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Western Balkans Investment Facility Infrastructure Project Facility Technical Assistance 5 (IPF 5)

TA2015030 R0 IPA

Preliminary Design and Environmental and Social Impact Assessment (ESIA) for the bypass Podgorica (Smokovac-Tolosi-Farmac) of Bar-Boljare highway (SEETO Road Route 4)

WB17-MNE-TRA-03

Environmental & Social Impact Assessment Scoping Report - Executive Summary

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1 Introduction

The sub-project (WB17-MNE-TRA-03) focuses on the development of the Preliminary Design and the Environmental & Social Impact Assessment, in compliance with the national legislation, IFI requirements and the EU standards, for the Farmaci – Tolosi - Smokovac section of Bar-Boljare highway (SEETO Road Route 4), comprising the bypass of Podgorica. The Project Beneficiary is the Ministry of Transport and Maritime Affairs of Montenegro – State Roads Directorate. This document summarizes the Environmental and Social Scoping Report for the proposed Project and has been prepared as part of the ESIA process in accordance with the international requirements of EBRD, the potential lender to the Project. It describes the activities that will be undertaken for the proposed development, while it also provides a description of the bio-physical and social environment to ensure that all risks and impacts are taken into consideration. The impacts and mitigation will be discussed further in the ESIA.

2 Regulations and guidelines

The Project will be aligned with EBRD's Environment and Social Policy and its Performance Requirements, with good international practices as well as with Montenegrin and EU laws and Directives.

2.1 National Legislation

The Montenegrin legislative framework will be applied for the environmental and social aspects of the Project such as Environmental Protection, Water, Waste, Nature Protection, Noise Protection, Air Quality and Cultural Heritage, Construction and Roads, Safety and Health, Labour Relations, Employment, Social Protection, Property and Expropriation.

The Environment Impact Assessment is carried according to the Montenegrin Law on EIA and other relevant regulations. According to the Decree on projects, the proposed Project is included in the List I, article 10 (d) "Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road or realigned and/or widened section of road would be 10 km or more in continuous length" and therefore an EIA is required to be prepared.

2.2 International Regulatory Framework

The most relevant Directive is the EIA Directive 85/337 as amended by three other Directives, which reflected different aspects of Environmental Assessment. According to the Directive 97/11 EC, the proposed Project falls into Annex I, Category 7 (c) "Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road or realigned and/or widened section of road would be 10 km or more in continuous length".

The Project is aligned with the requirements deriving from international agreements and conventions related to environmental and social issues such as the Bern, CITES, ESPOO, ILO, UNESCO conventions etc.

The Project proposal falls under category "A" of the EBRD screening categorization as it is listed in Appendix 1, item 6. "Construction of motorways, express roads and lines for long-distance railway traffic; airports with a basic runway length of 2,100 meters or more; new roads of four or more lanes, or realignment and/or widening of existing roads to provide four or more lanes, where such new roads, or realigned and/or widened sections of road would be 10 km or more in a continuous length" of the EBRD's 2014 Policy document. As such, the Project requires a special, formalized, and participatory assessment process in compliance to the EBRD's comprehensive set of specific Performance Requirements (PRs) that it is expected to meet, covering key areas of environmental and social impacts and issues.

3 Project Description

The proposed alignment is an elaboration of the initially investigated variant 2 of the General Design, applying a design speed of $V=120\text{km/h}$, where improvements have been made mainly at the section from Sitnica river to the end (Smokovac intersection), through the narrow corridor available between the northern boundary of the city and the hillsides Veljebrdo and Rogami, as defined by the approved Spatial Plan.

The start of the proposed variant is the intersection zone with the main road M-2.3. Podgorica-Cetinje, while the alignment crosses Zelenika hill via a tunnel and passes over Tolosi area by a bridge.

An overview of the technical characteristics of the alignment is presented in the following table.

