.
- Recently, there has been a growing recognition that biofouling is a major pathway in the introduction of non-native species, some of which become AIS.
- Most marine organisms, whether they are pelagic (living in the water column, e.g. comb jellies and jellyfish), benthic (associated with the seabed, e.g. sea-squirts and polychaete worms), mobile or immobile, disperse their eggs and larvae into the water column; any given volume of water is therefore likely to contain benthic (potentially biofouling) organisms awaiting a suitable substrate on which to settle.
- In the marine environment, biofouling settlement can commence within hours.
- Some biofouling may be particularly hardy and adapted for life in harsh intertidal environments, and may only require a damp, shaded atmosphere and/or occasional wetting by spray or water to survive (e.g. barnacles in the 'spray zone' on the legs of offshore drilling rigs).

Biofouling can occur in or on the following:

- Vessel hulls, including underwater fittings (e.g. propeller, rudder, bow thrusters): in the oil and gas industry, many vessels are involved throughout project and operational activities, such as tankers, supply ships, drill-ships, underwater vessels, floating cranes, survey vessels and supply vessels.
 - Untreated hulls (and similar) will rapidly develop complex communities including immobile species (barnacles, mussels, hydroids, sponges, bryozoans and algae ranging from thin films to large kelp) within which mobile species (gastropods, crustaceans, sea-spiders, various worms, echinoderms, fish) subsequently colonize.
- Exploration, production and accommodation seabed pipelines: this pathway involves the potential introduction of substrata from elsewhere which may already be contaminated by AIS.
 - The implantation of hard structures (with a large surface area) into the sea also results in the creation of hard substratum, which is available for easy colonization by species that may not otherwise have settled in the local habitat.



- This process can encourage local development (and thence introduction) of alien species, and also offer a stepping-stone for longer-distance relocation of alien species.
- Laying structures on the seabed (rather than burying them) in a soft-sediment habitat introduces new local habitat. The physical presence of structures may also influence water flow and local currents that may instigate novel migration pathways for potentially invasive species.
- Niche areas on vessels (damp or water-filled, such as chain lockers, bilges, sea-chests and internal seawater systems).
- Ancillary equipment that has previously been in seawater and thus potentially carries invasive species: examples include diving equipment, monitoring or sampling gear (for example, from environmental- and habitat-survey vessels), anchorage, pumps, pipeline ploughs, marine emergency rescue equipment, prefabricated modules, ropes, cables, fenders and buoys.
- Materials (potentially contaminated) used in habitat restoration: these pathways involve the potential introduction of material from elsewhere which may already be 'contaminated' by AIS, potentially including 'natural' material and locally relocated species.
- Waste discharges to the sea: continuous discharges of wastewater that may create higher-temperature water conditions that can encourage the growth or reproduction of otherwise dormant species that have settled but not become invasive. The potential for biofouling may be influenced by several factors, including the following:
 - Effectiveness of biofouling control measures: for example, the use and maintenance of appropriate anti-fouling paints and cleaning procedures.
 - Duration of stationary periods: vessels or facilities which spend large amounts of time in one location are subject to higher levels of settlement and colonization.
 - Speed of travel: most biofouling occurs at lower vessel speeds or when stationary.
 - Complexity of surfaces: entirely smooth hulls, such as a tanker hull, have a lower biofouling potential than a complex network of frames



and other structures with a greater surface area and variety of niches.

- Area of biofouling surface available: organisms can generally only colonize those areas that are submerged or dampened with spray. Partial or total removal of the surface from this environment, such as movement of a rig on a heavy lift vessel, or on-board retrieval of in-water equipment when not needed, can reduce or eliminate this potential.
- Construction materials, which differ in their biofouling potential: for example, copper pipes are more resistant to biofouling than steel.
- Time spent in shallow or coastal waters: the vast majority of AIS occur in coastal habitats; biofouling accumulated on deepwater offshore facilities has a much lower potential for introducing AIS into port, harbour and coastal environments.

4.2.2. Ballast

- Vessels that are designed to carry a heavy cargo are potentially unstable at sea once they have offloaded the cargo at the destination port. Therefore, after offloading they take on 'ballast' to weigh down and correctly balance the vessel.
- Formerly, sand, rocks or soil were used for ballast and these were the source of some of the earliest long-range AIS introductions.
- Today, however, vessels take on ballast water into specially designed tanks, which is then pumped out on arrival at the port where cargo is to be loaded.
- It has been estimated that 14 billion tonnes of ballast water is transferred annually¹⁹ and it is not surprising that the impacts of AIS resulting from ballast water transmission have been some of the most severely damaging, far-reaching, large-scale and costly so far recorded.
- Many marine species reproduce by dispersing planktonic eggs and/or larvae, and it is inevitable that ballast water will contain large numbers of a wide variety of organisms.
- Ballast is usually taken on in areas of relatively high shipping traffic, in shallow coastal or port waters that have a high natural abundance of plankton; these are usually the areas in which AIS will be present.



- While some organisms may not survive in ballast tanks, many do, and upon discharge at the destination port—if conditions are suitable—these organisms can either complete their lifecycle by settling out as biofouling, recruiting to the benthos (e.g. sea-stars) or living in the plankton (e.g. comb jellies).
- In addition to ballast water, the intake of turbid water results in the settling out and accumulation of fine sediment in the ballast tanks, which can also be a significant pathway for AIS. For example, dinoflagellate cysts are commonly found in ballast sediments and, when released, can multiply to form harmful algal blooms.

4.2.3. Physical introduction through other means

- While biofouling and ballast water are generally considered to be the two main pathways for AIS in the aquatic environment, the following pathways should also be considered as potential risks:
 - Direct introduction, for example, of whole plants or plant fragments tangled on anchor chains.
 - Sediment, potentially containing AIS eggs, larvae and plant fragments, for example, on anchors and anchor chains and in sea chests where sedimentary communities can become established if sediment is present.
 - These live vectors can then reproduce and transfer AIS to the receiving environment.



5. PREVENTION

Prevention involves attention to the most common vectors of transmission, including contaminated seed, mulch, or soils; movement of unlearned equipment or machinery from an invasive weed-contaminated area to a non-contaminated area; and a lack of restoration or revegetation after construction.

The detailed prevention measures for AIS are given below.

5.1. ONSHORE

5.1.1. Overall Prevention Principles

- **Take time to plan:** Proper planning can reduce future maintenance costs by reducing the potential for invasive plant introduction and spread. A good first step is to conduct a pre-activity assessment of the work area to determine which activities could spread AIS and which Best Management Plans (BMP) are applicable².

- **Stop movement of invasive species materials:** The movement of workers, materials and equipment can carry AIS between sites² (figure 3 & 4). In general, conduct field activities to minimize contact between equipment and potential sources of invasive species, particularly mud and weeds. This can include the following:
 - Avoid walking, driving, or mowing through weed patches when seeds are present².
 - Stay on trails and avoid walking through areas of tall grass or brush⁸.





Figure 3. Invasive plants can be spread as hitchhikers on vehicles⁹



Figure 4. Snails directly attached to wheel and tire⁷

- **Minimize soil and vegetation disturbance:** Disturbance can allow invasive plants to colonize a new area. Disturbance should be minimized, and when it is unavoidable, managers should conduct follow-up monitoring to ensure early detection of any invasive plants that may have been introduced².
- **Maintain desired plant communities:** A healthy plant community with native and desirable species provides resistance to invasive plant establishment².
- **Practice Early Detection and Rapid Response (EDRR):** Early detection and eradication of small populations helps prevent the spread of invasive plants and significantly reduces weed management costs. Regular monitoring increases the chances of success².



5.1.2. General BMPs²

- Provide prevention training to staff and contractors prior to starting work, identify personnel responsible for inspection of cleaned tools, equipment and vehicles at facilities and field sites.
 - Provide pre-work training on invasive plants. Training may include:
 - Field identification of invasive species
 - Reproductive biology of invasive species
 - Ecological and economic impacts of invasive species
 - Invasive plant prevention BMPs
 - Inspection and cleaning protocols for vehicles, tools, equipment, clothes and personal gear
 - When and how to record and report occurrences for invasive plants
 - How to use prevention resources
 - How to treat materials infested with invasive plants
 - Provide additional training to staff and contractors managing project materials. Training may include:
 - How to acquire weed-free materials
 - Project material inspection protocols
 - Provide prevention resources at highly visible locations such as access points and trailers. Resources may include:
 - Invasive plant identification guides
 - Prevention BMPs, activity, and inspection and cleaning checklists
- Scout for invasive plants and evaluate risks before activities begin:
 - Scouting for invasive plants should occur at likely introduction sites such as access points, lay-down areas, and staging areas. Wet areas may be especially susceptible.
 - Gauge the extent and intensity of scouting based on:
 - Threat of invasive species to sensitive or protected habitats
 - Size of the property or project
 - Type of activity (whether the activity disturbs ground or vegetation and the degree of disturbance)



- Adjacent environment
 - Scout both within and around activity areas.
 - Document invasive plant findings and communicate them to managers.
 - Evaluate invasive plant risks. Determine invasive plant prevention and management needs. Prioritize treatment of invasive plants based on guidelines in Prioritizing BMP Implementation.
- Schedule activities to minimize potential for introduction and spread of invasive plants.
 - Consider the timing of invasive plant control efforts; determine whether planned efforts should occur before, during or after the activity based on the plant life cycle.
 - When feasible, schedule land-disturbing activities to occur before invasive plants set seeds to minimize spreading seeds of invasive plants. Keep in mind that seeds may be present in the soil.
 - Consider invasive plant reproductive biology.
 - Coordinate the timing of maintenance activities and weed control activities when feasible.
 - Prioritize reducing invasive plant seed production at roadside operational zone (from pavement edge to 5 meters along roadway edge, or as appropriate) to reduce seed movement by vehicle.
 - Avoid working during rain events and high winds. Wet conditions make it easier for seeds to be picked up by a vehicle and spread kilometres down the road.
 - Develop site-specific plans for controlling existing invasive plants before ground disturbing activities begin.
 - Treat invasive plants along access roads and staging areas before moving equipment into worksites.
 - Before removing invasive plants from drainage ditches, treat the entire infestation to ensure that the plant parts will not spread to adjacent and downstream areas. Avoid side casting (piling excavated soil on either side of a trench when digging a drainage ditch) of accumulated road materials infested with invasive plants. Stockpile in one area that can be monitored.



