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Western Balkans Investment Framework
Infrastructure Project Facility
Technical Assistance 8 (IPF 8)

TA2018148 R0 IPA

Corridor VIII Rail
Detailed Design for the Rehabilitation of the Durres – Rrogozhine Section, Albania
WB21-ALB-TRA-01

Environmental and Social Impact Assessment Report

Non-Technical Summary (ESIA)
(Draft Report)

September 2021

COWI | IPF

Western Balkans Investment Framework (WBIF)

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The Infrastructure Project Facility (IPF) is a technical assistance instrument of the Western Balkans Investment Framework (WBIF) which is a joint initiative of the European Union, International Financial institutions, bilateral donors and the governments of the Western Balkans which supports socio-economic development and EU accession across the Western Balkans through the provision of finance and technical assistance for strategic infrastructure investments. This technical assistance operation is financed with EU funds.

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PROJECT NO.	DOCUMENT NO.
WB21-ALB-TRA-01	

VERSION	DATE OF ISSUE	DESCRIPTION	PREPARED	CHECKED	APPROVED
V01	September 2021	NTS on ESIA Report	Ardian Shehu	Konstantin Siderovski Kostas Tzanakakis	Richard Thadani

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List of abbreviations

Abbreviation	Meaning
ALB	Albania
ARA	Albanian Road Authority
DD	Detailed Design
EC	European Commission
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESMP	Environmental and Social Management Plan
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESP	Environmental and Social Policy
ESS	Environmental and Social Standards
EU	European Union
FS	Feasibility Study
HSH	Albanian Railways
IFI	International Financial Institutions
IPF	Infrastructure Project Facility
LAP	Land Acquisition Plan
LARF	Land Acquisition and Resettlements Framework
MIE	Ministry of Infrastructure and Energy
MTE	Ministry of Tourism and Environment
NEA	National Environmental Agency
NTS	Non-Technical Summary
PA	Protected Area
PD	Preliminary Design
PFS	Preliminary Feasibility Study
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
REA	Regional Environmental Agency
SEP	Stakeholder Engagement Plan
TA	Technical Assistance
ToR	Terms of Reference
WBIF	Western Balkans Investment Framework

Glossary

Term	Meaning
Baseline information	An outline the environmental characteristics of a receiving environment that provides the starting point for an assessment.
Consultation Authorities	Public bodies/authorities, who are legally designated to be consulted on the environmental and social aspects of P/P.
EIA	Environmental Impact Assessment, undertaken at the project level. The EIA for the eventual selected PIP projects is undertaken, if necessary, based on the SEA findings and on the environmental regulations.
EIA Directive[1]	Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU: "On the assessment of the effects of certain public and private projects on the environment"
Environmental topic	This term describes the different features of the environment that may be relevant in a SEA. Alternative terms include "environmental receptor" or "environmental issue".
EU acquis[2]	The *acquis* is the body of common rights and obligations that is binding on all the EU member states. Candidate countries have to accept the *acquis* before they can join the EU and make EU law part of their own national legislation. Adoption and implementation of the *acquis* are the basis of the accession negotiations.
European Site	Includes Special Protection Areas (SPA), Special Areas of Conservation (SAC) and candidate Special Areas of Conservation.
Indicator	Normally associated with monitoring, an indicator is used to measure the achievement of a Plan or Environmental objective
Law on EIA[3] (EIA Law)	Law no 10440, of the Albanian Parliament, of July 07.2011: "On Environmental Impact Assessment". Law is in full compliance with the EU EIA Directive
Objective	An intended goal, specifying the desired direction and outcome
Post-adoption statement	A summary prepared by the Responsible Authority (MEI) to outline how the assessment and consultation process have been taken into account in the adopted plan.
Recharge area	A recharge area is an area where the surface waters penetrate down into the ground, feeding thus the ground water bodies/aquifers.
Responsible Authority	Called also Project/plan developer, a public body responsible for a P/P. The responsible authority for Albanian GMP is MEI.

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052&from=EN

[2] http://ec.europa.eu/enlargement/policy/glossary/terms/acquis_en.htm

[3] http://www.mjedisi.gov.al/files/userfiles/VNM_Paraprake/Fletorja_Zyrtare_101-2011_-_Ligji_nr_10440_date_7_7_2011_-_Per_Vleresimin_e_Ndikimit_ne_Mjedis_%28VNM%29.pdf

Synopsis

Project Title	Corridor VIII Rail Detailed Design for the Rehabilitation of the Durres – Rrogozhine Section, Albania
Project number	WB21-ALB-TRA-01
Contracting authority	European Investment Bank
TA Consultant	IPF8 - COWI IPF
Main Beneficiary	Albanian Railways (HSH)
Project area	Durres – Rrogozhine Section
Lead International Financing Agency	European Investment Bank
Project Objectives	The specific objectives of the services as described in the ToR (Section 2.2) are to provide the Beneficiary (HSH) and Promoter (MIE) with the necessary support for the preparation of: › The detailed design for the rehabilitation works on Durres (Shkozet station) to Rrogozhine; › An Environmental and Social Impact Assessment (ESIA) of the proposed rehabilitation project to identify environmental and social risks, impacts and benefits, and structure the Project in compliance with the National legislation and the IFI Environmental and Social Policy (ESP) › The necessary works and services tender documentation to implement the final detailed design, along with support to the procurement process.
Outputs	**Activity 1: Inception Period** › Inception Report › Review of the ESIA **Activity 2: Detailed Design** › Updated Preliminary Design drawings › Detailed design **Activity 3: Environmental and Social Impact Assessment (ESIA)** › ESIA Scoping Report › Final ESIA › Approval/Disclosure **Activity 4: Procurement Plan, Tender Documents and Procurement** › Procurement plan › Tender documents › Report on Tender support **Activity 5: Final Reporting** › Final report **Bimonthly Reports plus updated risk matrix** (No later than 1 month after the end of each 2-month implementation period)
Results to be Achieved	The Consultant should achieve the following main results (ToR, Section 2.3): › Additional Topographical surveys › Geological and Geotechnical investigations › Track Alignment Detail Design (open line tracks and permanent way in stations, secondary tracks in stations)

	› Design of Structures (civil works, bridges, retaining walls, culverts) › Design of Signalling and Telecommunication systems › Design of Rehabilitation of Stations › Updated Preliminary design › The Detail Design shall contain passive provision for the possible future electrification of this section of the line using a high voltage overhead catenary system to accommodate the necessary civil works (i.e. tunnel/structure clearances, ducts and manholes) along the permanent way. › All necessary approvals for the detail designs. › Environmental and Social Impact Assessment, Stakeholder Engagement Plan, Non-Technical Summary, Land Acquisition Framework and Resettlement Action Plan compliant with the national legal and the IFI requirements; › Tender Documents preparation, for works and necessary services, compliant with the procurement rules of the EIB and internationally recognised Conditions of Contract such as FIDIC The design of the electrification sub-system is out of the scope of these ToR.
Project Starting Date	07-02-2020
Project Duration	15 months

1 Introduction

1.1 The proposed Project and the present document

The consortium COWI – IPF8 (hereinafter called “the Consultant”) has prepared the "Detailed Design for the Rehabilitation of the Durres – Rrogozhine railway line Section, Albania".

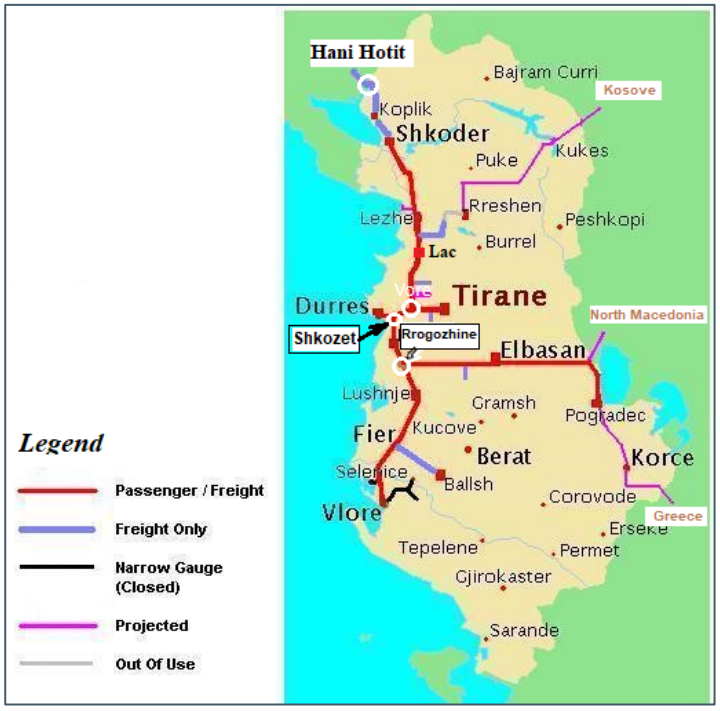

Figure 1-1_Albanian railway network and the Durres-Rrogozhine section

Durres-Rrogozhine railway line rehabilitation project is part of Pan European Corridor VIII that will link Italy with the Bulgarian east coast on the Black Sea. The corridor comprises both road and rail links, and the ferry Durres - Italy.

Figure 1-2_Schematic location of Durres and of the regional railway lines

The Terms of References (ToR) for the proposed subproject (WB21-ALB-TRA-01, which is called hereinafter “the Project”) was prepared by European Investment Bank (EIB), which is the lead IFI. The promoter is the Ministry of Infrastructure and Energy (MIE), while the

beneficiary is the Albanian Railways (HSH), a state-owned company responsible for the rail infrastructure in Albania.

According to Albanian, EU and EIB requirements, the Project is submitted to a comprehensive ESIA process. **This document** constitutes the Non-Technical Summary of the Environmental and Social Impact Assessment (ESIA) report, as part of the ESIA study package on the Project.

1.2 Project background

This railway line section was built between 1947 and 1950. The designed speed was up to 100 km/h. Currently, due to its deterioration, the trains' speed does not exceed 40 km/h for passenger and 35 km/h for freight. Passenger services are carried out by only a pair of trains per day, while freight ones are scheduled ad hoc. Due to the low speed, the number of passengers is insignificant.

