Reconstruction of Durres-Rrogozhine Railway Line, Albania

UPDATED NON-TECHNICAL SUMMARY (NTS)

August 2025

**The ESIA package, including this NTS, was initially developed under the IPF8 technical assistance in October 2021 and subsequently updated by Enova in August 2025.*

HSH

Contents

List of Abbreviations

Abbreviation	Meaning
CESMP	Construction Environmental and Social Management Plan
DD	Detailed Design
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EIB	European Investment Bank
E&S	Environmental and Social
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
FS	Feasibility Study
GHG	Greenhouse Gases
H&S	Health and Safety
HSH	Albanian Railways
LARF	Land Acquisition and Resettlements Framework
LARP	Land Acquisition and Restoration Plan
OHS	Occupational Health and Safety
O&M	Operation and Maintenance
PD	Preliminary Design
PIU	Project Implementation Unit
PR	Performance Requirement
SEP	Stakeholder Engagement Plan
WBIF	Western Balkan Investment Framework

1 Introduction

Project Context. The European Bank for Reconstruction and Development (EBRD) is considering providing finance to the Republic of Albania, represented by the Ministry of Finance and the state railway operator *Hekurudha Shqiptare* (HSH or the Company), for the **reconstruction of approx. 33 km of railway line between Durres and Rrogozhine** (the "**Project**"). The EBRD financing will be complemented by a sovereign loan from the European Investment Bank and investment grants from the European Union (EU). The Project will be implemented by HSH. This section is part of Pan-European Corridor VIII and spans the municipalities of Durres, Kavaje and Rrogozhine.

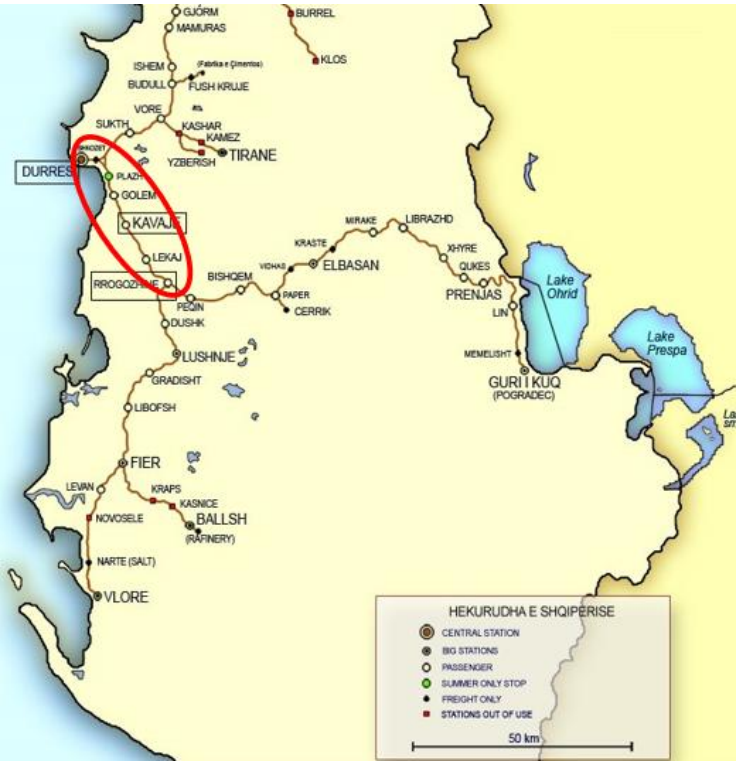

Figure 1: Durres-Rrogozhine railway section, as part of the Albanian railway network

Built between 1947 and 1950, this railway section has seen little to no maintenance over the last 25 years. The infrastructure's poor condition has resulted in numerous unmanaged crossings and low train speeds, limiting service to just one passenger train per weekend between Elbasan and Durres.

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-authorised road and passenger crossings have been recorded through inhabited areas. In addition, most of the "authorised" 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.

The Project aims to enhance rail infrastructure, focusing on improving operational speed, reliability, and safety for both passenger and freight services.

Project Status and Available Documentation. The *Detailed Design*[1] (DD), along with the *Environmental and Social Impact Assessment (ESIA) Package*[2], was developed in 2021 under WBIF grant funding. Following the public disclosure process, the ESIA package (including a Stakeholder Engagement Plan) was updated in February 2022.