Table 3-1 Technical characteristics of the alignment

Ref	Characteristics	
1	Length (km)	16.50
2	Design speed (V_e - km/h)	120
3	Minimal radius (R_{min} - meters)	700
4	The most unfavourable longitudinal gradient and length	3.73%/306m
5	Longitudinal gradient $>4\%$ (in percentages of total length)	0%
6	Third lane length	0
7	Maximum Embankment Height (m)	25
8	Maximum Cut Height (m)	40
9	Earthworks:	5,661,061.00
10	Embankments (m3)	2,695,548.00
11	Cuts (m3)	2,965,513.00
12	Balance between Cuts and Fills (m3)	269,965.00

The road project includes the interchange "Farmaci", which is connecting Bar – Boljare highway with main road M-2.3. Podgorica – Cetinje, the interchange "Zelenika", which is connecting the corridor of the Bar – Boljare Highway with the continental corridor of Adriatic-Ionian highway and interchange "Tolosi", as the connection with main road M-18 Podgorica – Nikšić Smokovac Interchange (by the end of this section) is out of the scope of the current design, since it is an interconnection, involving two highway corridors and has been elaborated during the priority "Main Design of the Smokovac – Matesevo" section.

The Project consists of ten bridges, five underpasses, four overpasses and two tunnels. Culverts will be proposed at several locations.

The location of landfills and borrow pits will be presented in the ESIA stage. The supporting highway facilities are divided into:

- Functional facilities serving the traffic on the highway, used for maintenance, control and enabling faster, safer, more comfortable and reliable transportation of goods and passengers on the highway, such as structures and facilities intended for road maintenance, control and management, and for toll stations;
- Support facilities intended for road users, such as petrol stations, motels, shops, parking lots, rest areas, information centres and others.

One rest area is foreseen at Velje Brdo ~ km 11+500 – (type II rest area on both sides) as well as two petrol stations at Velje Brdo (km 11+500) – petrol-service stations of type II (on both sides) and Šteke (km 03+500) – petrol-service stations of type II (on the left side of the highway). Motels will be the supporting facilities in the corridor of the highway with the richest content, the shortest stay of one night, for the requirements of transport, rest, recreation and tourism. Along the Podgorica bypass section of the Bar – Boljare highway corridor, one motel is foreseen at Šteke, km 03+500 – motel type II (on the left side of the highway)

4 Environmental and Social Baseline

4.1 Environmental Baseline

According to the Köppen classification, the Csa climate type dominates. The **Cs** subtype is characterized by hot, dry and clear summer and mild and rainy winter - a typical Mediterranean climate. The average temperature of the hottest month is greater than 22°C (mark a). The average annual air temperature in Podgorica is about 15.7°C and varies from 14.4 to 18.0°C. The warmest month is July, with an average temperature of 26.8°C, and the coldest January with an average temperature of 5.5°C. The average annual precipitation is 1668.4 mm in the wider Podgorica area. According to the available data (period 1951-2018), the annual precipitation varies from 870 mm (1953) up to 2476 mm (2010). The average annual relative humidity is 63.6%, while it varies from 55% to 75%. The mid monthly wind speed is relatively uniform throughout the year, while it ranges from 1.6 m/s in October to 2.4 m/s in July. As for the frequency of specific directions of the wind, the highest frequency has the northern wind (N), which is represented by the 13.8% of the total frequency of lines. The average annual maximum snow height is about 7.7 cm, and the absolute maximum recorded is 57 cm.

The east and north east side of the bypass route is mostly covered with landscapes of maquis and bare terrain as the west, and south west side of the route is very diverse, and landscape types are in the range of agricultural, semiurban to urban. The linear infrastructure landscape is the most common landscape type.

The terrain of this section of the highway is of relatively simple geological structure. The wider area around Podgorica is constructed on the surface by glaciofluvial (glf) and alluvial (al) Quaternary sediments, which are deposited over carbonate sediments of the Upper Cretaceous (K2). The wide area of Podgorica is characterized by quite a large variety of selected soil types. According to the national soil classification, four different soil types, are encountered in this part of the route, i.e. Calcomelanosols, Eutric Cambisols, Terra rossa (major) and rivers. According to the Spatial urbanistic plan of Podgorica, the terrains were classified into four categories according to erosion-related properties. The longest length (14,56 km) passes through the "medium erosion" category and 1,94 km through the "very weak erosion" category. The Project lies in the Podgorica - Danilovgrad zone with the expected maximum intensity of eight degrees of MSC.

Regarding air, there is one monitoring station in the capital. The measurement point in Podgorica is approximately at a distance of 3 km from Podgorica bypass. The name of the station is Nova Varoš (national and local number: MNE_VZ_03 and station code MNE_02_01), while NO, NO₂, CO, PM₁₀, C₆H₆, Pb, BaP are measured.