The deterioration of the railway system includes mainly the following:

- Rails, sleepers, and ballast are damaged and therefore cannot allow the initial design speed (100 km/h);
- Bridges and Rrogozhine tunnel, although designed to support loads equivalent to 22.5 ton/axel, are severely deteriorated, and their width does not comply with the typical 6.6 m as per the design standards. Moreover, they do not support the future electrification of the line;
- Damaged drainage system, with erosion and sedimentation;
- A considerable number of non-authorized road and passenger crossings have been recorded through inhabited areas. In addition, most of the "authorized" crossings with the roads network are not protected;
- The signalling system is out of operation;
- Stations' buildings are out of standards and stations' platforms require rehabilitation;
- Some of the existing pedestrian overpasses built for highway purposes, do not overpass the railway and therefore, the pedestrians simply cross the railway.

1.3 Project's purposes and objectives

The purpose of the proposed project is the upgrading of the railway line to meet European standards, including an increase in train speeds and improve safety.

The overall objective of the Project is the preparation of the Detailed Design for the Rehabilitation of the Durres – Rrogozhine Section, as part of the Railway Line Durres – Elbasan – Pogradec that will continue later towards North Macedonia (at Qafe Thane border place) and Greece.

The specific objectives are to provide the Beneficiary (HSH) and Promoter (MIE) with the necessary support for the preparation of:

- The detailed design (DD) for the rehabilitation works on Durres (Shkozet station) to Rrogozhine related to the railway line. Any additional parallel roads will be decided to be upgraded/built by the local governments and/or the Albanian Road Authority, thus not included in this document.
- An Environmental and Social Impact Assessment (ESIA) of the proposed rehabilitation project to identify environmental and social risks, impacts and benefits, and structure the Project in compliance with the National legislation and the EIB Environmental and Social Standards (ESS);
- The necessary works and supervision services tender documentation, along with support to the procurement process.

1.4 The ESIA Report and its Non-Technical Summary

The Non-Technical Summary (**this document**), is part of the ESIA study on the Project.

1.4.1 Purpose of the ESIA study

The ESIA study aims to assess the potential significant adverse impacts of a project before its approval. Besides, it takes into account the stakeholders concerns in the environmental decision-making process during the whole project's life cycle.

The ESIA study is a package of documents, including the ESIA Scoping Report, which precedes the preparation of the ESIA Report (the main report). The ESIA Scoping Report defines the main issues to be taken into consideration in the ESIA Report. Whether necessary the Scoping Report influences the project design and avoids/eliminates the project's options that may cause significant impacts to the environment. The conceptual and the preliminary design on the proposed project have been already influenced during the ESIA scoping stage.

The ESIA Report deals mostly with the strategies and measures to avoid/mitigate the negative impacts and, whenever possible, to enhance the positive ones. In function of the ESIA findings, the future lender(s) will decide on the possibility of project's financing. IFIs, including EIB[4] finance only the projects that are environmental friendly and therefore comply with their environmental and social standards.

The ESIA Report is also necessary to obtain the Environmental Declaration from the Ministry of Tourism and Environment that is indispensable to obtain the construction permit. As the project area covers the territory of three municipalities, the construction permit for the proposed project needs to be approved by the National Council of Territory Planning (NCTP), which is leaded by the Prime Minister. The necessary documents include the Environmental Permit and the approval from National Agency of Territorial Planning (NATP).

[4] https://www.eib.org/en/publications/environmental-and-social-standards

1.4.2 Purpose of the Non-Technical Summary on the ESIA Report

According to the EU "Guidance on EIA", 2017, the Non-Technical Summary (**this document**) gives in a non-technical language the following[5]:

- The role of the EIA in the Development Consent process;
- A concise and comprehensive description of the Project, the baseline information, the likely environmental effects, and the proposed mitigation measures;
- Any significant uncertainties about the Project and its environmental effects; and
- An overview of the approach to the assessment

1.4.3 Constraints/Limitations

There were some limitations to the ESIA package documents, as follows:

- the devastating earthquake of November 26, 2019 that affected the municipalities[6] along the alignment made difficult the contacts between the Consultant and the counterparts (key informants) in these municipalities (overall during 2020), especially in Durres one, which was heavily affected by the earthquake;
- outbreak of Covid-19 pandemic situation as of March 2020 which adversely affected contacting and meetings with key informants. Often it was challenging to reach key informants due to Covid 19 situation;
- During the period of preparation of the ESIA study, it was not possible to obtain official data on Project Affected People (PAPs). These data can be provided only by the State Agency of Cadastre (SAC) in Albania, as the one and only governmental institution, entitled for registering, keeping and disseminating the information. Although the official communication in this regard was made in due time, and, in addition, the project and beneficiary made every other effort to obtain this information, the expropriation list provided within the "Cadastral Report" includes 229 affected properties associated with a buffer zone from railway axis and other engineering objects with no further information. This list does not define if the area is owned by HSH and does not clarify the type of these properties, e.g. residential houses, warehouses, businesses, agricultural area. Therefore, the analysis of impacts related to land use and all aspects/factors in this regard, is pending, to be performed at another time in the future.

  The Consultant to prepare only a dedicated RAP concerning three families living in the stations buildings of Rrogozhine and Lekaj Stations.

1.5 Structure of this document

This document is structured as follows:

- Chapter 1: Introduction. The chapter includes the Project background and key stakeholders, its purpose and objectives along with the purposes of the ESIA Report and the Non-Technical Summary;

[5] https://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf

[6] https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/albania_post-disaster_recovery_a_v9.0.pdf

- Chapter 2: The Project. The chapter discusses the Project area along with the Project elements, as well as a short comparison of the considered Project's options;
- Chapter 3: Regulatory framework and guidelines. Under this chapter are discussed the key requirements on the ESIA Report and the Non-Technical Summary;
- Chapter 4: Impacts Assessment Methodology. The chapter provides for the approach and methodology for Project impacts' evaluation;
- Chapter 5: Baseline information and Impacts and Mitigation;
- Chapter 6: Main findings: This short chapter gives the main findings of the ESIA Report regarding the environmental and socioeconomic effect of the proposed project;
- Appendix - Maps and figures: Some maps and figures are placed and the end of this document, in order to clarify the discussed issues.

2 The Project and the Project's area

This chapter outlines the main characteristics of the project area and the main components of the proposed project. Besides, a section of the chapter outlines the considered options and the preferred option.

2.1 The Project's area

2.1.1 Outline of the Project area

The project area is included within the territories of the municipalities of Durres, Kavaje and Rrogozhine (see figure Figure 7-1 at the end of this document), as follows:

- Durres Municipality: from Km 0+000 to Km 8+500;
- Kavaje Municipality: from Km 8+500 to Km 23+150; and
- Rrogozhine Municipality: from Km 23+150 to Km 35+384

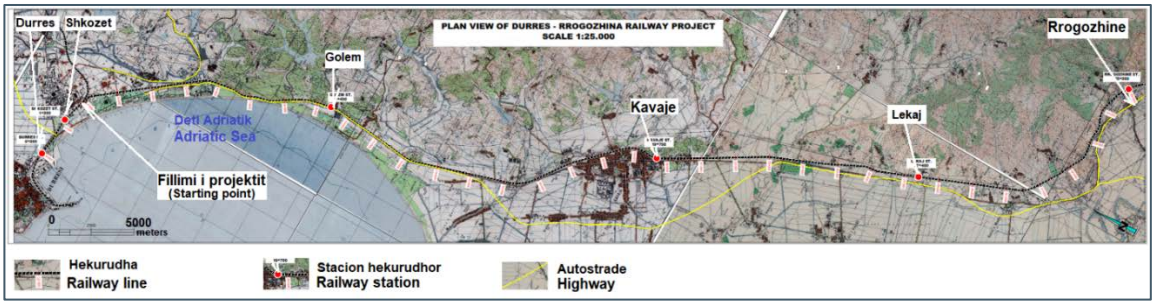

Figure 2.1_Plan view of the railway line Durrës-Rrogozhine

The railway line alignment follows the existing line. The starting point is close to Shkozet station (Km 1+876), while the ending point is Rrogozhine station.

The railway line runs across urban, semi-urban and rural areas. The terrain is flat, excepting a small segment close to Rrogozhine where a hilly terrain is crossed by Rrogozhine tunnel.

From km 1+876 to km 5+100 (Shkozet to Plepa), the railway line runs through a densely populated area.

Figure 2-2_Crossed terrain from km 1+876 to km 5+100

From km 5+100 to km 15+000 (Plepa to Kavaje town), the railway line runs in low terrain across urban, semi-urban and rural areas. The terrain on the left (East) of the railway line is hilly with some rock formation up to km 9+380, while then it softens up and the alignment cross section is in fill. The horizontal alignment is smooth and goes beside the highway Durres- Rrogozhine.

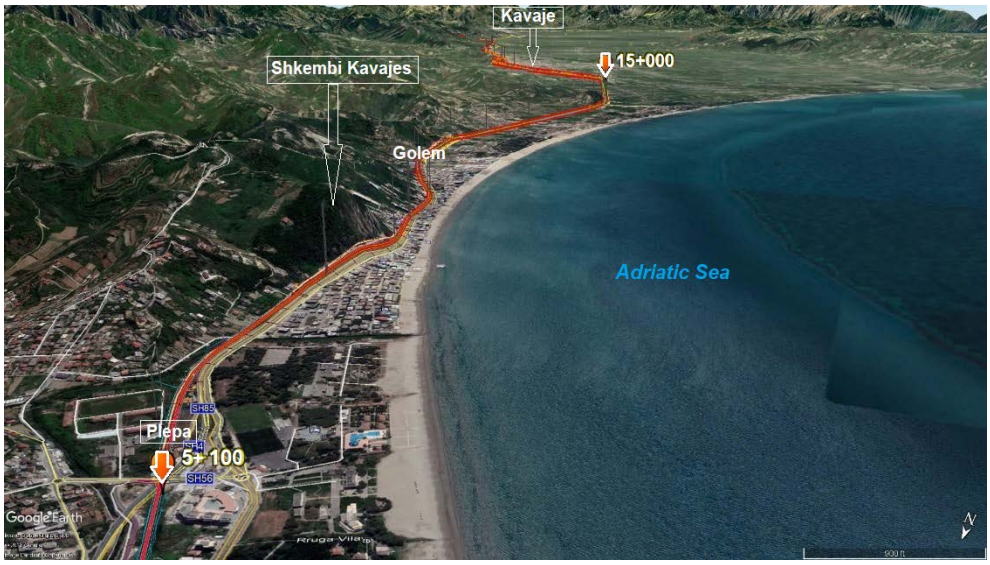

Figure 2-3_Crossed terrain from km 5+100 to km 15+000

From km 15+000 to km 28+000, the alignment runs in an almost flat terrain. At km 19+120 is located the station of Kavaje town.