In August 2024, the EBRD initiated a gap analysis of the developed ESIA package to assess its compliance with the EBRD E&S Policy (2019). As a result, the Gap Analysis Report, along with the Preliminary Critical Habitat Screening Report and a Preliminary Visual Representation of Railway Crossings, was developed. Additionally, this Non-technical Summary (NTS), as well as Environmental and Social Management Plan (ESMP), Environmental and Social Action Plan (ESAP), Stakeholder Engagement Plan (SEP), and Land Acquisition and Resettlement Framework (LARF), have been updated.

Project Implementation Model. The Project will be tendered on a design-and-build basis (Yellow FIDIC) to address any missing design elements, with tendering based on the available Detailed Design (see footnote 1) and requiring the Contractor to prepare the Main Design. The Company will also select a third-party Supervision Engineer via a tender procedure.

A Project Implementation Unit (PIU) for this Project will be established.

This document is a Non-technical Summary (NTS) of the Project's E&S assessment, incorporating the results of both the E&S assessment and gap analysis. The NTS provides a Project summary in non-technical language covering the Project background and description, legal requirements, baseline conditions in the Project area, E&S impacts with mitigation measures needed to structure the Project to meet the national requirements, EIB's E&S Standards (2022) and EBRD E&S Policy (2019) Performance Requirements, as well as the disclosure and communication requirements of the Project.

[1] This Detailed Design is a specification outlining the scope of work, which the contractor will use to develop the Main Design in accordance with Yellow FIDIC requirements.

[2] The ESIA package includes: Environmental and Social Impact Assessment Report, Environmental and Social Management Plan, Environmental and Social Action Plan, Stakeholder Engagement Plan, Land Acquisition and Resettlement Framework and Non-technical Summary.

2 Project Description

2.1 Overview of Previous Project Preparation Activities

An overview of the work done during 2020-2022 is presented below:

Feasibility Study (FS)	The FS was developed in 2018.
Preliminary Design (PD)	The PD was initially developed under the aforementioned FS in 2018 and updated in 2020-2021 as part of the project titled "Corridor VIII Rail - Detailed Design for the Rehabilitation of the Durres – Rrogozhine Section, Albania".
Detailed Design	DD was developed in accordance with the updated PD also during 2020-2021. This DD is a specification of the scope of work upon which the contractor will develop the Main Design according to Yellow FIDIC requirements. The DD will be used for tendering purposes, providing bidders with an overview of the materials and work needed to prepare their bids. However, under Yellow FIDIC conditions, the selected bidder will be responsible for developing the Main Design, which will be used to obtain the construction permit.
ESIA package	The ESIA was conducted during 2020-2021 with a final revision in February 2022. An ESIA package was developed and included: ESIA Report, ESMP, ESAP, SEP, LARF and NTS. A set of consultations was undertaken during the ESIA development.
Environmental and Social Management System (ESMS) and E&S Policy	A draft ESMS set of documents was developed in 2022 with the aim of establishing a system in HSH in accordance ISO 14001:2015 for Environmental Management Systems, ISO 9001:2015 for Quality Management Systems, and ISO 45001:2018 for Occupational Health and Safety Management Systems, as well as national legislation and relevant compliance requirements from lenders such as the EBRD, particularly for project-based funding in Albania's railway sector. A draft E&S Policy is included in this set.
Local Environmental Impact Assessment (EIA) Study	In 2020, the National Environmental Agency determined that the Project shall be subject to a full EIA procedure under Albanian law. No further actions have yet been undertaken.

2.2 Railway Alignment

The Project area is included within the territories of the municipalities of Durres, Kavaje and Rrogozhine (see Figure 56 in Chapter 7), 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.

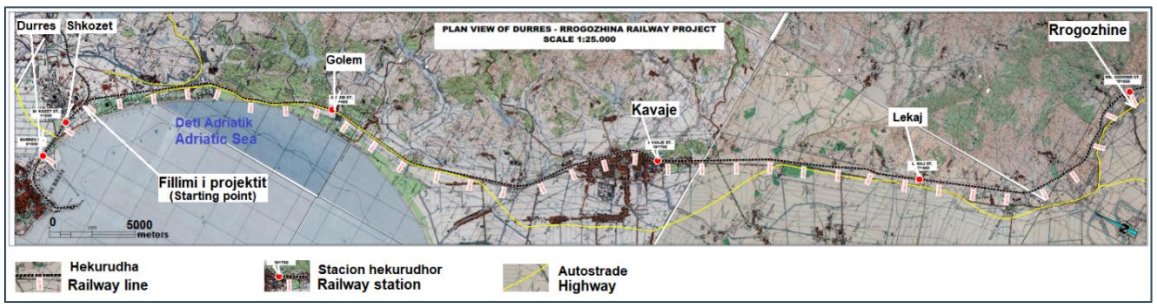

Figure 2: Plan view of the railway line Durrës-Rrogozhine

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 3: Railway alignment from km 1+876 to km 5+100