- Before scraping ROW, treat invasive plants with the appropriate control measure. This will help prevent the plants from spreading to adjacent areas by water, wind, equipment or vehicle.
- Designate specific areas for cleaning tools, vehicles, equipment, clothing and gear:
 - Designate sites for cleaning tools, vehicles, equipment, animals, clothing and gear before starting work. Preferred locations for cleaning are areas that are:
 - Already infested with invasive plants (with the assumption that you will leave clean)
 - Easily accessible for monitoring and control
 - Located away from waterways to avoid spreading invasive plants downstream
 - Contained with silt fences or soil berms
 - Paved or have sealed surfaces to avoid re-accumulation of soil and plant material on cleaned vehicles and equipment
 - Located away from sensitive species or natural resources
 - Implement storm water pollution prevention (SWPP) BMPs.
 - Contain water run-off that may carry plant parts or seeds.
 - Install berms or silt fences along the perimeter of worksites to help prevent the spread of contaminated materials outside the cleaning area.
 - Dispose of water that contains plant parts and seeds from equipment washing at a waste management facility or incinerator, not a wastewater treatment plant.
 - Consider the use of a portable cleaning station, especially when maintaining multiple linear utility sites with a variety of environmental conditions (figure 5 & 6).





Figure 5. Identifying a facility to properly wash vehicles and equipment is an important step in the prevention of invasive species⁹



Figure 6. A portable washer to clean vehicles in challenging terrain. The system fits on a trailer and can be towed by a pickup truck. It reuses wash water and is inexpensive²

- Designate waste disposal areas for invasive plant materials, and contain invasive plant material during transport.
 - Appropriate disposal areas are where viable invasive plant materials can be destroyed.
 - If disposing on-site, render invasive plants nonviable.
 - If disposing offsite, contain invasive plant material in heavy-duty (3-mm or thicker, contractor quality plastic) garbage bags.
 - Locate debris burn piles in areas that minimize the possibility of invasive plant establishment.
 - Do not dispose of viable invasive plant material that has the ability to resprout or spread at a facility which produces mulch, spreadable sewage sludge, or chipped products.
 - Do not dispose of soil, seeds, or plant material down a storm drain. This action may promote the spread of invasive plants downstream.
 - Develop a monitoring plan for waste disposal areas, including burn piles, to preclude the introduction and spread of invasive plants.
 - Clean vehicles after transporting invasive plant material and other AIS (figure 7).





Figure 7. Contain waste water when washing vehicles to prevent spreading AIS and/or their parts

- Plan travel routes to avoid areas infested with invasive plants and/or other AIS.
 - Avoid driving off-road whenever possible.
 - When driving off-road or off-trail, avoid patches of invasive plants and/or other AIS.
 - Exclude areas infested with invasive plants and/or other AIS from equipment travel corridors and staging areas.
 - Avoid parking on the side of the road in areas infested with invasive plants and/or other AIS.
 - Prevent animals (grazing, pack and support) from entering areas infested with invasive plants.
 - When traveling through infested areas cannot be avoided:
 - Consider the sequence of operations. Arrange travel routes from uninfested areas to infested areas. Work first in uninfested areas when vehicles and equipment are free from invasive plant material and/or other AIS.
 - Treat invasive plants and/or other AIS at access roads and staging areas before entering them.
 - Clean your vehicle before leaving the infested area.
 - Travel under dry conditions when feasible.
 - Traveling under wet conditions, particularly along unpaved roads, greatly elevates the risk of picking up invasive plant seeds and/or other AIS and transporting them.
 - Restrict travel to those periods when spread of seed is least likely, such as just prior to flowering or late in the season when seeds have already dropped².



- Where feasible, dedicated gear and apparel used only in infested sites offers the best protection⁸.
- Limit the number of roads travelled to minimize soil disturbance and the risk of unintentionally transporting invasive plant parts and seeds and/or other AIS on equipment into uninfested areas.
- Perform road maintenance such as road grading, brushing, and ditch cleaning from uninfested to areas infested with AIS. If possible, schedule such activities when invasive plant parts or seeds and/or other AIS are least likely to be viable.
- Clean tools, equipment, and vehicles before transporting materials and before entering and leaving worksites.
 - Integrate cleaning routines into field activities.
 - Frequently wash vehicles, especially after driving off-road or off-trail or along roads bordered by a high density of invasive plants and/or other AIS, and after traveling under wet conditions.
 - Consider covering vehicle grills with auxiliary screens when driving on dirt roads and traveling through areas heavily infested with invasive plants and/or other AIS.
 - Frequently inspect equipment storage areas for AIS.
 - Avoid acquiring water for cleaning where access to the water is through infested areas.
 - Remove soil, seeds and plant parts from the undercarriage, tires, sideboards, tailgates, and grills of all vehicles and equipment (figure 8). Wash tires and under carriage if the travel route is muddy. Cleaning methods are divided into two categories:

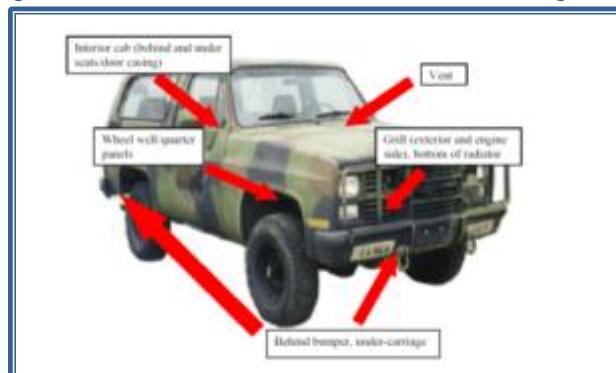


Figure 8. Recommended inspection sites for large equipment⁸



Cleaning without water

- Bristle brushes, brooms, scraper and other hand tools (to remove heavy accumulation of soil and debris prior to washing)
- High pressure air devices
- Vacuum
- Hand removal

➤ Brushing (Physical Removal)⁹

- Brushing is considered to be moderately effective in removing the majority of plant and/or other AIS material from equipment or gear. A follow-up with water washing, high-pressure air blasting, or high-pressure wash is also recommended (figure 9).



Figure 9. To prevent the spread of AIS, all clothing and field equipment should be inspected and cleaned before leaving the worksite⁹

- If there is a nap to fabric (e.g., upholstery, carpeting, or clothing), brush with the nap rather than against it.
- Brushing against the nap could further embed small seeds and/or insects into the material. High-pressure compressed air blasting may be used to assist soil removal.
- A combination of soft and stiff bristles of varying length is recommended for use on carpeting or components made of rubber, nylon, or plastic.
- Bristles of medium length and stiffness are desired for removal of soil and other matter from fabrics and upholstery.



- Stiff bristles are recommended for the tread of wheels that become encrusted with soil and mud. Metal bristles may also be used to remove soil or concrete in treads, but heavier wear and tear to the equipment will result (figure 10).



Figure 10. Field staff cleaning seeds and plant parts from a vehicle with a handheld wire brush before leaving a site infested with invasive plants²

➤ Vacuuming (Physical Removal)

- Vacuuming equipment or clothing with a brush attachment is suggested to remove most loose particle matter, but care should be taken because small seeds may become further embedded in materials. To prevent contained plant and soil matter from being redeposited following the cleaning process, collected matter should be bagged and incinerated or disposed of in a sanitary landfill. A follow-up with water washing, high-pressure air blasting, or high-pressure wash is also recommended.

➤ Use of Adhesive Roller (Physical Removal)

- Adhesive roller is considered to be moderately effective in removing plant material from equipment or gear. Seed and fragment materials readily attach to the adhesive sheets and are effectively lifted out of seams and the weave of loose particle fabrics; however, proper attention and care given during removal is a direct reflection of the potential efficiency of this technique. To prevent contained plant and soil matter from being redeposited following the cleaning process, adhesive sheets should be bagged and incinerated or disposed of in a sanitary landfill. A follow-up with water washing, high-pressure air blasting, or high-pressure wash is also recommended.



➤ Thermal Treatment

- Thermal treatments involve the use of extremely hot temperatures in order to kill all invasive material. Using steam, hot air, or hot water to clean vehicles and field equipment has proven to be especially effective when used to bring the object's surface temperature up to 140 °F for 30 seconds. A hand-held infrared thermometer can be used to verify the surface temperature. Disadvantages to the use of thermal treatments are the apparent risk of burns, its labor-intensive nature, and the initial investment cost of equipment⁸.