According to the Resolution on establishing the acoustic zones on the territory of Podgorica, the measuring point at the Old Airport settlement, on Boulevard Pera Četkovića, belongs to a residential zone, while the measuring point at I Proleterske brigade - mini bypass road, belongs to the zone under the strong influence of the noise that comes from the road traffic. The distance from the points to the alignment is more than 4km.

By the use of two models for the estimation for temperature and precipitation, both models show a temperature increase which during the century may reach an almost 4°C change (worst scenario) and the average annual amount of precipitation in Podgorica is going to have a steady but relatively mild decrease. Of all the areas in Montenegro with climate characteristics of drought, the ones with most drought are Zetsko-Bjelopavlicka plain. There are no recent historical data for the project area, while potential flood risk may appear in the area of Farmaci and Toloci where the interchanges will be located.

The highway crosses the valley of Tolosi with the river Sitnica (ch. 6+650) and channel Mareza (ch. 7+470) and the Zeta valley with River Zeta (ch. 12+570), a tributary of River Moraca. In between the river valleys, the highway crosses the hills of Lješanska nahija, Komani, Zelenika, Velje Brdo and Smokovac. In addition to these watercourses, along the highway route, there is a small number of intermittent streams, the largest of which is the Siralija (Rogami) stream. The Zeta is sampled at 4 measuring points and according to the classification of its water should belong to A2CK2 class (Duklov most, Danilovgrad and Vranjske njive). Zeta and Sitnica rivers achieved good quality status (name of site – Vranjske njive).

Within the permeable rocks, the following were distinguished: aquifers of intergranular porosity weak to good permeability (t_1, t_2, t_3, a_l) and carbonate rocks, cavernous-fissured porosities of low, medium, and good size (K_1, K_2, K_3). The highway route mostly passes through terrains made of carbonate rock masses and is less than one kilometre away from the peripheral springs. Regarding the absence of a permanent aquifer system, being developed in the secondary porosity of the limestone, it is denoted that along the zones of karstification or/and fracturing or/and disintegration, a certain amount of groundwater inflow, of poor, however, potential, in terms of transmissivity should be expected. The part of the route of designed highway section Farmaci – Smokovac passes close to water sources for public water supply and wells for the individual water supply of households. Water sources of ground waters for public water supply are the water source "Farmaci", the well - Water source "Komani", the water source "Mareza", the water source "Zagorič", the well - Water source Okno in area of "Straganica" and the Bolje Sestre spring.

The major part of the project area is exposed to different types of anthropogenic influence: urbanization, forest cutting, agriculture and cattle breeding. In the past, the flat lands of Momišićko polje and Lješkopolje have been frequently used for agriculture, but nowadays their use is somewhat reduced and a significant part of the arable land is urbanized. Intensive farming but also the permanently active grass cutting of meadows are characteristic of the wider area of Doljani and Donji Rogami, where cattle breeding is still present. Thus, the landscape presents a mixture of fragments of natural forests (mostly mediterranean and submediterranean floral elements), their derivatives and rocky pastures. The dominant plants of the project area are widely distributed within the country and are mostly native species occupying man-made habitats (urbanophilous and urbanoneutral species). Seven habitats listed in Annex I of the EU Habitats Directive are present within study area, i.e. 9250 *Quercus trojana* woods, 92A0 *Salix alba* and *Populus alba* galleries, 62A0 East sub-Mediterranean dry grasslands (*Scorzonera villosa*), 6540 Sub-Mediterranean grasslands of the *Molinio-Hordeion secalini*, 6220* Mediterranean dry grasslands - Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietea*, 3260 Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitriche-Batrachion* vegetation and 3150 Natural eutrophic waterbodies with *Magnopotamion* and *Hydrocharition*. In total, 167 plant species were reported within the study area during the survey, while 17 species – with national protection status, one (1) assessed as Vulnerable (VU), 153 assessed as Least Concern (LC) and four (4) as Data Deficient (DD) in the IUCN red list, three (3) species are included in the Annex II and IV of the EU Habitats Directive and 14 species are listed in the Annex II of the CITES Convention.