This segment also includes the Shkozet Triangle, the junction where the Tirana-Durres line meets the Durres-Rrogozhine line. In Figure 4 below, red and purple lines form part of the Durres-Rrogozhine alignment, while the blue line belongs to the separate Tirana-Durres project.

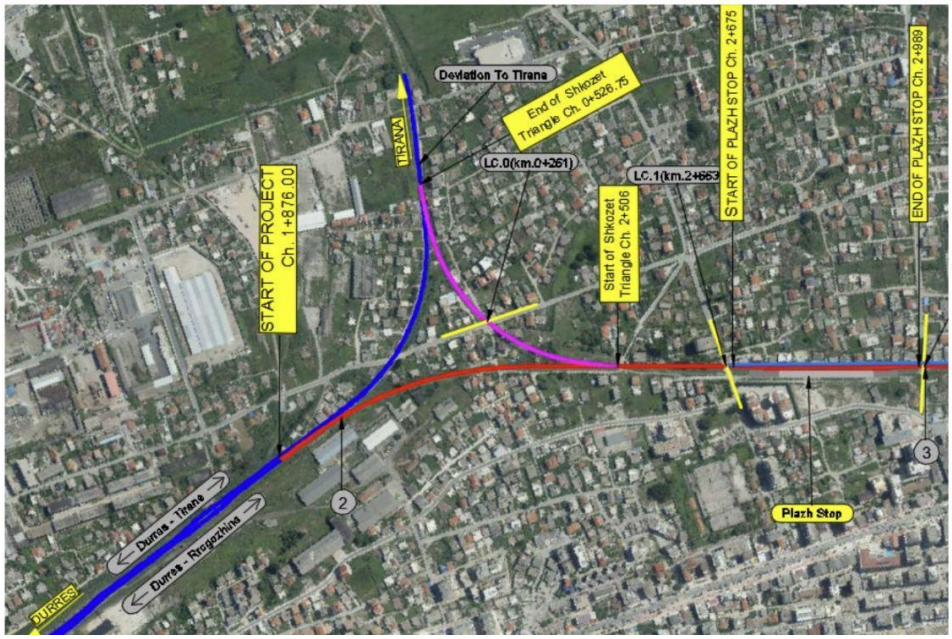

Figure 4: Shkozet triangle

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.

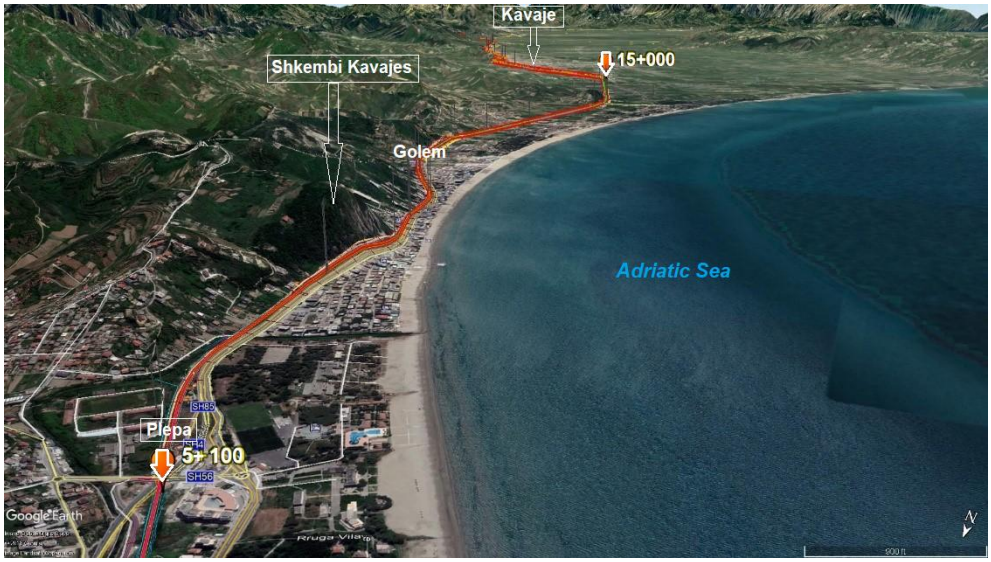

Figure 5: Railway alignment from km 5+100 to km 15+000

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.