Cleaning with water²

- Wash on a paved surface to avoid creating mud. Contain waste water and splash to prevent invasive plant parts and seed from spreading.
- High pressure washers (preferably with 2,000-psi): wash once for six minutes or two to three times for three minutes for best results.
- Portable commercial wash unit with under carriage washers and pressure hoses.
- Clean carpet, rubber, nylon or plastic materials using:
 - A vacuum cleaner
 - A variety of brushes with bristles of varying length and texture.
- Use special gear as appropriate:
 - Nylon gaiters to cover socks and laces
 - Leather laces on leather boots
 - Rubber boots
- Carry appropriate equipment to help remove soil, seed, and plant parts. This may include wire brushes, small screwdrivers, boot brushes, extra water free of invasive species, and bags for plant materials.
- Clean clothing, footwear and gear before leaving infested areas.
 - Inform workers about possible seeds and invasive plant parts and/or other AIS carried on their clothing, footwear and gear.
 - Clean clothing, footwear and gear for soil, seeds and plant parts before leaving infested areas.



- Wear fabrics that do not retain invasive plant material:

- Cotton duck (canvas)
- Nylon
- Leather



Figure 11. Since mud can be laden with seeds or plants parts, personal gear and clothing should be thoroughly cleaned to prevent moving invasive species into new areas⁹

- Prepare worksites to limit the introduction and spread of invasive plants and/or other AIS.
 - Determine the degree that site preparation is needed for each activity and worksite. Not all prevention measures are needed when the worksite is already widely infested; however, all cleaning and waste-disposal BMPs should be implemented before leaving worksites to prevent spread to new areas.
 - Position activity boundaries to exclude areas infested with invasive plants and/or other AIS. Activity boundaries include staging areas, access roads and other temporary facilities. If this is not feasible, treat infested areas prior to their use.
- Minimize soil and vegetation disturbance.
 - Retain soil cover and native/desirable vegetation in and around the activity area to the greatest extent possible to minimize the introduction and spread of invasive plant and/or other AIS.
 - Consider the impacts of different types of equipment. Plan to use equipment that minimizes soil and vegetation disturbance.



- Minimize the frequency of soil disturbance when feasible. If a site has to be cleared of vegetation regularly for maintenance (such as roadside blading or ditch clearing), consider paving or otherwise protecting the site by using weed-free materials (gravel, mulch, decomposed granite), deep mulching, or a soil stabilizer.
- Maintain topsoil or ensure quality soil placement to establish desirable plant community.
- Stabilize disturbed soils using erosion control or storm water pollution prevention BMP methods.
- After disturbing soil, encourage prompt regeneration of desirable vegetation to limit introduction of invasive plants.

- After activities, monitor worksites for invasive plants.
 - Monitor and maintain revegetation and landscaping at the site to support establishment of desired plant species (figure 12).
 - Monitor during multiple growing seasons, especially at times of germination and flowering, for a minimum of three years after project completion to ensure that any invasive plants are promptly detected and controlled. Monitoring areas include:
 - On-site cleaning areas and waste disposal areas
 - Areas where project or maintenance activities are performed
 - Areas where project materials are imported
 - Access routes, roads and other areas of concentrated use
 - Areas near watering sites, loading/ unloading areas
 - If three years is not sufficient to control the re-establishment of invasive populations, monitoring and treatment should be continued until confident that invasion has been controlled.



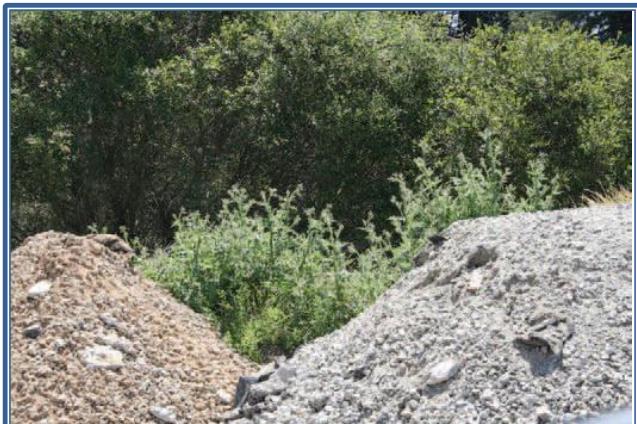


Figure 12. Cover soil stockpiles to prevent invasive plant establishment.
Monitor worksites for invasive plants and/or other AIS following activities.

5.1.3. Materials Management²

Project materials include:

- Erosion control materials (silt fences, fiber roll barriers, mulch and straw bales or wattle)
- Soil and aggregate (topsoil, fill, sand, gravel, and boulders)
- Landscape material (plants, seed, sod, fiber mulch, synthetic mulch, soil amendment)
- Animal/livestock feed
- Water (for cleaning or irrigation)
- Construction/building materials to which soil, seed, or other plant parts can adhere to.
- Use a weed-free source for project materials.
 - Select materials based on the environmental needs of the worksite. Verify how weed-free materials are produced and whether the screening criteria is based on noxious weeds or wild land invasive plants. Weed-free materials may not be 100% weed free, but using weed free materials can reduce the probability of exposure to invasive plant parts and seeds.
 - Develop a procedure for procuring and storing weed-free materials and inspecting material sources. Update records at least annually.
 - Provide training for planners, suppliers, field staff and contractors in material management and inspection.



- Determine the degree to which weed-free project materials are needed for each worksite. Materials from an infested site may be suitable for a worksite that is already infested with the same species. Excavated material from areas containing invasive plants may be reused within the limits of the infestation.
- Use weed-free materials for erosion control and soil stabilization.
 - Perform follow-up inspections at sites where straw and imported materials were used to ensure that any invasive plant introductions are caught early and treated.
- Use weed-free sand and gravel.
 - Any fill material brought on site should be clean, debris-free, and devoid of invasive plant parts or seeds and/or other invasive species. Do not borrow fill from weed infested stockpiles, road shoulders or ditch lines.
 - Inspect aggregate material sources (including but not limited to surrounding ditches, topsoil piles, gravel/sand piles or pits, fence rows, roads, easements, and Row) annually and before purchasing and delivery.
- Use weed-free seed. Verify seed mix to ensure it does not contain invasive plants.
- Keep and reuse on-site weed-free materials rather than importing new materials.
 - Stockpile topsoil along perimeter of project for later use rather than importing topsoil.
 - Consider using mulch from non-invasive plant species chipped on site when feasible.
 - Find local sources when off-site weed-free project materials are needed. Inspect project material suppliers as appropriate to determine if their sites are weed-free.
- Designate and use weed-free water sources. Inspect water sources to prevent introduction of invasive plants or animals.
- If unable to obtain materials from a weed-free source:
 - Work with a local weed specialist to sterilize or treat materials and provide required documentations or certification for approvals. Monitor application areas.



- If sources of fill material are infested, treat the invasive plants, then strip the infested topsoil and stockpile the contaminated material for several years to further deplete the soil seed bank. Check regularly for re-emergence of invasive plants and treat as needed.
- Inspect and document the area where material from weed-infested sources were used annually for at least three years after project completion, to ensure that any invasive plants transported to the site are promptly detected and controlled.
- Inspect project materials, sources, and storage areas for invasive plants annually and prior to each use to ensure that no invasive plants have invaded since the last inspection. Record the inspection results.
- Inspect and clean construction/building materials that have been exposed to soil, seeds or plant parts.
- Prevent invasive plant contamination of project materials when stockpiling and during transport.
 - Plan where materials will be moved and which route is taken.
 - Move only weed-free materials into uninfested areas. Moving materials from one infested location to another within a particular zone may not cause contamination, but moving materials from infested to uninfested areas could lead to the introduction and spread of invasive plants.
 - Ensure transport vehicles are free of invasive plants and seeds before and after use.
 - During transport, cover exposed piles of materials with geotextile fabric or impermeable material to prevent invasive plant contamination.
 - Cover exposed piles of project materials with impermeable material to protect materials from wind and rain, and reduce germination of invasive plants.
 - Active and inactive soil stockpiles must be:
 - Covered with soil stabilization material or a temporary cover. Soil stabilization materials used on bare slopes can be used for stockpiled soils. Temporary soil stabilization materials include:
 - ✓ Hydroseed (tackifier, fiber or seed)



- ✓ Erosion control blanket (jute mesh or netting)
- ✓ Mulch
- ✓ Soil binder
- ✓ Geosynthetic fabric
- ✓ Surrounded with a linear sediment barrier (e.g. fiber roll).
- Frequently monitor stockpiles, materials storage areas and borrow pits. Quickly treat new invasive plant populations prior to seed production.

5.1.4. Vegetation Management²

- Schedule vegetation management activities to maximize the effectiveness of control efforts and minimize introduction and spread of invasive plants.
 - Manage vegetation with methods favourable to desirable vegetation. Coordinate management of invasive plants and desirable plants.
 - Select tools and approaches that optimize control of invasive plants while not harming desirable plants.
- Develop a mowing policy to minimize the introduction and spread of invasive plants.
 - Identify invasive plants that should not be mowed (or conditions under which they should not be mowed) to avoid inadvertently spreading these invasive plants. Some invasive plants have the ability to sprout from stem and root fragments. Mowing these plants should be avoided.
 - Consider which invasive plants, if any, are present when identifying areas for mowing.
 - Consider timing of mowing of invasive plants and desirable plants.
 - Schedule mowing of desirable plants to occur after seed maturation, ensuring desirable plants grows unrestricted and produces seed.
 - Mow invasive plants when they have reached the early flowering stage (or well before seed development) to avoid spreading viable invasive plant seeds.
 - Plan to mow the right-of-way prior to invasive plant seed maturation. This could be accomplished by identifying specific



corridors that are either heavily infested with invasive plants or corridors that are in sensitive habitat areas, and prioritizing those areas in the mowing schedule.