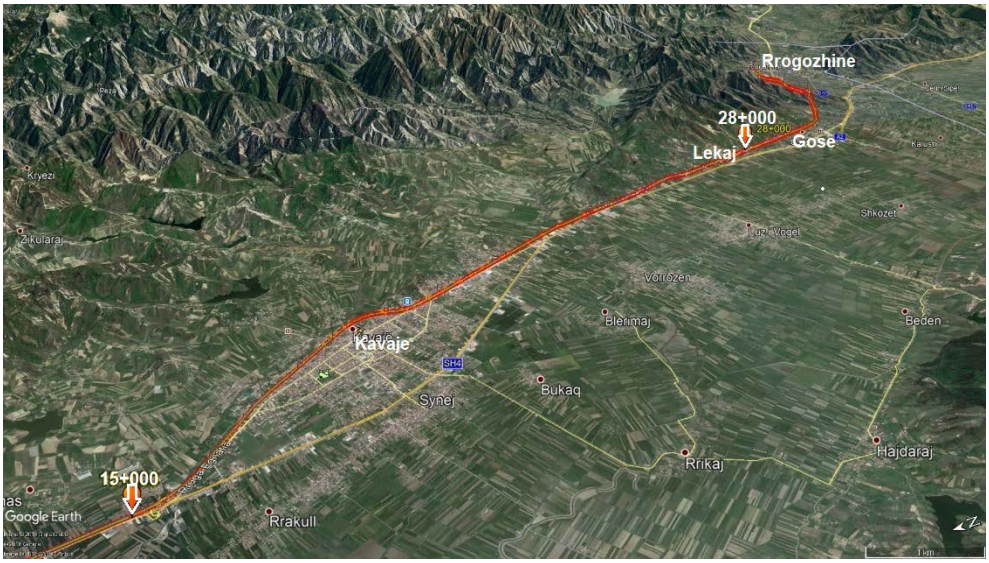

Figure 2-4_Crossed terrain from km 15+00 to km 28+000

From km 28+000 to km 35+384, the alignment runs mostly on a hilly foot terrain, where it is also located Rrogozhine tunnel (380m long).

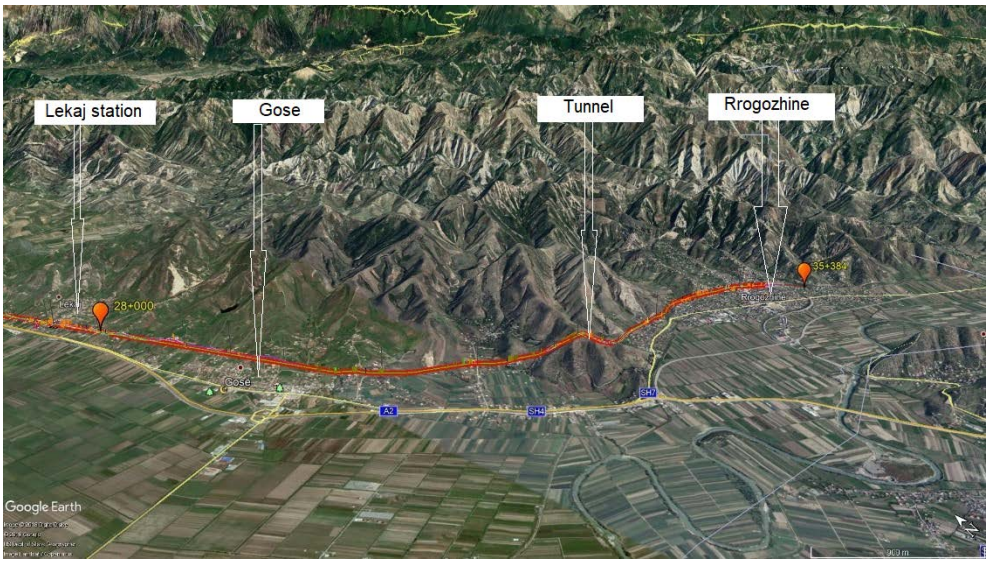

Figure 2-5_Crossed terrain from km 28+00 to km 35+384

2.1.2 Sensitive areas or areas of protection status

The railway line from Shkozet to Rrogozhine does not cross any nature protected area or area rich in biodiversity values. It does not affect any water source, cultural heritage site/object, etc. Figure 7-7 at the end of this document shows the closest nature and cultural protected areas to the railway line.

2.2 Considered Project's alternatives/options and preferred alternative/option

2.2.1 Considered alternatives

The Project's alternatives/options have been already considered and discussed in 2018 under the "Feasibility study for the rehabilitation of the railway line Durres – Elbasan – Pogradec and a new rail line link to the border with the former Yugoslav Republic of Macedonia", Component 2: Preliminary Design for Durres - Rrogozhine section (WB13-ALB-TRA-01 project)".

Under Component 2 of the above-mentioned project, it was concluded to improve the horizontal alignment of the Durres-Rrogozhine railway line. Component 2 has also taken into consideration the possible electrification of the railway line.

However, sections 2.2.2, 2.2.3 and 2.2.4 hereinafter summarize once again the considered Project's spatial and technical options and the stakeholders concerns on these options.

2.2.2 Spatial options

From the spatial point of view, the following options were considered:

- Option 1: Rehabilitation of the railway line within the existing alignment; and
- Option 2: The improvement of the horizontal railway line alignment to reach the trains' speed required by the European standards.

Option 2 imposes the increase of the line radius in some short railway line segments.

The Steering Committee preferred Option 2 to accomplish the purpose and objectives of the Project. Option 2 was preferred also from the environmental and social point of view (see ESIA Scoping Report on the proposed Project).

2.2.3 Technical options

The considered technical options include:

- Option 1: The non-electrified railway line; and
- Option 2: The electrification of railway line to reach the European standards

To be part of Pan European Corridor VIII the Durres-Rrogozhine section needs to comply with the European standards that require an electrified railway line. Due to existing non-favourable economic situation of the country, the Promoter cannot support the cost of the line electrification. However, the Steering Committee and the Consultant judged reasonable the Detailed Design to take into consideration the future electrification.

The electrification is preferred also from the environmental point of view, as it enhance the existing situation regarding air quality and GHG emissions, and therefore is much more environmentally friendly compared to trains running with diesel fuel.

2.2.4 Preferred alternative/option

As mentioned above, the existing railway line alignment and the non-electrified railway line do not meet the European standards that constitute the Project's rationale. In addition, the proposed Project design (and later on the railway line construction) is financed by EU founds as part of the Pan European Corridor VIII. That's why the Steering Committee preferred the improvement of the horizontal railway line alignment and the consideration into the design of the future line electrification.

Furthermore, the preferred option does not present any significant adverse environmental and social effect, whereas the positive effects regard overall the social and economic aspects at national and regional level.

2.3 Outline of the Project

2.3.1 Railway components

The railway line components are as follows:

- Superstructure: rails, sleepers, fastening components, protective layer and ballast layer;
- Sub-structure: sub-ballast or formation and the subgrade or natural layer;
- Structure: tunnels, bridges, underpasses, overpasses, culverts, drainage channels and retaining walls;
- Other components: level crossings, stations; signalling and telecommunication, fencing

The schematic figure below shows the components of the superstructure and sub-structure of a railway line.

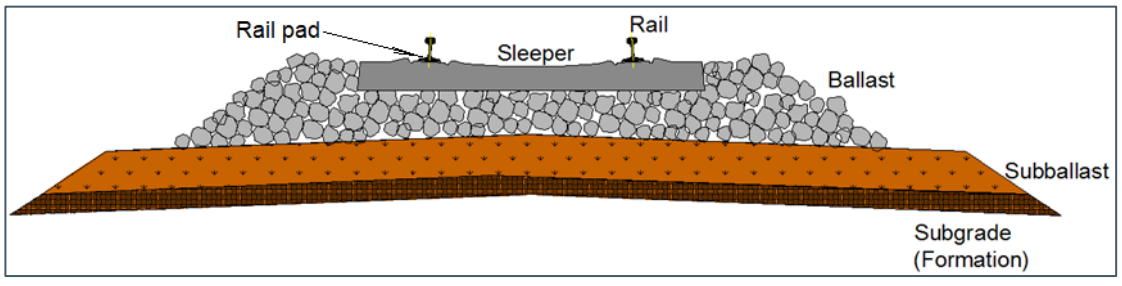

Figure 2-6_Schematic cross section of the railway track

The subgrade plays a role similar to that of a building foundation. The applied loads are transferred by the deflection of the rail to the ballast bed and then passed on via the subgrade to the subsoil.

2.3.2 Planned interventions

The Project aims to improve the passenger and freight transport services and increase safety and trains' speed according to the EU standards.

The increased speed and uniform classification (UIC D4 category, 22.5 tons/axle, and 8.0 tons/m), the improved transport services and the increase of safety will be reached through the following technical objectives:

- the improvement of the horizontal and vertical alignment;
- the replacement and rehabilitation of outdated superstructure components (ballast, sleepers, fastening, switches and tracks). The ballast will be in basalt, while the slippers in concrete;
- the replacement and rehabilitation (whether necessary) of substructure components (sub-ballast, subgrade);
- the rehabilitation and improvement of structure components (culverts, retaining walls, underpasses, pedestrians' overpasses, bridges and tunnel);
- the consolidation of level crossings (reduction of the number of crossings, secured level crossings, rehabilitation and/or interlocking improvements). Currently there are 30 level crossings, 25 of which are unauthorized. The Project has designed in total 16 secured level crossings, eight of which are existing ones, while eight are new;
- the improvement of interlocking and telecommunications equipment for incorporation into the CTC system;
- fencing the railway line and the stations' areas;
- The reconstruction of the stations, including new stations' buildings in Golem, Kavaje, Lekaj and Rrogozhine.