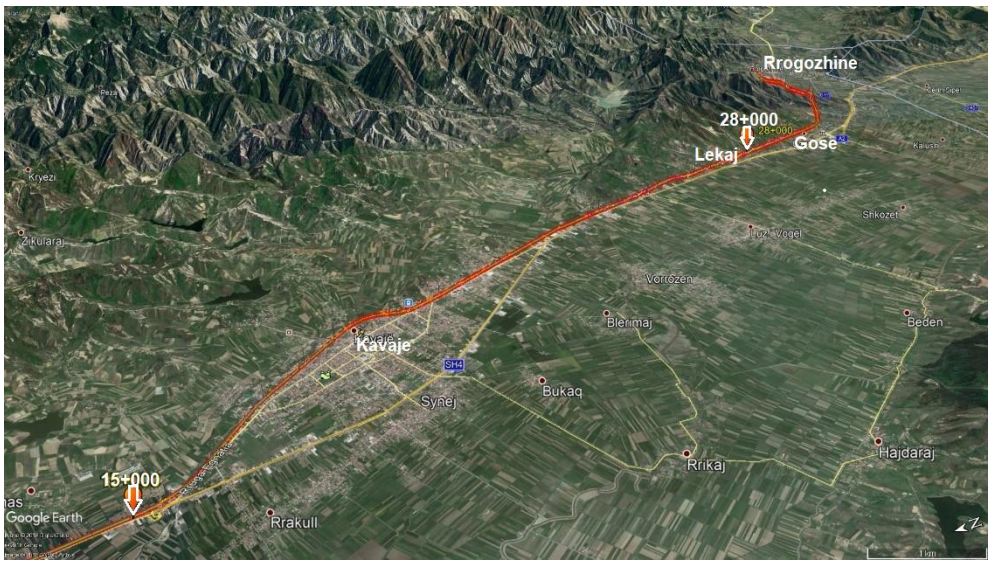

Figure 6: Railway alignment from km 15+00 to km 28+000

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

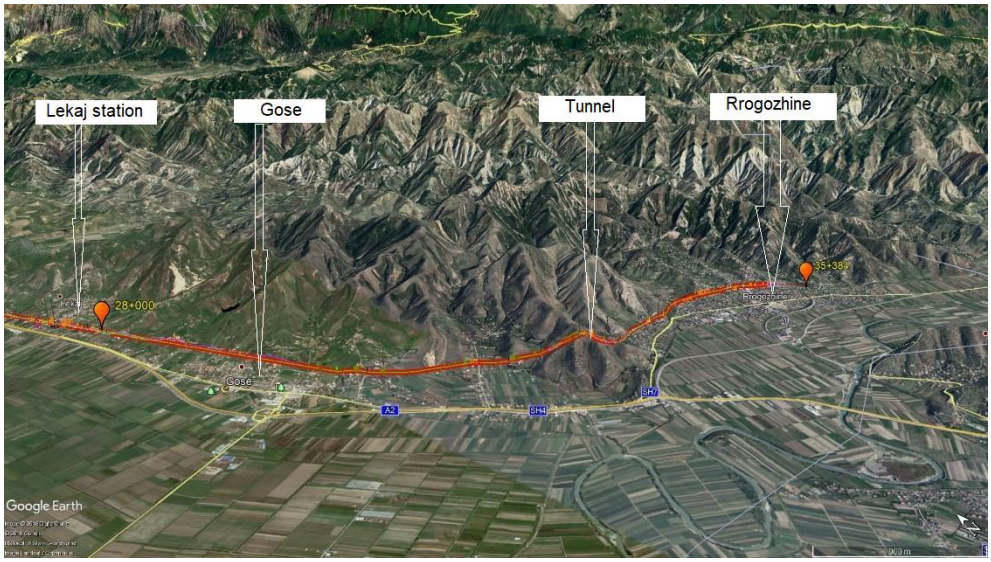

Figure 7: Railway alignment from km 28+00 to km 35+384

2.3 Alternatives Considered

The 2018 FS evaluated the Project's design alternatives, considering two spatial options: (1) rehabilitating the railway within its existing alignment and (2) improving the horizontal alignment to meet European speed standards. The second option was deemed more favourable. Technically, the options included maintaining a non-electrified railway or upgrading to an electrified line to align with European standards. While current economic conditions do not support immediate electrification, the DD includes future plans for electrification due to its environmental benefits, such as improved air quality and reduced greenhouse gases (GHG) emissions. The preferred option is highlighted as E&S responsible, avoiding significant negative impacts while enhancing social and economic outcomes.