- Limit mowing and other mechanical control to the minimum corridor width and maximum vegetation height needed to meet transportation and utility corridor requirements.
 - To reduce plant shock and root dieback of desirable plant species, mowing height should not be less than 15 cm. Mowing too low during the growing season will increase soil exposure to sun, increase soil temperatures and erosion risks, and encourage weed growth.
- Treat invasive plants in and adjacent to drainage ditches and streams before mowing. Invasive plants in the drainage system that are only mowed will grow and spread, and require additional mowing.
- Mowing equipment should be cleaned at least daily, as well as prior to transport or moving between work zones. This is particularly important if mowing occurs after seed maturation. Clean and remove all soil and plant parts from the undersides of mower decks.
- Retain existing desirable vegetation and canopy where possible.
 - Identify and protect desirable vegetation on site. Desirable vegetation should be non-invasive and suitable for the conditions.
 - Train personnel to identify invasive and desirable plants on-site. Provide identification guides to field staff.
 - Revegetate or mulch disturbed ground and newly opened canopies when feasible to prevent colonization by invasive plants.
- Render invasive plant material nonviable when disposing of materials on-site.
 - When composting invasive plants on site, consider the reproductive biology of the invasive plants :
 - Composting will render invasive plant material nonviable only if compost piles reach very high temperatures. Finished compost should be monitored for invasive plant emergence.
 - For large amounts of invasive plant material or for invasive plants with rigid stems, contain plant materials by placing



them on asphalt or black plastic (4-mm-thickness minimum), covering with black plastic (4-mm-thickness minimum), and securing the edges with landscaping staples, large rocks or sand bags. Effectiveness of this method varies by plant species.

- For smaller amounts of plant material or for plants with pliable stems, bag the material in heavy-duty (3-mm or thicker) garbage bags. Keep plant material bagged for at least one month. Effectiveness of this method varies by plant species.
- Keep covered or bagged materials in the sun, preferably on a dark surface such as asphalt, to accelerate the decomposition process. Material is nonviable when partially decomposed, very slimy or brittle.
- Monitor the bagged or covered material to ensure the plants do not escape through rips, tears or seams in the plastic.
- Once material is non-viable, it can be disposed of in a landfill.

- When piling invasive plants on site to dry out:
 - To avoid root growth and reestablishment, prevent cut surfaces or roots of invasive plant stems from contacting soil.
 - Invasive plants with viable seeds or fruit attached should not be left on-site to dry out in an exposed manner.
- When burying invasive plants on-site:
 - Contain all invasive plant material in an excavated pit, cover with woven geotextile, and cover with a minimum of 1 meter of uncontaminated fill material. Effectiveness of this method varies by plant species.
 - This method is best used on a worksite that already has disturbed soil.
- Locate disposal site in an area that facilitates easy monitoring and control if infestations occur.
- Do not dispose of soil, seeds, or plant materials down a storm drain. This action may promote the spread of invasive plants downstream.



5.1.5. Soil Disturbance²

Soil disturbance often occurs during:

- Access road and RoW opening or maintenance
- Thrusting, boring, trenching or testing associated with cable or pipe laying
- Vegetation clearing and uprooting
- Movement of vehicles and heavy equipment
- Foundation excavation for new facilities or structures
- Minimize soil disturbance and transport during project implementation.
 - Consider the impacts of different types of equipment. Plan to use equipment that minimizes soil disturbance.
 - Minimize the frequency of soil disturbance when feasible. If a site has to be cleared of vegetation regularly (such as ditch clearing), consider paving or otherwise protecting the site by use of inert materials (gravel, mulch, decomposed granite), deep mulching, or using a soil stabilizer.
 - Retain existing desirable vegetation and canopy where possible to minimize soil disturbance.
- Implement erosion control practices.
 - Implement Storm Water Pollution Prevention BMPs.
 - Contain and manage water runoff which may carry soil, seeds and plant material. Temporary construction fences installed along the perimeter of worksites can aid in preventing the spread of infested materials.
 - When feasible, select paved or sealed surfaces for cleaning to avoid re-accumulation of soil and plant material on cleaned vehicles and equipment.
 - Promptly revegetate and/or mulch disturbed soil after ground disturbing activities. Use mulch, seeding or a non-persistent cover crop as temporary cover during the delay between soil disturbance and revegetation.
 - Protect soil stockpiles from raindrop erosion and reduce germination of invasive plants.



- Manage existing topsoil and duff material.
 - Save local existing topsoil for reuse. Plan topsoil management prior to soil disturbance.
 - Develop topsoil management plans unless the topsoil and duff material are determined to be contaminated with invasive plants.
 - Identify on the plans where local topsoil and duff material within the grading limits are to be:
 - ✓ Removed or excavated
 - ✓ Stockpiled
 - ✓ Reapplied
 - When excavating local topsoil and removing duff material, minimize the handling or re-handling of the material to reduce detrimental impacts to living soil microorganisms.
 - Stockpile local topsoil and duff material in windrows no taller than 3 meters for local topsoil and 1.5 meters for duff. Implement temporary erosion control measures.
 - Seed local topsoil stockpiles that will remain in place for over six months with a fast growing native plant species to maintain living soil microorganisms. Covering topsoil stockpiles with impermeable barriers such as plastic sheeting may destroy living soil microorganisms.
 - Monitor stockpiles of topsoil and duff material regularly as they are highly susceptible to invasion by invasive plants. Determine management needs based on presence of invasive plants.

5.1.6. Revegetation and Landscaping²

- Develop revegetation and landscaping plans that optimize resistance to invasive plant establishment.
 - Identify areas where revegetation or landscaping is needed to improve weed resistance of plant communities. Determine the goal of vegetation coverage. Evaluate annually for three years to determine if establishment of desirable vegetation is successful at resisting the invasive plant establishment.



- Develop weed-resistant plant communities in roadside operational zones (area from the edge of pavement extending outward a minimum of 5 meters, or as appropriate) to reduce seed movement by vehicular traffic. Establish vegetation from the edge of pavement where possible. Consider using plants that have low growth forms or that do not create line-of-sight safety obstructions or increased fire risk potential, and are well adapted to roadside disturbance.
- Revegetate or landscape with local native plants or appropriate non-invasive plants to prevent invasive plant introduction. Native species grown outside of the region may not establish well.
- Evaluate existing soil type, texture and health to determine vegetation selection, fertilization and maintenance needs.
 - Improve unhealthy soil by adding healthy topsoil or compost and using aeration to incorporate oxygen into the soil.
 - Fertilization, if done improperly, can encourage weed growth and reduce the ability to establish native plantings. Organic fertilizers are better suited for native plants because they release nitrogen at a very slow and stable rate.
 - Do not fertilize areas treated with compost as the compost will provide plants with the needed micro-nutrients to support healthy growth.
 - If improving soil health is not possible, choose vegetation with low soil-nutrient requirements.
- Develop a seed mix and plant palette that will occupy various planting zones/ecological niches in order to encourage a weed-resistant landscape.
 - Select plants, with the aid of a professional consultant, based on existing soil conditions, drainage patterns, amount of rainfall or irrigation available, exposure and adjacent environment.
 - Use native material to the greatest extent possible.
- Encourage passive regeneration of native plant cover where site conditions permit and where the risk of weed invasion is low.



- Design irrigation systems with attention to irrigation timing, coverage and quantity to encourage the growth of desirable plants and discourage the growth of invasive plants. Too much water can stunt the growth of drought-tolerant plants and encourage undesirable water-loving invasive plants.
- Acquire plant materials locally. Inspect delivered plants to ensure plant labels match specifications prior to planting.
 - Identify sources of native and appropriate non-native plant materials. Specify and use weed-free locally appropriate seed mixes that will occupy various niches in order to create weed-resistant landscapes.
 - Use local native ecotypes when feasible. Native species grown outside of the region may not establish well or may carry diseases. Consider contract growing of local native plants.
 - When using local native species is not feasible and the risk of weed invasion is high, use locally grown, non-invasive species proven to grow well locally.
- Revegetate and/or mulch disturbed soils as soon as possible.
 - Use proper horticultural practices to promote healthy root and foliage growth that will aid in the vegetation's ability to withstand adverse conditions and to compete with weed growth.
 - Avoid use of fertilizers in areas with high infestations of invasive plants where fertilizer may favour growth and spread of invasive plants over desirable species.
 - Consider using compost or an organic slow release fertilizer when planting native species. Excessive nitrogen availability promotes the growth of weedy annual grasses, which could dry out of the site and crowd out slow-growing perennials.
 - Consider inoculation to improve establishment success for planted species. Inoculation refers to the adding of "inoculants" which are mycorrhizal fungi that help with moisture retention and soil/root relationships in the first year of establishment.
 - When revegetation is impossible, consider limited and judicious use of paving/hardscape, or otherwise protecting the site by use of inert materials (gravel, long-fiber mulch, and decomposed granite), deep mulching or using a soil stabilizer.



- When using mulch:
 - Use weed-free mulch.
 - Consider fire risk at the application site. Some long-fiber mulches are highly flammable.
 - Apply mulch at the recommended thickness to suppress the establishment and growth of invasive plants. Ensure mulch remains on-site. Lighter mulches will blow away in areas prone to heavy wind or rain fall; mulches can move if watering results in surface flow. Consider the use of tackifiers or biodegradable netting.
 - Supplement with additional mulch to retain thickness and effectiveness after it begins to decompose.