In addition, design has taken into account the future electrification of the railway line. That is why the superstructure is designed 6.6m wide.

The improvement of the parallel or service roads, which connect the local settlements to the designed level crossings is not included in the Project. These roads will be upgraded by the local Authorities and/or the Albanian Road Authority.

3 Regulatory Framework and Guidances on the ESIA Report Preparation

The ESIA process fulfils the Albanian and EU regulations and EIB standards. As provided in the Inception Report on the Project, when these regulations/ standards differ, the most stringent of them is applied.

Note: The term "EIA" in Albanian and EU environmental regulations, include also the social issues, and therefore "EIA" according to these regulations means "ESIA" according to EIB environmental terminology.

3.1 Key requirements on the ESIA Report and the Non-Technical Summary

The ESIA Report and the associated reports (ESIA Scoping Report and the Non-Technical Summary) should fulfil the requirements given in the table below.

Table 3.1_Regulations and guidance on the ESIA Report and its associated documents

ESIA Study package deliverables	Standards followed for the proposed Project
ESIA Scoping Report	EU "Guidance on Scoping"
ESIA Report content	-EU EIA Guidance on the preparation of the EIA report[7]; -CMD 912/2015 "On national EIA methodology"; -EBRD Environmental and Social Policy[8] (April 2019)
Non-Technical Summary	EU "Guidance on EIA"

3.2 Requirements on the impacts assessment methodology

The approach and methodology for impacts assessment is based on the EU "Guidance on EIA" and good international practice (GIP), as well as on the previous experience of the ESIA team on transport projects in Albania. It should be underlined that the Albanian DCM 912/2015 "On national EIA methodology" fully complies with the EIA Directive. Thus, the used methodology complies with both the national and EU requirements.

[7] https://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf

[8] https://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html

4 Impacts' Assessment Methodology

The approach to the ESIA includes a general approach for structuring the report and the impacts' evaluation methodology. There are strong relationships between the environmental standards, the Project's components and activities, and the general approach to be followed for such studies. In addition, the stakeholders concerns has been taken into consideration.

4.1 General approach

The approach used for assessing the potential impacts is summarized below, and it includes more specifically, the following steps:

- Defining the project's area;
- Outlining the project's specific technical interventions and the related environmental and social impacts;
- Consultations with the affected municipalities and other relevant stakeholders;
- Describing the baseline information;
- Defining the environmental and social impacts that will be taken into consideration;
- Evaluating the significant potential environmental and social impacts.

4.2 Evaluation of impacts' significance

Impacts are evaluated in terms of "significance", which assessment "relies on informed experts' judgments about what is important, desirable or acceptable with regards to changes triggered by the Project in question. These judgments are relative and must always be understood in their context". The assessment methods should define clear thresholds or criteria for determining whether an impact is significant, based on the characteristics of an impact, in a clear manner.

4.2.1 National and EU regulations

The evaluation of impacts' significance is based on Annex III (3) of the EIA Directive[9], as well as in Annex I of CMD 686/2015 "On National EIA methodology"[10].

Once evaluated, the potential impacts should be dealt with a mitigation strategy, which will aim at minimizing and reducing the likely adverse effects and, whenever possible, enhancing the positive environmental effects of the project. The principles of mitigation, including their hierarchical setup, follow the following steps:

a. Preference for avoidance and prevention;
b. Cancellation;
c. Mitigation; and
d. Remedial/Compensation

[9] http://ec.europa.eu/environment/eia/eia-legalcontext.htm

[10] http://www.qbz.gov.al/botime/fletore_zyrtare/2015/PDF-2015/145-2015.pdf

4.2.2 Guidelines and Practical considerations

The criteria for evaluating the significance include the impact's magnitude and the sensitivity of the receiving environment[11]: Magnitude defines how large an impact might be. It reflects the area of land and the amount of a particular resource or the number of affected people. Magnitude is closely linked to the stakeholders' concerns and is determined mostly by empirical prediction. While the determination of the sensitivity involves more subjective judgments in terms of how a certain environmental receptor is valued in society. Some discretion from the environmental expert is, therefore, required in assigning different weights to the criteria.

The last and final step for evaluating a potential impact on a receiving environment is the definition of the impact significance, the principle of which is described in the table below.

Table 4.1_Characterisation of potential impacts in terms of significance

Significance of impact	Description
Biophysical and socio-economic receptors	
Insignificant (Negligible)	The receptor will not be affected in any way by the proposed development activities, or the potential effect is considered to be of "negligible" intensity or is imperceptible/indistinguishable from the natural/social background variations;
Minor (Low)	The impact will occur (with and without mitigation. The impact magnitude is small (with and without mitigation) and within the accepted standards, and/or the value/sensitivity of the receptor is low.
Moderate	The impact can be reasonably reduced to a level that is as low as practicable. This does not mean that a "moderate" impact can be reduced to a "minor" one, but that moderate impacts can be effectively managed.
Major (High)	Impacts of large magnitude affect a resource/receptor of high value/sensitivity, or the accepted standards/limits are exceeded. In this case, in the function of the regulations/standards, the adverse effects must be weighted against the positive ones until a decision of the key stakeholders.

[11] http://ec.europa.eu/environment/eia/pdf/EIA_guidance_Scoping_final.pdf

5 Relevant Baseline Information and Impacts and Mitigation

This chapter outlines the baseline information, the expected significant impacts, and the suggested mitigation measures.

5.1 Air quality

Baseline information: According to official annual data[12], the air quality near the railway line is within the accepted national and EU standards. While within the rural areas crossed by the railway line, it is good, because of the low road traffic and other air polluting activities.

Impacts and Mitigation

Design and Construction phase: Air quality will be affected by construction activities. Impacts are temporary and can be reduced by routine mitigation measures.

Operation: The main source of pollution is the fuel combustion from locomotives that can be mitigated by using fuels within the standards and suitable locomotives. The future railway electrification will avoid this source of pollution. Therefore, the air quality will be enhanced.

Conclusion: The air pollution is not a problem of concern and therefore can be reduced to insignificant through routine mitigation measures.

5.2 Noise and Vibrations

Baseline information

Noise: the Consultant measured the noise levels along the proposed alignment in 12 locations (see Figure 7-2 at the end of this document). The measurements showed that in some locations, the noise levels are slightly higher than the standards because of the dense road traffic near the railway line. While across the rural areas where the traffic and urban activities are limited, the noise levels are within the standards.

Vibrations: the Consultant conducted a vibrations' survey, during which all the sections close to habitable places were identified, along with ortho maps and other data to exclude buildings that do not classify for sensitive receivers. The sections where vibration levels exceed the EU standards are listed in the following table:

Table 5-1 – Sections where vibration levels exceed the EU standards

From km	to km	Track length [m]
1+840	4+360	2.520
5+440	5+680	240
9+360	9+680	320
18+160	18+680	520
19+280	19+760	480
21+040	21+280	240
Total		**4.320 m**

[12] National Environmental Agency. State of Environment Report. Annual Reports for 2017 and 2019

Impacts and mitigation during construction
Construction and transport activities will generate noise and vibrations. Impacts are temporary and can be reduced by routine mitigation measures. Particular attention should be paid across the densely inhabited areas (Shkozet, Plepa and Kavaje).

Impacts and mitigation during operation
Noise and vibration generated during the operation stage are associated to the trains' movement. They affect people and buildings located close to the railway line.

Noise and vibrations can be reduced at the source, the propagation path and the receiver[13]. Both noise and vibrations are firstly reduced during the railway design, through reducing them at the source, including the design of the railway line radius curves, and structure and substructure elements. The track and the rolling stock must be maintained in good operating conditions.

The most efficient way to control the vibration is at the source. At the very low frequency (below 20 Hz), the soil stabilization can effectively mitigate the vibration compared to soft soil. Apart from soil stabilization, similar (and better) results are achieved with a slab in the ground or a ballasted trough, which can be used to realize a flat and hard layer with high input impedance. Ballasted through is a variant of a concrete slab that provides high input impedance and a side support for the ballast. The effectiveness of these measures is increased when combined with under ballast mats.

Secondly, the noise and vibrations are reduced at the propagation path. Based on the Noise Study performed for the Project's purposes, the Consultant does not suggest to install noise barriers. The Consultant suggested to reduce the vibrations at the sections listed in the Table 5-1 above by use of trenches, which should be 4 - 5 meters deep.

With regard to vibration reduction, there are also various measures that can be taken at the receiver, but these are not related to the railways authority and they are very costly for existing structures, unless only protection of sensitive equipment is needed.

Conclusion
Noise and vibrations during construction can be reduced through routine mitigation measures related to construction and transport activities. While during operation, they are reduced through the appropriate mitigation measures, which are already taken into account in the Project's design.

5.3 Climatic conditions and Climate change

5.3.1 Climatic conditions

Baseline information: The project area lies in the Mediterranean Plains Climatic Zone that is characterized by mild and wet winters and hot and dry summers. These moderate climatic characteristics are suitable for all the project development phases. Thus, the construction

[13] "State of the art review of mitigation measures on track.", RIVAS (Railway Induced Vibration Abatement Solutions) EU Collaborative project - Deliverable D3.1, 2011

works will be able to take place almost all year round. According to the hydrologic study, the Project's area has never been flooded.

Impacts and Mitigation
Design and Construction phase: Schedule construction activities for the construction of the bridges, culverts and the protection works against erosion outside the rainy periods.

Operation: The design has taken into consideration the increase of the conveyance capacity of the new bridges (e.g. Shen Vlashi Channel Bridge at km 5+864) and culverts. Besides, the design has increased the number and the diameter size of all the new culverts.

Conclusion: The likely impacts associated with climate conditions do not constitute a concern for the Project. They have been taken into consideration by the Project's design.