2.4 Technical Characteristics

2.4.1 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 illustrates the cross section of railway line with key components of the superstructure and substructure.

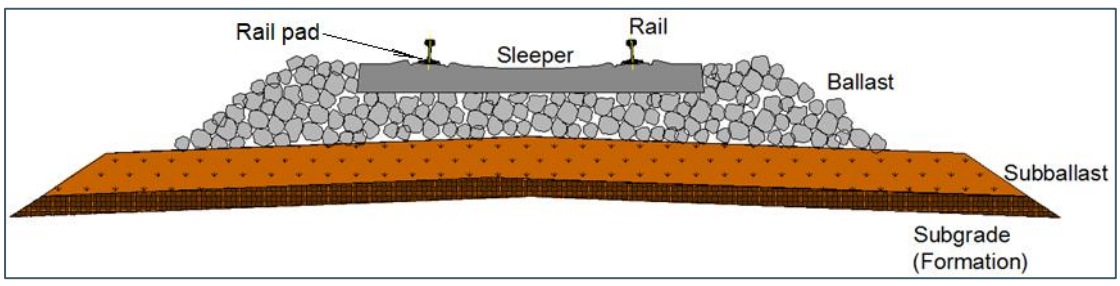

Figure 8: Schematic cross section of the railway track

All components installed beneath the rails and sleepers are specifically designed to transfer loads effectively to the underlying substructure, ensuring stability and durability. The subgrade functions in a manner similar to a building foundation, distributing the applied loads through the deflection of the rail into the ballast bed. From there, the loads are transmitted through the subgrade to the subsoil, ensuring proper load distribution and structural integrity of the railway.

2.4.2 Planned Interventions

The Project aims to enhance passenger and freight transport services, increase safety, and improve train speeds in accordance with EU standards. The increased speed and standardised classification (UIC D4 category, 22.5 tons/axle, and 8.0 tons/m), along with improved transport services and enhanced safety, will be achieved through the following technical objectives:

- Improvement of the horizontal and vertical alignment.
- Replacement and rehabilitation of outdated superstructure components (ballast, sleepers, fastenings, switches, and tracks). The ballast will be basalt, and the sleepers will be concrete.
- Replacement and rehabilitation (where necessary) of substructure components (sub-ballast, subgrade).
- Rehabilitation and improvement of structural components (culverts, retaining walls, underpasses, pedestrian overpasses, bridges, and tunnels).
- Consolidation of level crossings (reducing the number of crossings, securing level crossings, and improving or rehabilitating interlocking systems).
- Improvement of interlocking and telecommunications equipment for integration into the CTC system.
- Fencing of the railway line and station areas.
- Reconstruction of stations which includes demolition of existing and construction of new station buildings in Golem, Kavaje, Lekaj, and Rrogozhine.

Additionally, the Project design takes into account the future electrification of the railway line, with the superstructure designed to be 6.6 m wide. The improvement of parallel or service roads connecting local settlements to the designed level crossings is not included in the project but will be handled by local authorities and/or the Albanian Road Authority.

2.5 Description of the Railway Section

The tables below provide a more detailed description of the entire railway line, divided into four segments, along with a description of specific structures along the railway, such as stations and other notable sites.