There are 3 species of gastropods, endemic to the Lake Skadar basin that are assessed as Endangered by IUCN. These are known to inhabit the waters: *Valvata montenegrina* (Mareza, Sitnica and Zeta river near Vranjske njive), *Radix skutaris* (Mareza, Sitnica and Zeta river near Vranjske njive), and *Plagigeyeria zetaprotogona* (spring near Vranjske Njive). The later one is restricted to Montenegro, and before this survey, it was known only from the type locality (river Zeta near Tunjevo village – outside of the study area).

The watercourses that will be crossed by the proposed road alignment are Sitnica River and Zeta River, while as mentioned above, Moraca River is close to the project area but will not be crossed by the alignment. There are about 30 fish species that inhabit the waters of these rivers. The European eel (*Anguilla anguilla*, IUCN status CR) and the Skadar gudgeon (*Gobio skadarensis*, IUCN status EN) inhabit the waters of Sitnica and Zeta River and can be considered as potential triggers for CHA, while the Adriatic brook trout (*Salmo farioides*) and the Ohrid spirin (*Alburnoides ohridanus*), both assessed as Vulnerable (VU), inhabit the waters of Moraca and Zeta River and can be considered as potential PBF (priority biodiversity features).

There are four species of amphibians and twelve species of reptiles present within the study area, and all are nationally protected. All these species are widely distributed in Montenegro and or the Maritime region (Mediterranean and sub-Mediterranean subregions) and are common and abundant in the project area. The exception is the Albanian water frog - *Pelophylax shqipericus* (IUCN EN; an endemic species of SE Montenegro and coastal Albania), which inhabits river banks and marshes within the wider project area and is the only internationally protected species. In total, there are 183 nationally protected species in the study area, sixty species included in Annex I of the EU Birds Directive and four bird species assessed by IUCN as VU or EN. At least 75 breeding (nesting) bird species are registered within the study area: 74 in Mareza area, 57 in Rogami area (Zeta valley) and 65 in the rocky terrain along the route. Due to the frequent fires that occur in this part

and higher frequency of human presence, the most sensitive area of the highway corridor, regarding breeding birds, is Mareza, followed by the area where the bridge over Zeta in Rogami is planned, while the least sensitive, although it is the longest part of the route (70% of the route), is the zone of the rocky grasslands (EUNIS 2007: E1.3).

Preliminary field surveys have identified at least two sensitive sites located within the study area. Specifically, the locality in Tološi, Magara Cave (80 m above sea level) is the habitat of at least four species of bats (*Rhinolophus ferrumequinum*-Greater horseshoe bat, *Rhinolophus hipposideros*-Lesser horseshoe bat, *Rhinolophus blasii*-Blasius's horseshoe bat, *Myotis oxygnathus*- Lesser Mouse-eared myotis) which are both nationally and internationally protected (Eurobats agreement, Habitats Directive and Bern convention). All these species of the genus *Rhinolophus* are categorized on the Mediterranean IUCN list as "Near threatened" (NT).

The route of Farmaci-Smokovac highway-section passes through parts of the Nature park - Zeta River Valley (corresponds to IUCN category V of protected natural assets) which was a Nature park on 18.12.2019 ("Official Gazette of Montenegro", No. 69/2019). According to the "Study of protection and establishment of protected natural good Zeta River Valley" (EPA Montenegro, 2019), three protection zones are determined within the Nature Park: protection zone I (strict protection regime), protection zone II (active protection regime) and protection zone III (regime of sustainable use),.

The management of Zone III is regulated by the Spatial urban plans of the municipalities Danilovgrad and of the Capital City of Podgorica with an explicit application of standards protection of the environment and nature in order not to disturb but to improve the biological condition of the Nature Park. All plans and activities included and planned within these Spatial Plans either in the stage of the development of detailed planning documentation or implemented in the field, until the moment of declaring the protected area are allowed. This provision applies to the proposed highway and has come as a result of stakeholder consultation. Additionally, the Environmental Protection Agency has stated that the study for the protection area and its zones has taken into account the road projects prior to its enforcement and therefore the current project is not included in the restrictions.

4.2 Social Baseline

The complete route of the Podgorica bypass is located in the municipality of Podgorica. There are 23 local communities in the urban area and another 34 in the rural areas of Podgorica.

The proposed Podgorica bypass route is likely to impact approximately 20 settlements and city areas of the Podgorica municipality.