5.1.7. Routine Maintenance and Inspection of Facilities

- Identify prevention priorities with resource, facility, or corridor managers prior to starting work.
 - Prioritize areas for implementing prevention BMPs.
 - For priority areas, identify which work tasks can spread invasive plants.
 - All cleaning and waste-disposal BMPs should be implemented before leaving worksites infested with invasive plants and before entering uninfested areas.
- Document invasive plant findings and communicate to managers.
 - Incorporate invasive plant findings into facility inspection forms. Communicate invasive plant findings within and adjacent to the right-of-ways to resource managers for future treatment and prevention measures.
 - Survey or monitor for invasive plants at likely introduction sites such as access points, laydown areas, and staging areas. Wet areas may also be especially susceptible.
 - Gauge the extent and intensity of monitoring based on:
 - Threat of invasive plants to highly sensitive or protected habitats
 - Size of the property or project



- Type of facility
 - Degree of disturbance from maintenance activities
 - Adjacent environmental conditions
 - Inspect both within and around facility site.
- Identify travel direction and cleaning locations prior to starting work.
 - The sequence of maintenance operations often requires different access points for entry and exit. Arrange travel routes from uninfested areas to areas infested with invasive plants. Work first in uninfested areas when vehicles and equipment are free from invasive plant material.
 - Perform access road maintenance such as road grading, brushing, and ditch cleaning from uninfested areas to areas infested with invasive plants. Schedule such activities when invasive plant parts or seeds are least likely to be viable.
 - Identify cleaning locations based on operational sequence, travel direction and presence of invasive plant population. Cleaning location may be in between worksites.
- Designate lay-down and staging areas outside of infested areas prior to starting work.
 - Position inspection activity boundaries to exclude areas infested with invasive plants. If this is not possible, treat infested sites prior to their use.
 - Establish equipment locations and job-site equipment storage areas in locations that minimize the potential for introduction and spread of invasive plants.
- Carry portable cleaning tools that can be used without water.
 - Remove soil, seeds and plant parts from the undercarriage, tires, sideboards, tailgates, and grills of all vehicles and equipment.
Cleaning tools include:
 - Bristle brushes, brooms, scraper and other hand tools (to remove heavy accumulation of soil and debris)
 - High pressure air compressor
 - Vacuum



- Hand removal
- Develop brush control policy along access roads to minimize the introduction and spread of invasive plants.
 - a. Limit brush control and other mechanical control to the minimum width from the road edge to meet transportation and utility corridor requirements when feasible.
 - Water quality compliance and fuel reduction objectives may require additional widths from the road edge. Limit brush control to the minimum widths feasible.
 - Treat brush or tree stumps to prevent regrowth and to reduce future vegetation control and disturbance.
 - Develop a long-term access road vegetation management plan to reduce frequency of vegetation control and disturbance.
 - Develop a revegetation plan with low-growing groundcover that will resist the establishment of invasive plants and woody plants along access roads.
 - Consider paving or otherwise protecting the site by using weed-free materials (gravel, mulch, and decomposed granite), deep mulching, or a soil stabilizer.
 - Take proper steps to dispose of brush trimmings that contain invasive plant parts and seeds
 - Do not chip invasive plant materials and scatter at worksites, unless the worksites are already widely infested with the same invasive plant.
 - Render invasive plant materials nonviable if leaving on-site.
 - Contain invasive materials during transport to waste disposal areas designated for invasive plants.
- Minimize soil disturbance when maintaining access roads.
 - Evaluate the need to grade each road or section of road rather than following a set schedule for road maintenance. This is especially important in areas infested with invasive plants or areas that are susceptible to infestation. Do not grade unless you must for road drainage, safety, or function.



- Keep the grader's blade 5 cm above the road surface when the primary goal is to remove rocks that have fallen onto the road. Do not disturb roadbed aggregates or soil along the road unless it is necessary. In such cases, use erosion control and/or reestablish desirable vegetation as soon as possible.
- Use only clean fill material from a weed-free source rather than borrowing fill from a weed infested stockpile, road shoulder or ditch line.
- Clean road graders and other equipment immediately after operating in areas infested with invasive plants. Clean all dirt and plant parts from the undersides of equipment.
- Consider paving or treating the road surface with soil stabilizers to reduce routine road maintenance.
 - Consider the use of water-based road dust-abatement products.
 - Use caution when applying stabilizers in areas infested with invasive plants. Some stabilizers include material, such as lignite, that tends to kill existing grasses and forbs. Invasive plants will quickly invade treated areas and outcompete desirable vegetation.
- Maintain facility site to limit the introduction and spread of invasive plants.
 - When feasible, maintain areas of concentrated use in a weed-free condition by surfacing with aggregate (gravel, rock, or decomposed granite), deep mulching, installing vegetation barriers or planting a dominant non-invasive groundcover and compacting freshly disturbed areas. These areas include but are not limited to pull outs, parking and staging areas.
 - Where possible, control invasive plants in areas adjacent to facility sites and work routes so invasive plant seeds or other reproductive structures do not move into new areas.
 - Designate and limit access points to facilities.
- Bring backups
 - Check all equipment, such as the hull, motor, axle, dock line, trailer lights, rollers, runners, and any other parts in contact with water.



Inspect your trailer and equipment – remove all plants, animals and mud, and dispose of them on dry land or in the garbage¹⁰.



Figure 13. Check all equipment contact with water¹¹

- Look for attached adult mussels on all surfaces.
- Feel by hand for attached veliger mussels on all surfaces¹⁰.
- **Clean, Drain, Dry**
 - Vehicle and equipment washing stations can be used at locations (figure 14).



Figure 14. Washing stations

- Trailers and/or other vehicles are washed prior to entering and sometimes after leaving a freshwater habitat. Most aquatic plant fragments capable of surviving out of water are easily seen and can be removed by hand. Washing stations are probably better suited to removing microscopic threats such as zebra mussel veligers, didymo or spiny water flea. Primary considerations for vehicle washing



stations are whether space and utilities for a station are available, the cost of installation, staffing and how wash water is captured and treated¹⁰.

- **Decontaminate**
 - Remove organisms you can't see on your vehicle, trailer or equipment by:
 - Rinsing them with hot water (>40°C); or
 - Spraying with high pressure water (250 p.s.i.); or
 - Drying them in the sun for at least five days¹².
- **Implement Management Plan and Monitor**
 - The accurate identification of aquatic weed infestations and their associated problems are the first steps toward developing and implementing an aquatic plant management program.
 - Regular monitoring to look for new or pioneer infestations¹².

5.2. OFFSHORE

- **Bring backups⁹**
 - Use equipment that can be inspected and cleaned easily to both avoid spreading invasive species and reduce impacts to planned field schedules. If possible, bring extra sets of “backup” field equipment in case decontamination can’t be done in the field before arriving at a new site. Where feasible, dedicated gear and apparel used only in infested sites offers the best protection.
- **Minimize contact**
 - Conduct field activities to minimize contact between equipment and potential sources of invasive species, particularly aquatic plants, sediment, and weeds. This may include the following:
 - Sample from least to most invasive species-contaminated areas within the water body, for example, sample upstream to downstream or from areas of less weed growth to dense weed growth.



- Minimize wading and avoid running boats onto sediment. For example, use bank sampling poles instead of wading.
- Avoid getting plants, sediment, and fish inside boats or other sampling gear.
- Use a catch pan underneath dredges, etc., to keep potential invasive species off boat decks and out of bilges.

- **Clean, Drain, Dry⁹**
 - After working in the water, inspect and clean all equipment (see figure 15 for boat example) and clothing that touched the water, dirt, and vegetation.
 - CLEAN – Remove any visible vertebrates, invertebrates, plants, plant fragments, seeds, algae, and dirt. If necessary, use a scrub brush and rinse with clean water either from the site or brought for that purpose. Continue this process until the equipment is clean.
 - DRAIN all water in bilges, samplers, and other equipment that could hold water before leaving the site.
 - DRY – Fully wiped down all equipment until dry.



Figure 15. Recommended inspection sites for boats⁸

- **Decontaminate⁸**
 - The treatment options listed in the table below use temperature (heat or cold) to ensure that any species or pathogens that may have been missed during the initial treatment will be killed. At this time, hot water and drying are the recommended treatments for large equipment such as boats and boat trailers (table 1).



- Decontamination treatments should take place where the procedure can be carried out effectively and safely. Keep in mind that wash and rinse water must not drain to surface water.

Table 1. Decontamination Options for Aquatic Invasive Species⁸

Decontamination Options for Aquatic Invasive Species Treatment	Concentration or Temperature	Exposure Time	Comments
Hot water wash or soak	60° C (140° F)	5 minutes for felt-soled boots and nets; 10 seconds for all other equipment	Ensure all parts of the equipment reach temperature for the full exposure time.
Cold/Freezing	-4° C	4 hours minimum	Time starts after the equipment reaches -4° C.
Drying	Low humidity, in sunlight is best	48 hours on average (temperature and humidity dependent: see dry time calculator link below)	Time starts after the equipment is thoroughly dry.