5.3.2 Climate change

Baseline information:
According to *Albania's Third National Communication on the Climate Change* (Albanian Ministry of Tourism and Environment, 2016[14]) and the fifth synthesis report of the *Intergovernmental Panel on Climate Change* (IPCC), 2014[15], the climate change parameters that are of concern for the Project include the temperature, rainfalls, sea level rise and GHG emissions.

Temperature: the maximum absolute projected temperature value is 46.5 ºC. Therefore, the projected temperature increase does not represent any risk for the Project if the Project's components are manufactured to work appropriately in these temperatures.

Hydrology: The maximum projected increase in runoff values that can affect the Project area could reach 29.5% in the winter period by 2100. The Project's design has taken into consideration the improvement of the drainage system. The design of the bridges and culverts has already taken into account the likely erosion from rivers and streams in case of discharge increase. The conveyance capacity of the new bridge at km 5+864 will be increased compared to the existing bridge; All the new culverts will have a bigger diameter size compared to the existing ones. The designed increased diameter size will avoid also the blockage of the culverts by sediments.

Sea level rise: In the pessimistic scenario, the highest value of sea level increase will be roughly 70 cm by 2100. As the lowest part of the terrain crossed by the railway line is roughly 2.5 m a.s.l. (at Shkozet – see Figure 7-3 at the end of this document), it is not expected any impact of the sea level rise on the Project's elements.
GHG emissions: GHG emissions at the country level are low. The contribution of the transport sector and railway transport to the total GHG emissions at the country level is 26.31% and 0.108%, respectively. However the Consultant estimated the expected GHG emissions during the railway operation.

The absolute GHG emissions from the railway line Durres-Rrogozhine are 602 CO_2 eq. tons/year (see table below) in 2014 (without the project). While the expected GHG emissions

[14] https://unfccc.int/sites/default/files/resource/Albania%20NC3_13%20October%202016.pdf
[15] https://www.ipcc.ch/report/ar5/wg2/europe/

do not exceed 438 tons/year (see table below) despite a drastic increase of the passenger and freight traffic.

Table 5-2_ Estimated GHG emissions and rail traffic for both "Without" and "With" the project

Option	Parameter	Year			
		2014	2025	2030	2040
Without the project	Passenger*km	1,618, 930	2,183,543	2,281,611	2,903,656
	Tons*km	2,231,877	3,359,488	3,857,991	5,401,187
	CO_2 eq. (tons/year)	602	139	102	102
With the project	Passenger*km	n/a	6,320,371	6,848,377	9,217,532
	Tons*km	n/a	11,309,667	12,791,667	29,964,767
	CO_2 eq. (tons/year)	n/a	430	319	438

Likely impacts of the Project on the climate change
Design and Construction phase: Impacts are expressed through the release of GHG emissions from working and transport machineries. This impact can be reduced by routine mitigation measures.

Operation: It is not expected any impact on climate change during the operation stage. The main source of GHG emissions is the fuel combustion from locomotives that can be mitigated by using fuels within the standards. In addition, the GHG emissions will be reduced by rehabilitation of the railway line, increase of the load factor of the trains and use of locomotives of lower power capacity for the same traction capacity. The future electrification of the railway line will almost avoid the generation of the GHG emissions, due to the fact that more than 90% of the national electricity is generated by hydropower plants that are clean sources.

Anyway, the biggest benefits of the project on the GHG emissions reduction are due to the indirect effects from the replacement of the road transport by the rail transport. The passenger rail transport requires less than 10% of the energy needed to move an individual by personal car[16]. In average, the freight rail transport needs 4-5 times less energy than the freight road transport. So, indirectly, the Project will be beneficial with regard to the total GHG emissions released by the transport sector. The GHG emissions can further be reduced through designing energy efficiency stations' buildings and platform canopies.

Conclusion: The likely impacts of the Project on climate change are insignificant. However, the Project's design has already take into consideration the necessary adaptations to the projected climate change.

5.4 Geology

Baseline information: The main geological risks that can affect the railway line is linked to lithology, tectonics, seismicity, and the water table level. These risks are the subsidence and soil liquefaction during earthquakes.

Impacts and Mitigation: The only risk is subsidence, which may occur where the upper geological layers are composed of unconsolidated marshy deposits (e.g. lowland from

[16] *Railway Handbook 2017*

Shkozet to Plepa). The subsidence may affect the stability of the bridges and the railway substructure, because of the weight of the trains.

The appropriate filling material will replace the existing one. The design of the bridges' foundations has already taken into account the local geotechnical conditions.

Conclusion: It is not expected any eventual impact related to the geological issues.

5.5 Earthquakes

Baseline information: The railway line crosses an area of high seismic risk. The most sensitive section is from Shkozet to Plepa, where, the railway traverses an area where the expected intensity is IX degree MSK-64 (see Figure 7-4 at the end of this document). Recently, a strong earthquake hit the Project's area in 2019.

Earthquake of November 26, 2019, and the railway line: The epicenter was some 25 km in the North of Durres (see Figure 7-6 at the end of this document). The magnitude of the mainshock has been evaluated at least 6.4, while the intensity in the epicenter to IX degree (MSK-64)[17]. The earth shake lasted at least 50 seconds. Thousands of buildings (in Vore, Fushe Kruje, Mamurras, Thumane, Milot, Lezhe, Durres, Golem, Kavaje, Rrogozhine, etc.) were damaged. This earthquake damaged also the Ishmi Bridge, which is currently (July 2021) out of work. Consequently, at present, the railway line from Vore to Hani Hotit is not functioning. Figure 7-5 at the end of this document shows the role of the soil conditions in the amplification of the earth-shaking during this earthquake.

Impacts and Mitigation: The earthquakes may damage the bridges and stations. The Project's design has already taken into consideration the seismic risk, which is calculated by taking into consideration the tectonic features, the geotechnical model of the ground, and the water table level.

Conclusion: As the Project design has taken into consideration all the necessary seismic parameters, it is not expected any eventual impact associated with the earthquakes.

5.6 Groundwater

Baseline information: The information on the groundwater is provided by the Hydrogeological Study carried out by the Consultant COWI-IPF8.

There is a thick impermeable clayey cover layer that protects the aquifers of the crossed area. The railway line is located far away from the sanitary protection zone of the hydrogeological wells that supply drinking water to the rural settlements. Therefore, there is no expected risk to groundwater pollution if routine mitigation measures are undertaken. Durres, Golem and Kavaje are supplied from hydrogeological wells located in Fushe Kuqe and Cerme, located roughly 30 km from these settlements. Rrogozhine station is located more than one km from the hydrogeological water wells.

Impacts and mitigation: The protection of the groundwaters relates to routine mitigation measures for the protection of the surface waters and soil, and therefore the likely adverse

[17] https://www.volcanodiscovery.com/earthquakes/albania/archive/2019-nov-26.html

impacts on groundwaters can be evaluated as insignificant if appropriate mitigation measures are undertaken.

Conclusion: No significant adverse impacts on groundwaters are expected

5.7 Surface waters

Baseline information: The railway crossed some streams and two small rivers (Lishati and Darsi Rivers). The only bridge that will be demolished and rebuilt is the Fllaka Channel Bridge at km 5+864. No surface water body that serves for drinking water supply purposes is present in the project area.

Impacts and Mitigation: The potential impacts on the watercourses during the construction stage include increased suspended solids in waters; pollution risk from paints, grease, fuel, and oil spillage, solid waste, etc. No changes in the hydrological regimes of the crossed rivers and streams are expected by the bridges' construction and/or rehabilitation.

If the due general measures of good construction practice for the reduction of potential impacts of discharges into the soil and the surface waters are undertaken, the likely adverse impacts on surface waters can be reduced to insignificant.

Conclusion: No significant adverse impacts on surface waters are expected.

5.8 Flooding

Baseline information: The watercourses it crosses do not flood the railway line Durres-Rrogozhine. None of the major bridges has ever been threatened to date by the water levels of these watercourses. The culverts and small bridges have guaranteed the stability of the railway substructure. However, the lowland crossed by the railway line has been never inundated during exceptional flood events.

Impacts and Mitigation: The construction activities may increase the risk from flooding by the crossed streams in case of heavy rainfalls if the removed materials are thrown out in the stream beds. The blockage of the drainage system, including the culverts, might cause the flooding of the land both sides of the railway. These impacts can be avoided by rehabilitation of the drainage system, by performing construction works in dry period, as well as by applying a set of mitigation measures related to solid waste.

The design has taken into account the increase of the conveyance capacity for all the new bridges and culverts, as well as the increase in number and size of the new culvers.

Once the railway is rehabilitated, it is not expected any adverse impact on the flood events, if the drainage system, including culverts, is correctly maintained.

Conclusion: During construction and operation there is no expected any significant adverse impact on the flood events if mitigation measures are taken.

5.9 Biodiversity and Protected Areas

Baseline information: The railway doesn't cross any area of rich diversity values or protected area. The existing railway runs only across man-made areas composed of urban, suburban and agricultural ones (see Appendix 2.2 – Map of the Railway line-orthophoto).

Impacts and Mitigation: The impact on biological environment during construction is limited to the working strip, which should be maintained clear from any vegetation. The only vegetation to be removed is composed mainly of some invasive species that covers the non-maintained existing railway and its belt (unless 5m wide on each side of the railway). The stream banks and streambeds riparian vegetation will not be significantly affected because there is no need to perform earthworks within these environmental receptors. So, the project avoids the mudding of water flow which might locally affect some animal freshwater species. Since the construction work period is short, the impact results of low significance if appropriate mitigation measures are taken. Due to the possible negative impacts, it is suggested that the construction works on watercourses to be conducted during the periods of low water level.

After the construction works it is not expected any impact on biological environment.

Conclusion: the potential impacts on the biological environment during construction stage are insignificant, temporary, reversible, and localised to the working site.

5.10 Land use

Baseline information: The stations will be rehabilitated within the Albanian Railways property. While the parallel roads are part of the bidding process of the Project. These roads will be rehabilitated by the local governments. Anyway, no permanent land acquisition is required by the Project.

Conclusion: there is not expected any potential impacts on the land use, as the railway line and the stations are located within the Albanian Railways property.