Montenegro has only 741 km² of the high-quality agricultural land (5.4% of the territory) indicating its particular importance to Montenegro. It should be noted that the largest portion of the higher quality arable land is located in the municipality of Podgorica: 17% of quality arable land is located at 10.4% of the country's area. Part of this higher quality arable land is located along the route of the Podgorica bypass Highway section along the ridge of Čemovsko polje at sites: Tološi, Donja Gorica, Farmaci, and Beri. However, the largest areas of high-quality arable land are located in the southern part of the Podgorica municipality and away of the Highway routes.

The number of livestock owned by agricultural households in Podgorica (besides poultry) is less significant than in other Montenegro regions. However, 19.97% of all beehives are located in Podgorica area.

According to available data in Montenegro Real Estate Administration (recorded by request of owners), there are 16,382 informally constructed buildings in the Podgorica municipality, a total constructed area of 1,984,061 m². Montenegro is a signatory to the Vienna Convention on informal settlements, which aims to harmonize the activities that will be carried out in regularization (legalization) and improvement of informal settlements in a sustainable manner and to prevent the emergence of future illegal settlements.

Coverage of water supply by central water supply in Montenegro urban areas can be considered good, as around 99% of all urban areas are covered. In Podgorica, 56,440 households get water from city waterworks supply, or 155,730 citizens, which is close to 100%. However, rural areas still in many cases depend on their local supply systems. In Podgorica, 80% of the rural area is covered with city water works. Only around 60% of the city urban area is covered by a central sewage system. This percentage is much lower in the rural areas of the municipality. Around 92% of all apartment buildings are connected to the city sewage, and only around 7% of houses, which means that around 55% of the municipality population is not connected to the sewage system.

Podgorica provides pre-school, school, and university education through :

- 2 state preschool institutions (with many educational units)
- 19 private preschool institutions (two of which are international),
- 30 state primary schools,
- 1 private international elementary school,
- 11 secondary schools (10 state and 1 state-private) .

Health Centre Podgorica is a reference centre for primary health care. It operates at 42 locations around the municipality. There are four large health centres in the Podgorica city: Block V, Nova Varos, Stara Varos, Konik. Also, larger points are located in Golubovci and Tuzi. Health stations exist in Maslin, Zagorič, Donja Gorica, Zabjela and Tološi. In the rural area, there are rural ambulances (Vranjina, Lijeva Rijeka, Ubli, Bioča, Zatrijebač, Traboin, Dinoša, Pelev Brijeg, Baloča, Barutana, Gradac, Drezga and Skorać) that serve as health checkpoints for health care services once a week.

Montenegro has a dependency ratio of 47.8 (persons that are likely to be dependable on support per 100 inhabitant working-age inhabitants). Montenegro has a younger population than other countries in the region; pensions still make a significant part of nearly one-third of an average household income. The lodging, water and electricity costs are lower, as is the case in many ex-Yugoslavia countries, most households own their own home, and electricity and water prices are socially protected categories. Recreation and culture consumption are low, as is the consumption for hotels and restaurants (vacations). Education costs are also low, but that come as a result of a free of charge state school and university system.

The rate of poverty risk is the proportion of persons (in the total population) whose equivalent income is less than the relative poverty line. The absolute and relative poverty rate is consistently higher in rural areas relative to urban areas, but the majority of households below the poverty line, as well as those in the bottom 40 percent of poverty risk live in urban areas. The census of 2011 has shown that literacy rate in Montenegro reached 98.8% of total population, and that shows that 6.1% of all population of Montenegro over 65 years of age are illiterate.

Gender equality is warranted by the Constitution and legal framework of Montenegro, there are significant residues of gender inequality (higher percentage of illiteracy, lower percentage of women headed households, lower percentages of activity and employment etc.). Furthermore, women's wages are lower than those of men for comparable work, and wage gaps are present. In general, the activity of the labour force is higher in urban areas like Podgorica.

Women are owners of only 4% of houses, 8% of land and 14% weekend houses, as a result of the tradition that men are mostly defined as successors of family property and formal holders of spouse joint property. In entrepreneurship women are represented far less than men, as shown by data that say that only 9.6% of women are registered of business owners, putting Montenegro behind the EU and the countries of the region.

Montenegro had to provide shelter for refugees and IDPs, of whom one third (12,130) have found shelter in Podgorica. As much as Montenegro is not a country of destination for most of refugees in recent immigration crisis, and that there are no refugee camps presently in Montenegro, UNHCR statistics show that there are 9.92 refugees and persons of UNHCR in Montenegro per 1000 inhabitants, meaning 1% of total population.