(Decontamination protocols developed by the Washington Department of Ecology, Environmental Assessment Program)⁸



6. ERADICATION AND CONTROL

6.1. DESIGNING A SUCCESSFUL ERADICATION PROGRAMME³

- Base the programme on science.
- Ensure that eradication of all individuals is achievable.
- Ensure that the legal and institutional framework is sufficient for dealing with the issue.
- Ensure that all individuals of the target population are susceptible to the eradication technique being used.
- Ensure through prevention measures that the immigration of the target species into the area is zero.
- Put in place a method to detect the last survivors.
- Include a subsequent monitoring phase to ensure that eradication has been achieved, and to prevent re-invasion.
- Ensure that methodologies/techniques are environmentally, socially and ethically acceptable.
- Include any necessary measures to restore ecosystems after eradication.

6.2. ONSHORE

Eradication is the elimination of the entire population of an alien invasive species, including any resting stages, in the managed area. Efforts at eradication often follow failure to prevent introduction of invasive species on construction and other vulnerable sites. Eradication as a rapid response to an early detection of a nonindigenous species is often the key to a successful and cost-effective solution.

It cannot be stressed highly enough that well-intentioned, but misguided, AIS eradication attempts have considerable potential to cause environmental harm and -given that AIS thrive in disturbed conditions- to exacerbate the original problem. Many such cases have been documented including, in particular, several disastrous examples of 'biological control' where the introduced agent, e.g. the cane toad, itself became a highly damaging AIS. Under no circumstances should



biological control be considered for use in oil and gas developments without extensive consultation with specialists. The use of biological control agents should be based on rigorous science, proven effectiveness and known benign status in the same environment⁶.

Many techniques are available to eradicate AIS, some examples of which are presented in table 2⁶.

It should be noted that many of the techniques shown in Table 2 have the potential to cause environmental harm if misapplied or mismanaged. For example, cutting of AIS plants may promote more vigorous regrowth while suppressing growth of native species; grazing by livestock may promote seed transmission and provide disturbed soil for further AIS infestation. Trapping of human-associated AIS may result in mortality of native species. As such, any attempted eradication, even of no established AIS, should only be undertaken in consultation with appropriate specialists.

Table 2. Examples of some eradication options for plant and animal AIS⁶

	Plant Species	Animal Species
Physical	Hand Pulling or Digging	Trapping (includes baited traps for rodents, light traps for insects, scent traps for snakes, etc.)
	Mechanical removal	
	Constructing Barriers	
Biological	Grazing by livestock	-

Attempting eradication without extensive expert assistance has the potential to cause significant environmental impacts and may exacerbate AIS. Some of the eradication methods for invasive species are given below.

6.2.1. Physical

- Hand Pulling or Digging
 - Hand pulling or digging is a low-tech strategy for controlling invasion plants. It is most easily done when the soil is damp. Hand pulling requires



considerable labour and is therefore only feasible when cover is low and in small patches¹³ (figure 16).

- It's important to remove as much of the root system as possible; even a small portion can restart the infestation. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily¹⁴.
- Hand pulling is one of the simplest and most widely used methods to control aquatic weed growth¹⁰.



Figure 16. Experts hand pulling invasive plants¹⁵

- Mechanical Removal

- Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment¹⁴ (figure 17).



Figure 17. Mechanical removal of the AIS^{17, 18}

- Stems less than 2.5 cm in diameter can be cut with sharp hand pruners or loppers. Then use a weed wrench, winch, or come-along to yank the roots out of the ground. If this is not



an option, dig out roots with hand tools or rent a stump grinder¹⁶ (figure 18).

- Stems more than 2.5 cm in diameter typically require a handsaw, chain saw, or a string trimmer outfitted with a circular saw blade. Chainsaw and circular-saw use require training and proper safety gear (helmet, ear and eye protection, leg and ankle protection, and sturdy leather boots)¹⁶.



Figure 18. Hand pruners, hand saw, and loppers^{19, 20, 21}

- For large shrubs and trees, remove trunks and stems first. Then roots are more easily removed. Leave 1 meter of stem attached weed wrench, winch, or come-along to yank out the roots. If this is not an option, dig out the roots with hand tools or rent a stump grinder¹⁶.
- Large-scale removal (more than an acre) requires a skid-steer and front-mounted grapple or bull hog to remove mature shrubs – roots and all. Some grapples grab the stems and pull up; others grab the roots and pry out. Skid-steer removal should be done only when the ground is dry to keep soil disturbance to a minimum¹⁶. Disturbed ground quickly grows with weeds, so have a native plant seed mix ready to sow in these areas¹⁶.
- Hand rakes of varying sizes and configurations are being manufactured and sold for aquatic weed control. Many of these hand rakes are lightweight aluminium, with rope tethers that are designed to be thrown out into a swim area and dragged back onto shore. Some are designed to cut the weeds instead of raking them back to shore. While these may be cost-effective strategies to manage individual swim areas, there is a risk that



these rakes will make the problem worse by creating weed fragments that can escape and infest other portions of the freshwater habitat¹⁰ (figure 19).



Figure 19. Hand rakes^{22, 23}

- Shredding boats can be used to control emergent and floating plants¹⁰.
- Harvest and removal harvesters are the most widely used types of equipment employed for mechanical control. These freshwater habitats are generally deep in the middle and aquatic weeds naturally grow in the shallow littoral areas¹⁰.

- **Constructing Barriers**
 - The spread of an invasive species may be decreased or prevented by constructing and maintaining a barrier zone. Animals that can be noxious to humans and human activities are often kept out of the areas of interest by fencing (if they are large), by netting (if they are small), and by screening (in the case of insects). On a larger scale, "barrier fences" have been erected to prevent the movement of vertebrate invaders from one region to another²⁵.

- **Trapping for invasive vertebrates**
 - For some animal species, using trapping methods could possibly be more effective. Traps should be located where can the target invasive species be found (table 3, figure 20).



Table 3. Trapping techniques tested by Life Trachemys²⁶

Passive traps	Results	Active traps	Results
Fyke nets	Good results: 6.3 captures / day	Active capture tools (hand nets)	Good results (for juveniles)
Floating traps with bait	Average results: 5 captures / day	Nets	Bad results
Floating traps with bait and PVC	Good results	Capture by hand	Bad results
Floating enclosed traps with external entrances	Bad results		
Floating traps	Good results		
Floating traps with 4 ramps	Good results: 8 captures / day		



Figure 20. Trapping invasive alien turtles²⁶

6.2.2. Biological

- Grazing by livestock
 - Browsing by a combination of cattle, sheep and domestic goats effectively controlled the height growth of some of invasive species such as, Black locust (*Robinia pseudoacacia*)²⁷.
 - Cattle will graze invasive grasses, can trample inedible weed species, and can incorporate native seeds into soil. Horses can also be used to control invasive grasses, but horses tend to be more selective than cattle. Geese are also useful for the control of invasive grasses, but are more subject to predation than other animals²⁸.
 - Goats can control woody species because they can climb and stand on their hind legs, and will browse on vegetation other animals cannot reach. Goats additionally, tend to eat a greater variety of plants than sheep²⁹ (figure 21).



- However, grazing by livestock may promote seed transmission and provide disturbed soil for further AIS infestation.



Figure 21. Grazing by livestock³²



6.3. OFFSHORE

It is extremely difficult to control a marine organism once it becomes established. Prevention of marine invasions is by far the best option.³ In other words, although prevention measures may be costly, an analysis of the long-term costs and benefits (environmental, economic and social) will invariably show that they are less than the losses and costs which are incurred if the invasives are allowed to establish, and then require on-going control³⁵.

Various methods have been used to reduce the numbers of marine invasive species in established populations but while there may be some success in lowering the numbers, these activities will have to be maintained indefinitely at great cost³⁵.

6.3.1. Physical Control³⁰

Physical control techniques are:

- Removal by hand
- Removal by nets, spears (for fish) (figure 22, 23 & 24)
- Mechanical harvesting
- The creation of physical barriers



Figure 22. Mesh net used for capture fish ³¹





Figure 23. Spear used for capture fish³²



Figure 24. Vinyl hand nets can be highly effective tools for removal³³

6.3.2. Biological control

Biological control includes³⁰:

- The introduction of natural enemies, such as pests and pathogens, from the invader's country of origin.
- Other natural controlling factors could include competition, parasites, diseases, and/or genetic disorders³³.

Methods are being investigated but this a very complex approach, fraught with difficulties including the risk that a control agent may escape and affect non-target species³³.