5.11 Soil and soil quality

Baseline information: The railway line, the new service roads and the train stations lie partly in an agricultural area and partly urban areas. However, a part of the railway line and the service roads lie in soil with high agro-pedologic quality. Besides, the railway line crosses the neighbourhoods of Durres, Kavaje, and Rrogozhine cities.

Impacts and Mitigation: Soil quality is affected by construction activities (compaction, loss of topsoil, vegetation clearing, etc.). Mitigation measures include the use of the local roads as access roads, minimizing the working strip. Whether reasonable, remove the topsoil within the area of the eventual work camps and working strips. Preserving it during construction activities and reinstall to rehabilitate the same areas once the construction phase is done.

No impact is expected during the operation phase.

Conclusion: If appropriate mitigation measures are undertaken, the likely impact on soil and soil quality can be reduced to low significance.

5.12 Infrastructure utilities

Baseline information: Infrastructure includes all utilities that cross or run very close to the railway line, and therefore constitute a risk for the Project's implementation and vice-versa can be adversely affected by the construction of the railway line. Infrastructure includes gas and water supply pipelines, aerial and underground power and telecommunication, and power substations and cabins. During site visits and consultations with the affected municipalities, the Consultant has identified the crossed infrastructure utilities.

Impacts and Mitigation: Any necessary infrastructure utility that can be damaged by the Project should be removed and reinstalled appropriately. However, impacts on infrastructure are temporary and can be mitigated.

Conclusion: the damage to infrastructure utilities can be mitigated and therefore the overall significance can be evaluated as insignificant.

5.13 Landscape and visual amenities

Baseline information: The railway line crosses only agricultural land and urban and rural settlements. The railway line is located sufficiently far from the cultural heritage sites that have also tourist values.

Impacts and Mitigation: As the railway already exists, there is no expected any additional permanent adverse effect on the landscape, excepting the the fencing of the railway line and stations. In addition to the visual aspect of the new stations' buildings, the improved and secured level crossings, and the newly improved service roads, bridges, underpasses, and drainage channels will be much better compared to the existing ones

Conclusion: In general, the landscape and visual issues will be affected negatively only by the presence of the fencing. Whereas all the other components of the railway line will have their visual amenity improved.

5.14 Cultural heritage

Baseline information: there is no any cultural heritage site/object within the working strip and therefore there is no expected any negative impact on cultural heritage

Impacts and Mitigation: there is no expected any negative impact on cultural heritage. According to the Albanian law 17/2018 "On the cultural heritage and museums" prior the start of the construction works the approval of the Archaeological Survey Agency (ASA) might be required. The Law 17/2018 requires the application of the "chance find procedure". All contractual personnel will be trained to stop all activities if any valuable cultural heritage object is found. If this happens, construction will not begin again until authorized by the Regional Directorates of National Cultural Heritage (DRKK), Durres and Tirane.

No adverse impacts on cultural heritage during the operation phase are expected.

The operation of the trains for passengers will increase the visits to the cultural heritage sites, especially in the archaeological park of Durres and other historic sites/monuments, etc.

Conclusion: there is not expected any potential adverse impacts on the formally known cultural heritage.

5.15 Waste

Baseline information: There is no any environmental hot spot within the fingerprint of the Project's area. The only waste is constituted by the neglected existing building facilities in the the freight train stations contain a few solid waste such as bricks, etc.

Impacts and Mitigation: The main source of waste generation is the removal of the ballast and the partial removal of the subgrade, the widening of Rrogozhine tunnel, the demolition of the existing Shen Vlash Channel Bridge and of the culverts and stations' buildings, which will generate solid waste. The removal of the rails and sleepers will produce metallic, concrete, and wood waste. Another source will be the construction activities (earth and concrete works, electro-mechanical works, installation works, etc.). Whether the solid waste cannot be reused by the Project, it can be used for different other purposes, in collaboration with the local governments. In general, the solid waste that can be reused neither by the Project nor by the local governments will be disposed of at the disposal sites defined by the municipalities. The Albanian Railways will sign an agreement with the Municipalities of Durres, Kavaje and Rrogozhine on the transport and reuse of the solid waste.

The extraction and transport of the filling material (ballast, sun-ballast, and subgrade) as well as the rehabilitation of the used quarries will be under the responsibility of the supplier that is also responsible for the quarries' environmental permit.

The temporary impacts of solid waste generated by the project activities will be mitigated by implementing an EMP for such types of waste, which must be prepared prior to the construction period, and in accordance with the Standard 2 of the EIB and the Law No. 9010/2003, "On environmental management of solid waste", as amended, which comply with the Directive 2008/98/EC "On Waste", as amended[18]. The ESMP on the Project includes the main lines of a Waste Management Plan, which will be detailed by the Construction Company prior to the construction stage. The Waste Management Plan to be elaborated by the Contractor will consider the EU objectives for 2020 that intend to re-use and/or recycle up to 70% (in weight) of the construction and demolition waste.

Conclusion: Waste generation will be significantly reduced but not completely avoided. A part of the solid waste will be transported at the municipal waste disposals.

5.16 Railway accidents and incidents

Baseline information: The accidents are associated overall with the unauthorized level crossings and at a lower scale to the crossing of the open line. While the trains' incidents

[18] https://ec.europa.eu/environment/waste/framework/

derive mainly from the deterioration of the condition of the lines, the railway vehicles, the insecure railway switches, and on a lesser scale to the human errors of the railway staff[19].

Impacts and Mitigation: The Project's design has already taken into consideration the applicable standards on the secured level crossings, the closure of the informal crossings, the fencing of the railway line and stations, and the new signalization system that will avoid any eventual train collision and other accidents. All these elements (level crossings, fencing, signalization, etc.) will be appropriately built and maintained during the operation phase.

Conclusion: Accidents and trains' incidents will be drastically reduced.

5.17 Compliance with other plans/programmes

Baseline information: This section includes other existing plans/programs/projects within the same project area and/or the same sector (infrastructure and transport), in combination with which the proposed project may cause cumulative impacts.
The Project is part of the existing urban and transport national and municipal development plans and therefore in compliance with them. The rehabilitation of the railway line may interfere with the following project:

- Ionian Adriatic gas Pipeline (IAP), which is crossed at km 23+150;
- The opening of a local road alongside the eastern border of the Golem station area.

Impacts and Mitigation: As per the crossing of the infrastructure projects, the following can be said:

- Local road lying on the eastern border of Golem station area: Currently locals use the railway station platform as an informal local road. A new local road is planned to pass on the east of the station area. This new road is already designed and will be built soon by the Albanian Development Found (ADF). It is not expected the construction of this road to have any negative effect on the Project and vice-versa. Therefore, no mitigation measures are required. It can be said that the construction of this road will have a positive cumulative effect on the Project;
- Ionian Adriatic gas Pipeline (IAP): Darsi River Bridge (70m long) is located at the planned crossing of the gas pipeline with the railway line. Therefore, the future gas pipeline will be laid under this bridge. Consequently, no other mitigation measures are necessary. Besides, it should be underlined that the railway line is an existing structure and therefore the IAP path must be adapted to the railway.

Conclusion: No adverse cumulative impacts are expected.

5.18 Socioeconomic issues

Baseline information: Socio-economic baseline serve to determine the current social and economic conditions of the inhabited settlements along the railway alignment and to evaluate how these conditions will change from project development.

[19] http://dih.gov.al/attachments/article/633/DIH%20%20%20ANNUAL%20REPORT%20%202019.pdf

The railway line affects the territory of three municipalities (Durres, Kavaje and Rrogozhine). No representatives of Roma and Egyptian communities live nearby or are adversely affected by the Project.

Impacts and Mitigation

Design and construction: The sources of impacts include the demolishing and construction and transport activities, traffic, permanent and temporary land acquisition, an influx of temporary workforce, etc. The likely impacts include disturbance from traffic and noise, temporary land use restriction, eventual tensions that may arise from any eventual temporary land acquisition and loss/damage to livelihood, etc. These impacts are temporary and can be avoided/mitigated by applying the due strategies and measures.

The Project design has taken into consideration that the authorized level crossing and parallel service roads have considered the population movement to reach centers of administrative units, education and health facilities, etc.

Operation phase: The rehabilitation of the railway line will affect positively the following:

- Significant regional positive impact because of the national rail network connection to the regional and European railway networks through Corridor VIII;
- The increase of the importance of the port of Durres;
- Creation of opportunities for the increase of business at a national level and therefore increase in employment and incomes;
- Promotion of public transport, including the attraction of car users to public transport;
- Contribution to urban restructuring, shortening travel distances and improving cities sustainability; etc.

Conclusion: The overall socio-economic environment will be improved at a local, national, and regional level.

6 Main Findings

This chapter summarizes the main findings of the ESIA Report and the expected environmental and social effects that may arise from the Project's implementation phases.

The expected significant effects are the residual ones, which are associated directly with the project elements and activities or indirectly with the interaction between the project and other development plans/programs/strategies within the same project area or in the same sector (transport).

6.1 Expected significant negative effects

The main expected significant permanent negative effect concerns the landscape and the visual amenity, which will be affected by the fencing of the railway line and stations.

6.2 Expected significant positive effects

The main expected positive impacts occur overall during the operation stage. This category of impacts include:

- Enhancement of the economic situation of the country as a result of the railway line operation;
- The design of the railway line components will avoid/reduce at maximum any eventual damage due to earthquakes and therefore will avoid any eventual railway traffic interruption;
- Avoiding/reducing the railway line accidents and incidents;
- The railway infrastructure at the stations will be adapted to disabled people and woman with little children, etc.;
- The stations' buildings and platform canopies will fulfil the EU standards on energy efficiency and "green buildings";
- The design of the new stations' buidings will improve the visual amenity compared to the existing ones;
- Improvement of the traffic as a result of the improvement of the level crossings;
- The parallel roads are not part of the Project's tendering process. Their improvement will be carried out by the local governments and/or the Albanian Road Authority (ARA). However, this improvement is a positive cumulative effect;
- Decrease of the GHG emissions from the railway line and stations operation;
- Reduce the railway noise and vibrations;
- The rail passenger transport is safer and cheaper than the road transport. Consequently, this mode of transport is much more preferred by people with reduced incomes.