The 2011 census counted 6,251 Roma and 2,054 Egyptians (Askali are presented as Roma in the census), only around 1.5% of the total population. The 2011 census has shown that 4,673 RAE population lives in Podgorica, around 2.5% but as specified, it must be presumed that this number is in fact significantly higher.

According to the current legislation, cultural heritage is made of 357 archaeological, historical, artistic, building, ethnological and technical monuments of culture. In Podgorica municipality, according to the Central Registry that was established by the former Republican Institute for the protection of cultural monuments, there are 40 registered monuments of cultural protection: It has been reported that on 20 of the listed cultural heritage goods, illegal construction has been performed, and 29 of them are listed to be in a degraded condition (including only category I, II and III cultural goods).

5 Evaluation of Alternatives

The relevant investigation considered and elaborated four variants on the basis of those two developed by the General Design but also under the request of the ToR to examine the possibility of increasing the design speed from 100km/h to 120km/h, wherever feasible.

The main difference in the rationale of the elaborated alternatives is that Variants 1 and 3 are enclosing the Zelenika hill, follow the general alignment of the approved variant 1 and avoid the drilling of long tunnels, in contrast with Variants 2 and 4, which following the general alignment of the approved variant 3, pass through the Zelenika hill via tunnels and avoid high cuts and embankments.

The Consultant evaluated the developed four variants, to determine the two optimum variants for elaboration at the Preliminary Design stage. This evaluation considered Economic, Based of the above-performed analysis, and taking into consideration the technical characteristics, the functionality, the constructability, the total cost, the number and length of the proposed structures, the environmental and social constraints and the applied technical elements, **two of the examined variants (Variant 2 and Variant 1), from now on called Variant 1 and Variant 2, were selected** (first and second choice respectively) **for further elaboration** as the potential preferred options, at the stage of the preliminary design.

Following the completion of the Draft Preliminary Design, the Consultant has to propose the optimum variant. The evaluation of the variants has to be based on the criteria defined in Annex 5 of the ToR, which can be grouped under two major groups, reflecting the cost of the variant and the related impacts (positive or negative), permitting the comparative evaluation against the criteria set.

For the evaluation of the environmental aspects, six sub-criteria have been used, as presented on the next table.

Table 5-1 Scoring on environmental criteria

Ref. No.	Criterion	Variant 1		Variant 2	
1	Excavations (m3)	2,965,513	1.000	3,901,156	0.760
2	Surplus of earthworks (m3)	269,965	1.000	1,163,602	0.232
3	Landscape (Visible length of bridges - m)	2,729	0.896	2,446	1.000
4	Noise (length of noise barriers - m)	2,300	1.000	3,200	0.958
5	Air & Noise-Number of affected buildings	69	1.000	82	0.841
6	Number of Animal Passages / km of open route	1.37	0.242	1.04	0.000
	Total Environmental aspect scoring		5.138		3.792
	Average Environmental aspect scoring		0.856		0.632

For the evaluation of the social aspects, four sub-criteria have been used, as presented in the next table. The social impact of the Project is related to its length, as well as to the impact it has to the human environment, aggravating the quality of life for any resident near the new motorway or depriving them of their homes and livelihoods.

Any impact on cultural heritage has also been considered.

Table 5-2 Scoring on social criteria

Ref. No.	Criterion	Variant 1		Variant 2	
1	Length (Km)	16.5	1.000	17.38	0.949
2	Physical & economical displacement (houses)	21	0.952	20	1.000
3	Impacts to arable agricultural land (Ha)	39	1.000	42	0.929
4	Impacts to cultural heritage (monuments)	9	Neutral	9	Neutral
	Total Social aspect scoring		2.952		2.878
	Average Social aspect scoring		0.984		0.959

The overall weighted scores for all types of criteria show that variant 1 proves preferable receiving a total evaluation score of 85.6% against 83.2% of variant 2. Therefore, the Consultant proposes that Variant 1 should be further elaborated at the Final Preliminary Design stage.

6 Potential impacts

The table below presents the main environmental and socio-economic aspects associated with preconstruction, construction, operation and maintenance of the Podgorica bypass that have been identified in the Scoping Report and will be discussed in the ESIA. Indicative mitigation measures are proposed considering the Project stage.