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8. ANNEX



ALIEN SPECIES FOR TURKEY	
Species Name	
<i>Hypnea musciformis</i>	Alga
<i>Halophila stipulacea</i>	Aquatic Plant
<i>Acridotheres tristis</i>	Bird
<i>Oxyura jamaicensis</i>	Bird
<i>Psittacula krameri</i>	Bird
<i>Bugula neritina</i>	Bryozoan
<i>Cercopagis pengoi</i>	Crustacean
<i>Charybdis hellerii</i>	Crustacean
<i>Mnemiopsis leidyi</i>	Comb jelly
<i>Ameiurus nebulosus</i>	Fish
<i>Clarias gariepinus</i>	Fish
<i>Ctenopharyngodon idella</i>	Fish
<i>Cyprinus carpio</i>	Fish
<i>Gambusia affinis</i>	Fish
<i>Gambusia holbrooki</i>	Fish
<i>Oncorhynchus mykiss</i>	Fish
<i>Oreochromis aureus</i>	Fish
<i>Pterygoplichthys spp.</i>	Fish
<i>Pterygoplichthys disjunctivus</i>	Fish
<i>Salmo salar</i>	Fish
<i>Salvelinus fontinalis</i>	Fish
<i>Tilapia zillii</i>	Fish
<i>Cryphonectria parasitica</i>	Fungus
<i>Imperata cylindrica</i>	Grass



<i>Microstegium vimineum</i>	Grass
<i>Sorghum halepense</i>	Grass
<i>Ambrosia artemisiifolia</i>	Herb
<i>Eupatorium cannabinum</i>	Herb
<i>Oxalis pes-caprae</i>	Herb
<i>Solanum sisymbriifolium</i>	Herb
<i>Bemisia tabaci</i>	Insect
<i>Cryptococcus fagisuga</i>	Insect
<i>Hyphantria cunea</i>	Insect
<i>Ips typographus</i>	Insect
<i>Tomicus piniperda</i>	Insect
<i>Trogoderma granarium</i>	Insect
<i>Myocastor coypus</i>	Mammal
<i>Potamopyrgus antipodarum</i>	Mollusc
<i>Aphanomyces astaci</i>	Oomycete
<i>Trachycarpus fortunei</i>	Palm
<i>Podarcis siculus</i>	Reptile
<i>Cyperus rotundus</i>	Sedge
<i>Lantana camara</i>	Shrub
<i>Acacia saligna</i>	Tree
► <i>Robinia pseudoacacia</i>	Tree
<i>Ailanthus altissima</i>	Tree
<i>Pinus pinaster Aiton</i>	Tree
<i>Persicaria perfoliata</i> (L.) H. Gross (= <i>Polygonum perfoliatum</i> L.)	Vine, climber



BIOSTATUS NOT SPECIFIED	
Species Name	
<i>Alexandrium minutum</i>	Alga
<i>Didymosphenia geminata</i>	Alga
<i>Cyperus rotundus</i>	Sedge
<i>Ceratitidis capitata</i>	Insect
NATIVE SPECIES	
Species Name	
<i>Polysiphonia brodiei</i>	Alga
<i>Lumbricus rubellus</i>	Annelid
<i>Sabella spallanzanii</i>	Annelid
<i>Batumus umbellatus</i>	Aquatic Plant
<i>Hydrocharis morsus-ranae</i>	Aquatic plant
<i>Montia fontana</i>	Aquatic plant
<i>Najas minor</i>	Aquatic plant
<i>Nymphoides peltata</i>	Aquatic plant
<i>Trapa natans</i>	Aquatic plant
<i>Typha latifolia</i>	Aquatic plant
<i>Phragmites australis</i>	Aquatic plant
<i>Lythrum salicaria</i>	Aquatic plant, herb
<i>Alectoris chukar</i>	Bird
<i>Anas platyrhynchos</i>	Bird
<i>Anser anser</i>	Bird
<i>Bubulcus ibis</i>	Bird
<i>Columba livia</i>	Bird
<i>Cygnus olor</i>	Bird



<i>Porphyrio porphyrio</i>	Bird
<i>Streptopelia decaocto</i>	Bird
<i>Chara spp.</i>	Freshwater alga
<i>Esox lucius</i>	Fish
<i>Neogobius melanostomus</i>	Fish
<i>Perca fluviatilis</i>	Fish
<i>Phoxinus phoxinus</i>	Fish
<i>Rutilus rutilus</i>	Fish
<i>Salmo trutta</i>	Fish
<i>Scardinius erythrophthalmus</i>	Fish
<i>Sparus aurata</i>	Fish
<i>Tinca tinca</i>	Fish
<i>Clarias gariepinus</i>	Fish
<i>Aegilops triuncialis</i>	Grass
<i>Agrostis capillaris</i>	Grass
<i>Agrostis gigantea</i>	Grass
<i>Ammophila arenaria</i>	Grass
<i>Arundo donax</i>	Grass
<i>Bromus inermis</i>	Grass
<i>Bromus rubens</i>	Grass
<i>Panicum repens</i>	Grass
<i>Phalaris arundinacea</i>	Grass
<i>Poa pratensis</i>	Grass
<i>Vulpia bromoides</i>	Grass
<i>Poa bulbosa</i>	Grass
<i>Dactylis glomerata</i>	Grass



<i>Acanthus mollis</i>	Herb
<i>Asparagus officinalis</i>	Herb
<i>Bellis perennis</i>	Herb
<i>Brassica elongata</i>	Herb
<i>Brassica tournefortii</i>	Herb
<i>Calluna vulgaris</i>	Herb
<i>Camelina sativa</i>	Herb
<i>Centaurea diffusa</i>	Herb
<i>Centaurea solstitialis</i>	Herb
<i>Cirsium arvense</i>	Herb
<i>Coronilla varia</i>	Herb
<i>Cynara cardunculus</i>	Herb
<i>Cynoglossum officinale</i>	Herb
<i>Erodium cicutarium</i>	Herb
<i>Euphorbia esula</i>	Herb
<i>Iris pseudacorus</i>	Herb
<i>Lepidium latifolium</i>	Herb
<i>Linaria vulgaris</i>	Herb
<i>Lotus corniculatus</i>	Herb
<i>Melilotus alba</i>	Herb
<i>Onopordum acanthium</i>	Herb
<i>Ranunculus ficaria</i>	Herb
<i>Rumex acetosella</i>	Herb
<i>Rumex crispus</i>	Herb
<i>Rumex obtusifolius</i>	Herb
<i>Sagina procumbens</i>	Herb



<i>Senecio viscosus</i>	Herb
<i>Trifolium dubium</i>	Herb
<i>Trifolium repens</i>	Herb
<i>Tussilago farfara</i>	Herb
<i>Veronica serpyllifolia</i> ssp. <i>serpyllifolia</i>	Herb
<i>Xanthium strumarium</i>	Herb
<i>Petasites hybridus</i>	Herb
<i>Urtica dioica</i>	Herb
<i>Solanum americanum</i>	Herb
<i>Lumbricus rubellus</i>	Insect
<i>Sabella spallanzanii</i>	Insect
<i>Hylastes ater</i>	Insect
<i>Lasius neglectus</i>	Insect
<i>Lymantria dispar</i>	Insect
<i>Tetropium fuscum</i>	Insect
<i>Orthotomicus erosus</i>	Insect
<i>Vespula vulgaris</i>	Insect
<i>Crocidura suaveolens</i>	Mammal
<i>Lepus europaeus</i>	Mammal
<i>Mustela nivalis</i>	Mammal
<i>Rupicapra rupicapra</i>	Mammal
<i>Dreissena polymorpha</i>	Mollusc
<i>Helix aspersa</i>	Mollusc
<i>Mytilus galloprovincialis</i>	Mollusc
<i>Cuscuta spp.</i>	Parastic herb
<i>Frangula alnus</i>	Shrub



<i>Genista monspessulana</i>	Shrub
<i>Lonicera maackii</i>	Shrub
<i>Rhododendron ponticum</i>	Shrub
<i>Salsola tragus</i>	Shrub
<i>Alnus glutinosa</i>	Tree
<i>Populus alba</i>	Tree
<i>Rhamnus alaternus</i>	Tree
<i>Rhamnus cathartica</i>	Tree
<i>Tamarix parviflora</i>	Tree
<i>Cotinus coggygria</i>	Tree, shrub
<i>Prosopis spp.</i>	Tree, shrub
<i>Ricinus communis</i>	Tree, shrub
<i>Salix cinerea</i>	Tree, shrub
<i>Tamarix ramosissima</i>	Tree, shrub
<i>Clematis vitalba</i>	Vine, climber
<i>Hedera helix</i>	Vine, climber

* This list is taken from Global Invasive Species Database

(<http://issg.org/database/species/search.asp?sts=sss&st=sss&fr=1&x=30&y=9&sn=&rn=Turkey&hci=-1&ei=-1&lang=EN>)

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► This species reported in the TANAP ESIA Report (Terrestrial Biodiversity Baseline Report) for Ardahan and Çanakkale provinces.



ALIEN SPECIES FOR MARMARA SEA (OFFSHORE)	
Species Name	
<i>Rhizosolenia calcar-avis</i> (M. Schultze, 1858)	Phytoplankton
<i>Alexandrium monilatum</i> (Howell) (F.J.R. Taylor, 1979)	Phytoplankton
<i>Phaeocystis pouchetii</i> (Hariot) (Lagerherim, 1893)	Phytoplankton
<i>Acanthophora nayadiformis</i> (Delile) (Papenfuss, 1968)	Phytoplankton
<i>Acrochaetium codicolum</i> (Børgesen, 1927)	Phytoplankton
<i>Asparagopsis armata</i> (Harvey, 1855)	Phytoplankton
<i>Bonnemaisonia hamifera</i> (Hariot, 1891)	Phytoplankton
► <i>Codium fragile</i> (Suringar, 1867)	Phytoplankton
<i>Chondria collinsiana</i> (Howe, 1920)	Phytoplankton
<i>Chondrophycus papillosum</i> (C. Agardh) (Garbary and Harper 1998)	Phytoplankton
<i>Ganonema farinosum</i> (Lamouroux) (Fan and Wang, 1974)	Phytoplankton
<i>Gracilaria arcuata</i> (Zanardini, 1858)	Phytoplankton
<i>Griffithsia corallinoides</i> (Linnaeus) (Trevisan, 1845)	Phytoplankton
<i>Hypnea variabilis</i> (Okamura, 1909)	Phytoplankton
<i>Radicilingua thysanorhizans</i> (Holmes) (Papenfuss, 1956)	Phytoplankton
<i>Rhodophysema georgii</i> (Batters, 1900)	Phytoplankton