7 Maps and Figures

Figure 7-1_Administrative map and the railway line Durres - Rrogozhine

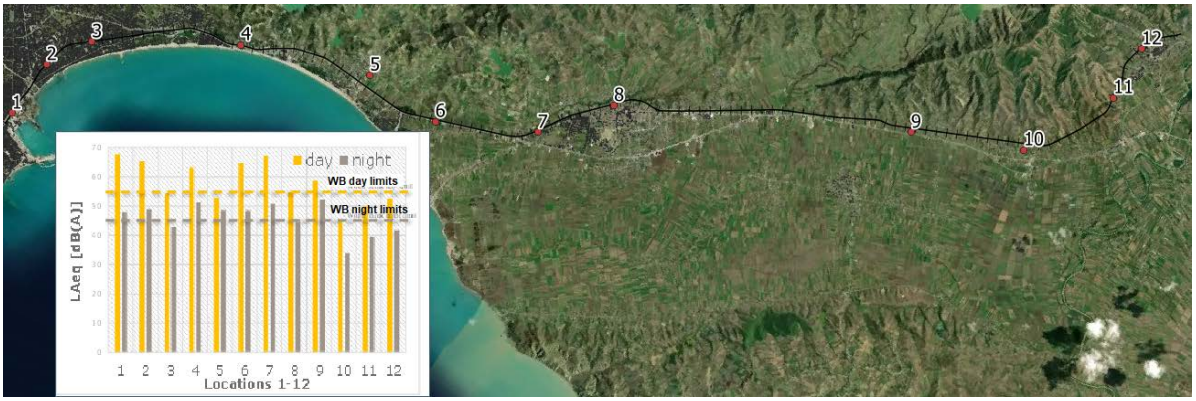

Figure 7-2_ Environmental noise measured and the railway line alignment

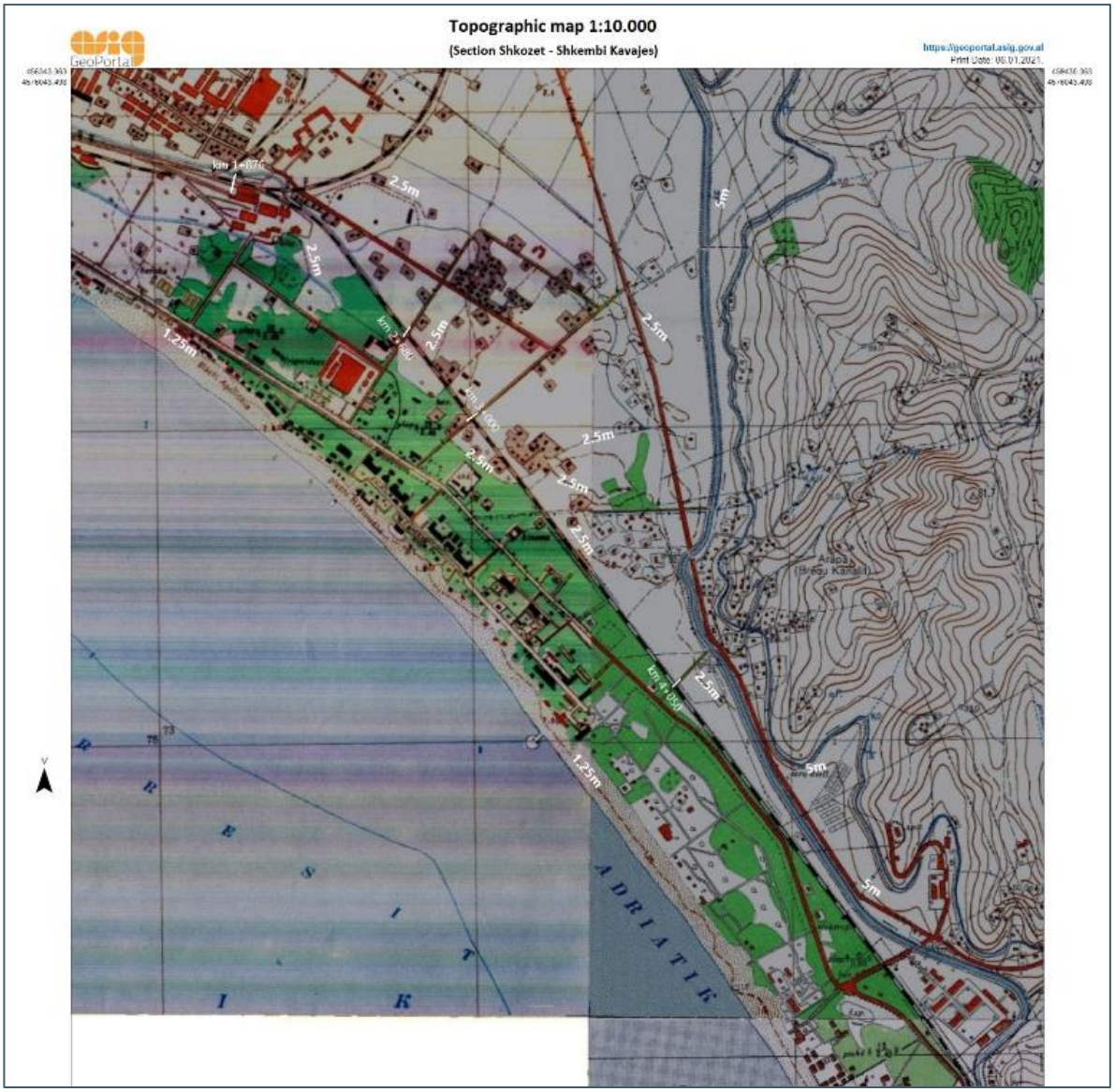

Figure 7-3_The railway line Shkozet – Shkembi Kavajes on the topographic map

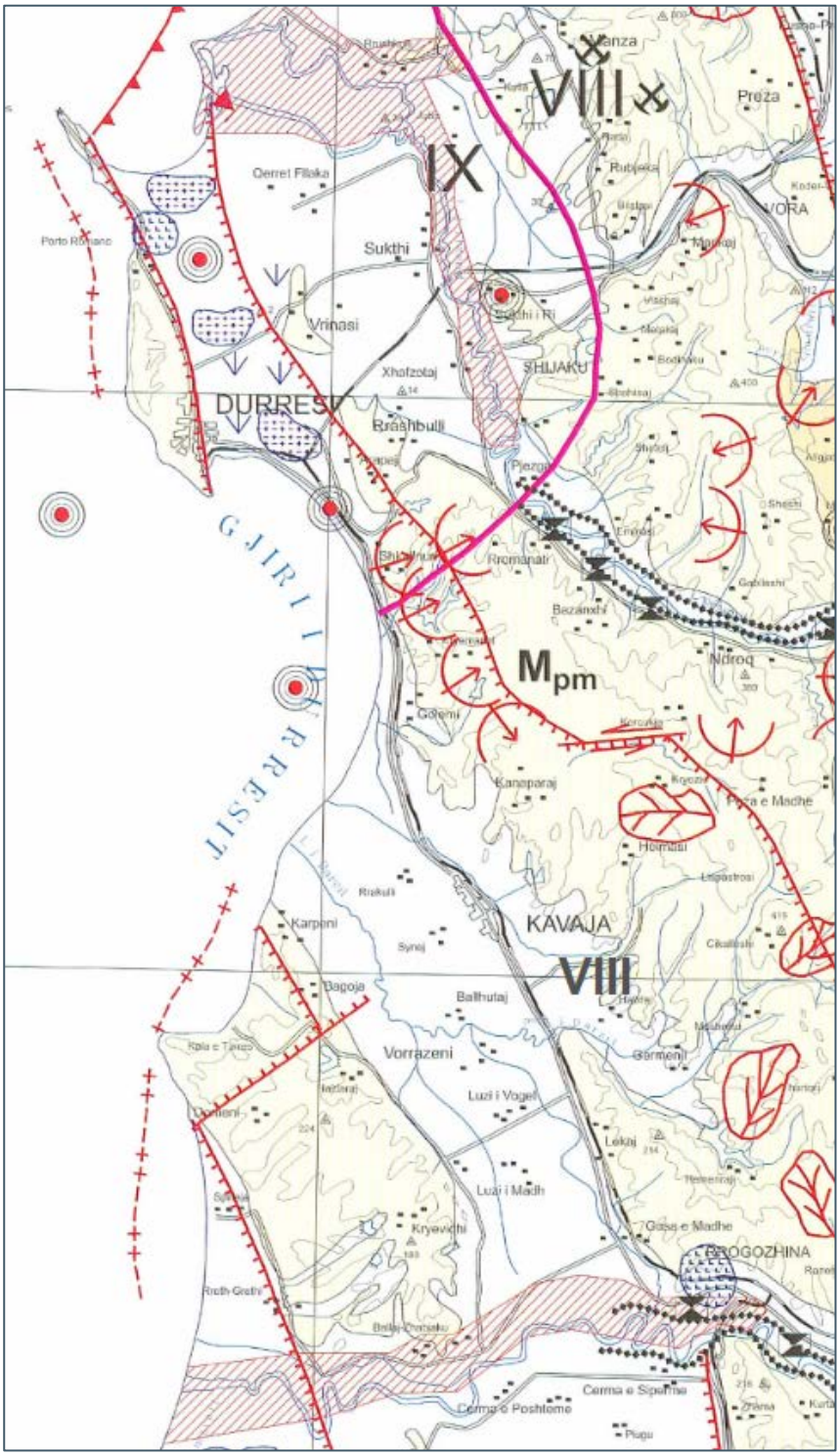