6.1 Key environmental impacts:

Table 6-1 Environmental impacts during construction phase

Parameter	Potential Impacts/sources
Resources and waste	<ul style="list-style-type: none"> ■ Use of large quantities of construction material ■ Consumption of fuel by vehicles and machinery ■ Sewage (black and grey water) management and disposal
Geology and Soils	<ul style="list-style-type: none"> ■ Excavation works during construction including off-site quarrying where needed ■ Activation of the existing small landslides in the hilly terrain; ■ Increase of erosion phenomenon in the hilly steep areas covered by sparse vegetation; ■ Erosion of gravels and sands from construction activities at the Sitnica and Zeta river crossings and Mareza channel crossing; ■ Possible damage to bridges in case of earthquakes if they are located over active tectonic lines
Water Environment (Surface waters, groundwater)	<ul style="list-style-type: none"> ■ Impacts to aquatic habitats, water quality & river morphology from river crossings of the right of way and access roads ■ Sediment plumes from working strip, yards, camps and access roads due to rainwater runoff ■ Oil & chemical contamination from machinery on working strip, yards, camps and access roads ■ Potential impacts on ground water quality and quantity by construction works ■ Construction machinery and transport trucks, which may bring pollution risk from fuel and oil spillage; ■ Changes in hydrogeological regimes/disturbance to ground waters
	<ul style="list-style-type: none"> ■ Generation of waste water and solid waste
Air Quality and Climatic factors	<ul style="list-style-type: none"> ■ Impacts from dust ■ A large amount of aggregates will be created, most of which will come from borrow pits and river flood plains in or near the project area. ■ Impacts from emissions to the atmosphere from machinery and vehicles
Climate change	<ul style="list-style-type: none"> ■ Increase of GHGs ■ Floods ■ Increase of temperatures by the removal of topsoil and vegetation clearance
Noise and Vibration	<ul style="list-style-type: none"> ■ Impacts from noise and vibration from machinery, construction vehicles, blasting of rocks (if required) and compressors for hydrotesting.
Biodiversity and Natural Habitats	<ul style="list-style-type: none"> ■ Disturbance impacts to fauna and flora species of nature conservation interest from the Project's activities during construction and pre-commissioning works with particular reference to sensitive areas ■ Habitat fragmentation and separation of habitats ■ Removal or disturbance of aquatic habitats, causing loss of biodiversity.

Parameter	Potential Impacts/sources
	<ul style="list-style-type: none"> ■ Obstructions of the migratory routes for reptiles, amphibians and mammals ■ Direct mortality of species ■ Sedimentation release to watercourses as result of run-off from earthworks.
Landscape and Visual Impacts	<ul style="list-style-type: none"> ■ Temporary and permanent landscape and visual impacts from land take and above-ground structures.

Table 6-2 Environmental aspects in Operation phase

Parameter	Potential Impact/sources
Resources and waste	<ul style="list-style-type: none"> ■ Waste generated by the travellers
Geology and soils	<ul style="list-style-type: none"> ■ Soil pollution by oil leakages, by unplanned disposal of solid wastes or discharges of waste and used waters, by dispersion of pollution and contaminants from water flushing in disposal sites ■ Risk of landslides
Water Environment	<ul style="list-style-type: none"> ■ Discharge of the surface runoff via road drainage to surface waters may cause: Impairment of water quality due to the introduction of pollutants in the runoff; ■ Accidental spills of transported hazardous substances and lubricants; ■ Potential impacts on the areas designated for water abstraction through pollution of groundwater's from runoff water infiltration
Climate change	<ul style="list-style-type: none"> ■ GHGs ■ Pavement changes and soil erosion ■ Floods and landslides impacting on structures
Air Quality and Climatic factors	<ul style="list-style-type: none"> ■ Impacts from air emissions from the increase of traffic
Noise and Vibration	<ul style="list-style-type: none"> ■ Impacts from noise emissions due to the increased traffic.
Biodiversity and Nature Conservation	<ul style="list-style-type: none"> ■ Impact to fauna from the noise emissions from traffic ■ Habitat fragmentation ■ Stormwater discharge from the road may contain elevated concentrations of contaminants, predominantly suspended solids, which could adversely impact the aquatic ecology of receiving waterbodies. ■ Accidental fauna kill, such as the bird corridor above the river Zeta and above Mareza ■ Exposure to artificial light can cause nocturnal animals to suspend normal foraging and reproductive behaviour.
Landscape and Visual Impacts	<ul style="list-style-type: none"> ■ Impacts on landscape due to the presence of several structures ■ Impacts on visibility and related visual vulnerability for local inhabitants

The Scoping report proposes indicative mitigation measures for each category of identified impacts per environmental parameter and per phase which will be further described in the ESIA.