<i>Chorda filum</i> (Linnaeus) (Stackhouse, 1797)	Phytoplankton
<i>Ectocarpus siliculosus</i> (Dillwyn) (Lyngbye, 1819)	Phytoplankton
<i>Halothrix lumbricalis</i> (Kützing) (Reinke, 1888)	Phytoplankton
<i>Pilayella littoralis</i> (Linnaeus) (Kjellman, 1872)	Phytoplankton
<i>Protectocarpus speciosus</i> (Boergesen, 1902)	Phytoplankton
<i>Sargassum latifolium</i> (Turner) (C. Agardh, 1820)	Phytoplankton
<i>Sphaerotrichia divaricata</i> (Agardh) (Kylin, 1940)	Phytoplankton
<i>Bryopsis pennata</i> (Lamouroux, 1809)	Phytoplankton
<i>Ulva fasciata</i> (Delile, 1813)	Phytoplankton
<i>Centropages furcatus</i> (Dana, 1846)	Copepoda
<i>Parvocalanus latus</i> (Andronov, 1972)	Copepoda
<i>Parvocalanus elegans</i> (Andronov, 1972)	Copepoda
<i>Acartia tonsa</i> (Dana, 1848)	Copepoda
<i>Mnemiopsis leidyi</i> (Agassiz, 1865)	Ctenophora
<i>Beroe ovata</i> (Mayer, 1912)	Ctenophora
► <i>Aspidosiphon</i> (<i>Aspidosiphon</i>) <i>mexicanus</i>	Sipuncula
<i>Lepidonotus carinulatus</i> (Grube, 1870)	Polychaeta
<i>Harmothoe boholensis</i> (Grube, 1878)	Polychaeta
<i>Harmothoe minuta</i> (Potts, 1910)	Polychaeta



<i>Ancistrosyllis rigida</i> (Fauvel, 1919)	Polychaeta
<i>Sigambra constricta</i> (Southern, 1921)	Polychaeta
<i>Nereis zonata persica</i> (Fauvel, 1911)	Polychaeta
<i>Glycera alba adspersa</i> (Fauvel, 1939)	Polychaeta
<i>Lumbrineris debilis</i> (Grube, 1878)	Polychaeta
<i>Dasybranchus carneus</i> (Grube, 1870)	Polychaeta
<i>Timarete dasylophius</i> (Marenzeller, 1879)	Polychaeta
<i>Timarete anchylochaeta</i> (Schmarda, 1861)	Polychaeta
<i>Ficopomatus enigmaticus</i> (Fauvel, 1923)	Polychaeta
► <i>Marphysa disjuncta</i>	Polychaeta
► <i>Prionospio pulchra</i>	Polychaeta
► <i>Hydroides elegans</i>	Polychaeta
<i>Mnemiopsis leidyi</i> (Agassiz, 1865)	Ctenophora
<i>Beroe ovata</i> (Mayer, 1912)	Ctenophora
<i>Callinectes sapidus</i> (Rathbun, 1896)	Decapoda
<i>Marsupenaeus japonicus</i> (Bate, 1888)	Decapoda
<i>Erugosquilla massavensis</i> (Kossmann, 1880)	Stomatopoda
<i>Rapana venosa</i> (Valenciennes, 1846)	Gastropoda
<i>Teredo navalis</i> (Linnaeus, 1758)	Bivalvia
<i>Anadara inaequivalvis</i> (Bruguière, 1789)	Bivalvia
<i>Crassostrea gigas</i> (Thunberg, 1793)	Bivalvia
<i>Mya arenaria</i> (Linnaeus, 1758)	Bivalvia



<i>Ruditapes philippinarum</i> (Adams & Reeve, 1850)	Bivalvia
<i>Asterias rubens</i> (Linnaeus, 1758)	Echinodermata
<i>Liza haematocheila</i> (Temminck & Schlegel, 1845)	Pisces
<i>Solea senegalensis</i> (Kaup, 1858)	Pisces
<i>Gambusia affinis</i> (Girard, 1859)	Pisces
<i>Lagocephalus spadiceus</i> (Spadiceus, 1845)	Pisces

* This list is taken from TANAP ESIA Report which reviewed for Marmara Sea Region (Marine Biodiversity Baseline Report).

- These species are already reported in the TANAP ESIA Report (All of these species were previously reported to have been transported to the coasts of Turkey by ballast waters of ships or by hull fouling).



ANNEX 6.1

SPECIFICATION FOR REINSTATEMENT

ANNEX 6.2

**EROSION, REINSTATEMENT AND LANDSCAPING PLAN
FOR LOT-1**

ANNEX 6.3

**EROSION, REINSTATEMENT AND LANDSCAPING PLAN
FOR LOT-2**

ANNEX 6.4

**EROSION, REINSTATEMENT AND LANDSCAPING PLAN
FOR LOT-3**

ANNEX 6.5

**EROSION, REINSTATEMENT AND LANDSCAPING PLAN
FOR LOT-4**

ANNEX 7

KP'S ACCORDING TO REV H AND REV J

KP's according to Rev H and Rev J

ID	REV H		REV J	
	KP Start	KP End	KP Start	KP End
CH1	3000	3735	3186	3921
CH2	3940	4051	4126	4237
CH3	20700	23000	20977	23277
CH4	23670	27081	23947	27358
CH5	62320	63140	63303	64123
FCH1	71710	71755	72666	72711
CH6	84758	87000	85741	87983
CH7	115393	116000	116376	116983
CH8	116069	116637	117052	117620
CH9	164345	164566	165360	165581
FCH2	166450	166571	167465	167586
CH10	167000	167154	168015	168169
CH11	169000	174000	170015	175015
CH12	174412	176000	175427	177015
CH13	187557	193000	188572	194015
CH14	202930	203709	203945	204724
CH15	214885	219641	215900	220656
FCH3	220177	220211	221192	221226
CH16	232172	232787	233187	233802
FCH4	269680	269696	270699	270715
FCH5	280401	280414	281421	281434
CH17	306365	312319	307400	312670
FCH6	332830	332845	333917	333932
FCH7	353584	353613	355704	355733
CH18	369037	369126	371311	371400
FCH8	372760	372903	375027	375177
CH19	385169	390000	389036	392485
CH20	393489	394339	395974	396824
CH21	432592	434819	435077	437304
CH22	451458	454120	453943	456605
FCH9	504756	504770	506877	506891
FCH10	508498	508510	510622	510634
CH23	518154	521487	520252	523585
CH24	537806	543711	539798	545703
CH25	564425	565125	566417	567117
CH26	588880	590358	590940	592418
CH27	604940	608000	607000	610060
CH28	614648	626000	616751	628103
CH29	632635	634183	634738	636286
CH30	634285	634864	636388	636967
CH31	634906	634932	637009	637035

ID	REV H		REV J	
	KP Start	KP End	KP Start	KP End
CH32	652000	654878	654103	656981
CH33	656000	656431	658103	658534
CH34	660353	660456	662456	662559
CH35	661206	661709	663309	663812
CH36	683613	683648	687002	687037,1
CH37	683924	683963	687313	687352
CH38	700549	701087	703938	704476
CH39	708677	708890	712066	712279
FCH11	709815	709897	713204	713286
CH40	713855	713956	717244	717345
CH41	720035	720290	723424	723679
CH42	729485	729571	732873	732959
CH43	733201	733366	736589	736754
CH44	741301	741446	744689	744834
CH45	746599	749672	749987	753060
FCH12	763361	763381	766754	766774
CH46	802361	802428	805749	805816
CH47	802454	802755	805842	806143
CH48	815368	815380	818756	818768
CH49	846021	846224	849409	849612
CH50	945058	945445	948615	949002
FCH13	983388	983432	986945	986989
CH51	993073	993795	996630	997352
CH52	1029605	1029804	1034862	1035061
CH53	1030091	1030310	1035348	1035567
FCH14	1035368	1035377	1040654	1040663
FCH15	1087890	1087980	1093394	1093484
CH54	1139490	1140300	1144988	1145800
CH55	1149730	1149900	1155228	1155398
CH56	1208945	1209108	1225520	1225910
FCH16	1214260	1214290	1222948	1222983
CH57	1223054	1223506	1229520	1229805
FCH17	1315643	1315665	1321758	1321780
FCH18	1323270	1323300	1329399	1329429
CH58	1362917	1363753	1369450	1370286
CH59	1366493	1366692	1373026	1373225
FCH19	1369221	1369237	1375754	1375770
CH60	1372340	1372683	1378873	1379216
CH61	1430920	1432305	1437587	1438972
FCH20	1461293	1461349	1467963	1468019
CH62	1477452	1477833	1484122	1484503
CH63	1491767	1496340	1498360	1503000
FCH21	1553697	1553730	1562671	1562704

ID	REV H		REV J	
	KP Start	KP End	KP Start	KP End
FCH22	1565865	1565885	1574842	1574862
FCH23	1590290	1590362	1599266	1599339
FCH24	1605400	1605425	1614378	1614403
FCH25	1613360	1613419	1622338	1622397
FCH26	1651548	1651598	1661511	1661561
FCH27	1689784	1689838	1699822	1699876
CH64	1736000	1738300	1746722	1748567
CH65	1741100	1741500	1751367	1751767
CH66	1788300	1788500	1798567	1798767
CH67	1800600	1805000	1810871	1815289

ANNEX 8

BIORESTORATION MONITORING PLAN