Figure 7-4_Geohazard map of Albania and expected intensity of the earthquakes

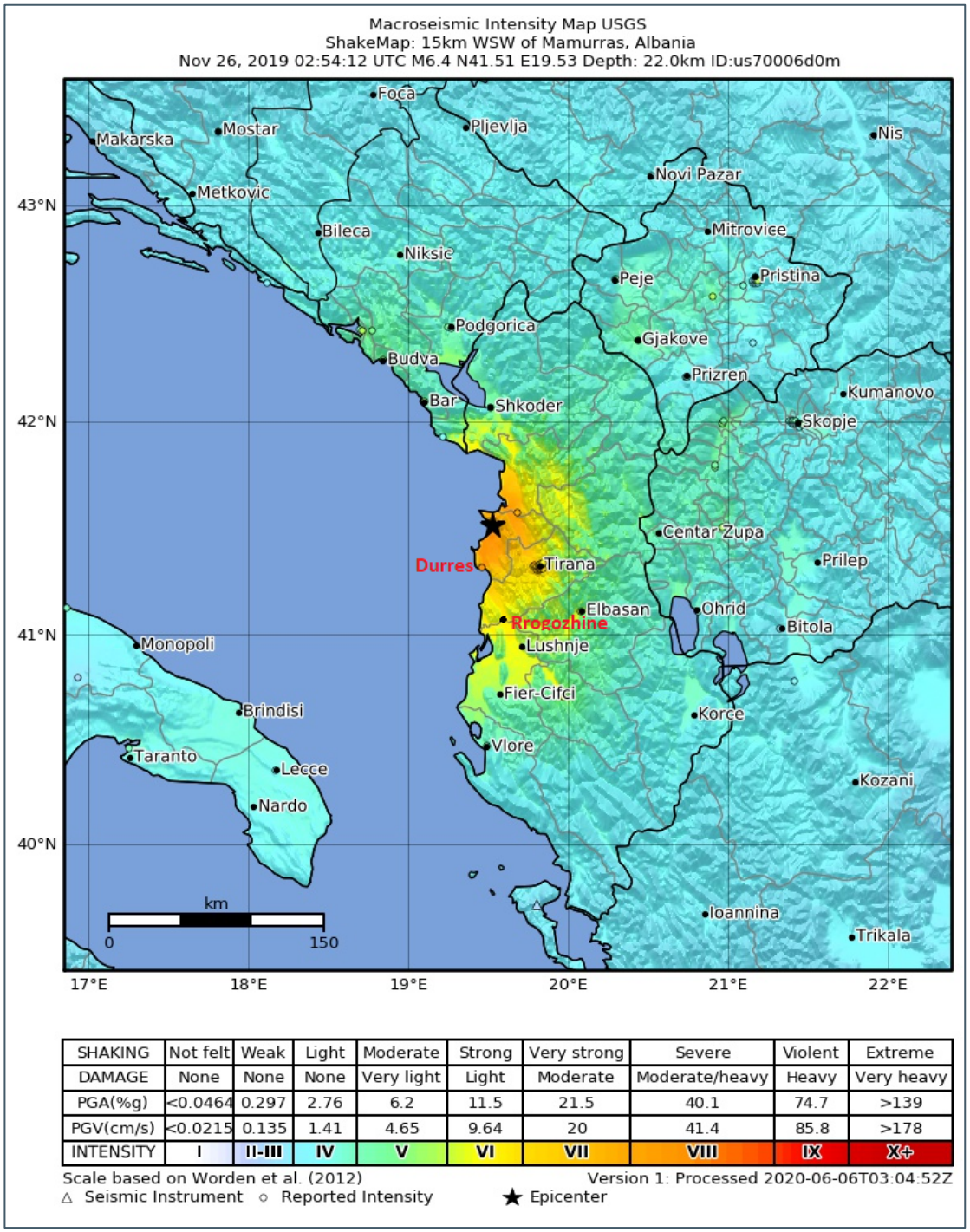

Figure 7-5_Amplification of earth shaking within the Project area

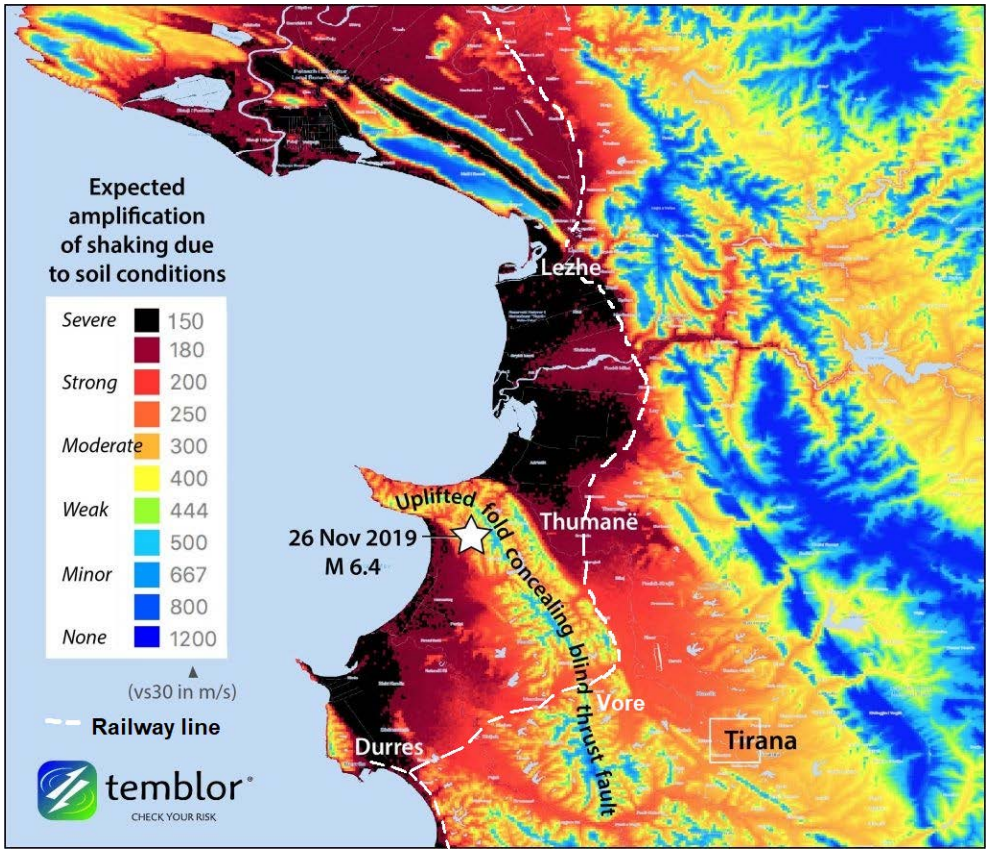

Figure 7-6_Amplification of the earth shaking due to soil conditions

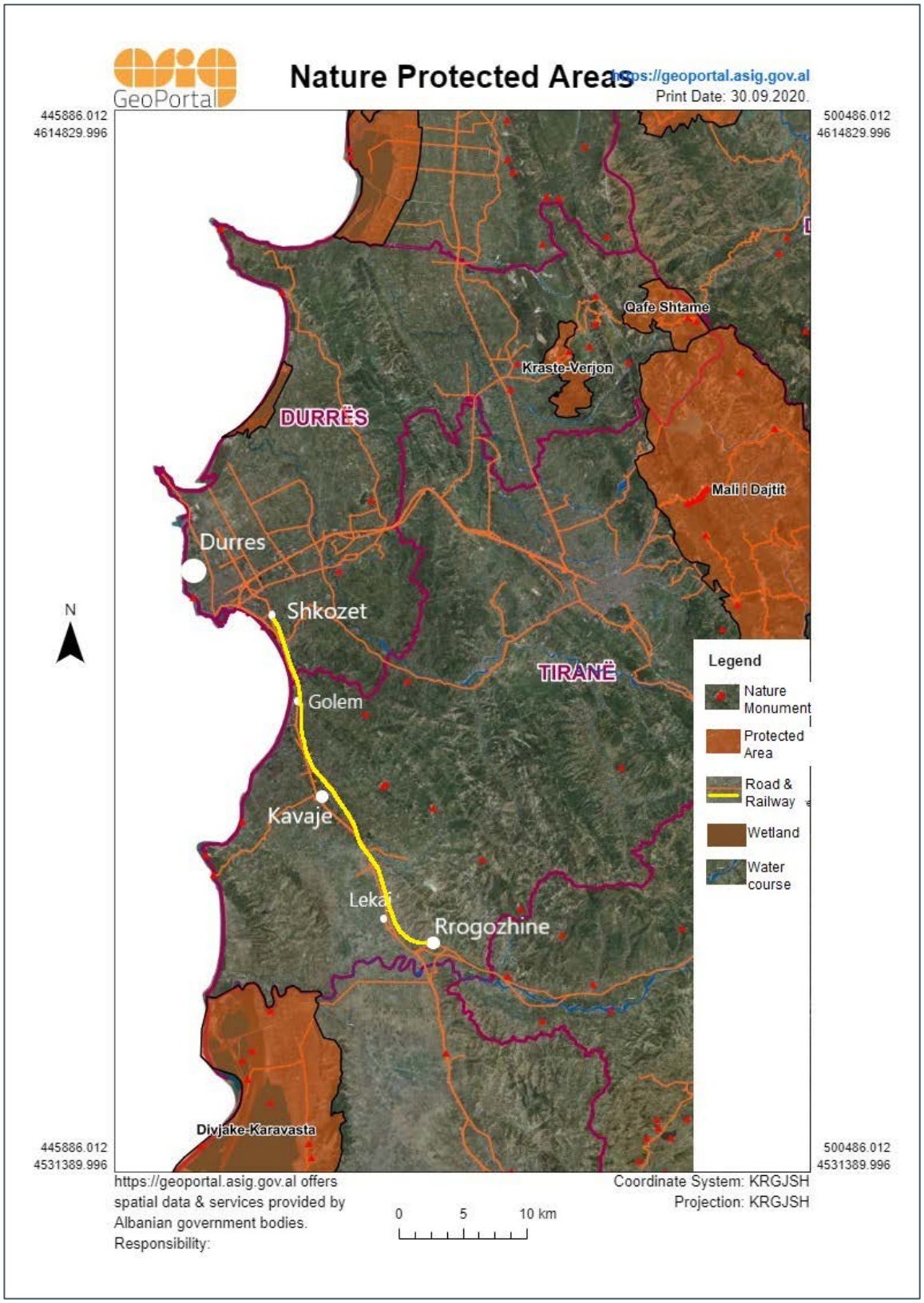

Figure 7-7_Protected Areas and Nature Monuments