6.2 Key socio-economic and cultural impacts:

The importance of integrated assessment to identify the environmental and social impacts and issues associated with Project. Social impacts and issues of the Project have been assessed against the applicable requirements of the Montenegrin law and EBRD PRs to adopt a mitigation hierarchy approach to address adverse environmental or social impacts and issues to workers, affected communities, and the environment

from project activities. The Key social impacts are related to Labour and working conditions in general stemming from construction works but also form the unprecedented risks from COVID-19. Occupational health and safety risks and health and safety in general are considered as the Project activities, equipment and infrastructure may increase the potential for worker and community exposure to health and safety risks and impacts, including those associated with construction, transport of raw and finished materials and again the exposure to transmission of COVID-19. Increased number of traffic accidents due to increased traffic around construction sites, increased traffic loads on local roads and traffic density is affecting the local community and existing road users. The Development of the Project will result in physical and economic displacement, resulting from land rights or land use rights acquired through expropriation or other compulsory procedures and imposition of restrictions that result in people experiencing loss of access to physical assets or natural resources irrespective of whether such rights of restriction are acquired through negotiation, expropriation, compulsory purchase, or by means of government regulation. It is estimated that in either variants the avoidance of impacts as the preferred measure is not possible, hence it is expected that a total of 21 households will be impacted by physical displacement while a total of approximately 42 Ha of land will be acquired. The exact scope and magnitude of impacts including potential livelihood losses will be assessed during the ESIA phase. Cultural heritage (known) including "intangible cultural heritage" (ICH) will not be directly impacted by the Project. However, the Agency for Protection of Cultural Monuments of Montenegro has provided a list p cultural monuments and evidence of archaeological localities in Cadastral Municipality Velje Brdo – Gradina na Malom Brdu. Apart from the monuments already under protection the following are assets with potential cultural importance and values:

- In Cadastral Municipality Farmaci – The Church of Hristovog Spasenja
- In Cadastral Municipality Draževina – The residence of Milojevic Ban, Nahija Ljesan,
- In Cadastral Municipality Beri – The Church of Saint George 1317, remains

The Scoping report proposes indicative mitigation measures for each category of identified social impacts per environmental and social parameter and per phase which will be further described in the ESIA.

7 Stakeholder engagement

The Project Promoter will undertake a practice of stakeholder engagement throughout the project planning, construction and operation phases. The plan for this engagement, including identification of stakeholders, disclosure of information, consultation, and handling of suggestions, comments and concerns, is to be documented in the Stakeholder Engagement Plan (SEP). This plan will be updated as required as the Project progresses.

Stakeholder engagement activities and consultation meetings/interaction have been undertaken in pre-scoping and scoping stage, aiming at introducing the Project to the potentially affected stakeholders and collecting baseline data and information on social, environmental and cultural heritage sensitivities.

Further Stakeholder meetings are planned to be held in Podgorica to facilitate the participation of all concerned stakeholders and disclose this Scoping report. Since stakeholder engagement is an ongoing process, further stakeholder activities will target at the relevant National Government Stakeholders, Environmental Protection Authorities, Civil Society Organizations, municipal authorities, heads of local communities and the General Public. The details of these activities will be presented in the SEP during the ESIA phase.

The project team will establish a grievance mechanism in accordance with the good international practice. Further details of the mechanism will be presented in the Livelihood and Assets Restoration Framework and in the preliminary Stakeholder Engagement Plan.

8 Terms of Reference for ESIA

Further desktop studies and a limited number of field surveys will be required for the preparation of the ESIA, which will cover the following aspects: introduction, project justification, legal and policy requirements, project description, baseline information, evaluation of alternatives, analysis and evaluation of impacts and mitigation measures, stakeholder engagement and grievance mechanism as well as preliminary management and monitoring plan.

The ESIA will be accompanied by a Stakeholder Engagement Plan, Environmental and Social Action Plan, a Livelihood and Assets Restoration Framework and a non-technical summary.