Table 1: Description of railway segments

Railway segments		Photographs taken along the segment		Segment description
No.	**Location (chainage)**			
1.	**Shkozet to Plepa (km 1+876 to km 5+100)**	 *Figure 9: Local road along railway corridor at km 3+100*	 *Figure 10: Plepa platform - beach station at km 2+730*	○ Several private properties, including houses and yards, have direct access to the railway corridor, with frequent track crossings for personal needs. ○ The local road runs parallel to the railway (Figure 9), with several businesses (mainly summer accommodation facilities) located 10-20 m away from the railway. ○ A recreational area is adjacent to the railway at km 3+600. ○ From km 4+350 to km 4+750, the railway is bordered by a green belt and access roads; further on, a few buildings are present but more distanced, with the exception of facilities very near the Plepa Station at km 2+730 (Figure 10). ○ This segment also includes the Shkozet triangle. ○ This segment has many crossings: one legal (Figure 11) and 12 illegal between km 2+200 and km 5+100. In some instances, municipal investments for local roads have resulted in uncontrolled asphalt crossings over the railway (Figure 12). Additionally, 14 footpaths were noted where pedestrians cross the railway tracks. ○ Urban waste disposal sites, including areas used by the Roma community for recyclable collection, are present intermittently along the segment.
		 *Figure 11: Legal level crossing at km 2+690*	 *Figure 12: Illegal level crossing and local road at km 3+380*	
2.	**From Plepa area to Kavaje town (km 5+100 to km 15+000)**	 *Figure 13: Recreational area between railway and bus terminal at km 5+300*	 *Figure 14: Legal level crossing at km 5+200*	○ The local road and motorway run adjacent to the railway, with several businesses (mainly summer accommodations) located 10-20 m away. ○ Urban waste disposal sites are intermittently present. ○ From km 5+300 to km 5+500, the railway is bordered by a green belt on both sides, access roads and the motorway. At km 5+500, there is a business complex, including a hotel and night club. The section from km 5+570 to km 9+600 is similarly bordered by a green belt, access roads and the motorway on both sides. ○ A recreational park (Figure 13) and a bus terminal are adjacent to the railway at km 5+300. ○ This segment has several crossings, of which two legal at km 5+200 (Figure 14) and km 8+280. There are several pedestrian overpasses as well (Figure 15). Additionally, there are 10 pedestrian footpaths crossing the railway between km 5+200 and km 9+500 (Figure 16). ○ An underpass at km 10+540 allows crossing beneath the railway and motorway (Figure 17).
		 *Figure 15: Pedestrian overpass at km 6+210*	 *Figure 16: Pedestrian crossing at km 9+500*	

Railway segments		Photographs taken along the segment	Segment description
No.	Location (chainage)		
		 *Figure 17: Underpass at km 10+540*  *Figure 18: Overpass at km 13+010*  *Figure 19: Representative agricultural landscape*  *Figure 20: Qerret village cemetery*	○ Two overpasses at km 11+900 and km 13+010 will need taller electrification poles if the railway is electrified to prevent any conflict with the overpasses (height of the existing electrification poles seen behind the overpass in Figure 18). ○ Between km 11+000 to km 11+800 and km 12+560 to km 15+000, the terrain is mostly cultivated land with no railway crossings (Figure 19); the closest farmland is 10-12 m from the railway at km 11+600. ○ The Qerret village cemetery in Kavaje is adjacent to the railway at Km 14+900 (Figure 20).
3.	**From Kavaja North to Kavaje South (km 15+000 to km 23+800)**	 *Figure 21: Large business at km 15+500*  *Figure 22: Gas station at km 23+700*  *Figure 23: Legal level crossing at km 18+450*  *Figure 24: Illegal level crossing at km 21+090*	○ Several businesses (Figure 21) are located 6-20 m to the railway, mostly on the western side due to easier access via the local road (the eastern side is restricted by the railway). ○ Two gas stations are 10-15 m from the railway (Figure 22), but separated by an access road and green belt. ○ This segment includes 7 underpasses, 2 legal crossings (km 18+450 - Figure 23 and km 19+350) and 5 illegal crossings (km 19+520, km 20+320, km 21+090 - Figure 24, km 21+220, km 21+520). ○ Urban waste dumpsites and recyclable collection points used by the Roma community are scattered along this segment. ○ There are 11 pedestrian crossings between km 15+000 and km 23+020 (Figure 25), some close to available underpasses. ○ Farming activities are noted along the railway (Figure 26), but no crossings, interruptions or disturbances related to agriculture have been noted. The distance between the railway centreline and farmland is as close as 7 to 15 m, mostly on the upper eastern side of the railway.

<table>
<tr><th colspan="2">Railway segments</th><th rowspan="2">Photographs taken along the segment</th><th rowspan="2">Segment description</th></tr>
<tr><th>No.</th><th>Location (chainage)</th></tr>
<tr><td></td><td></td><td> 
Figure 25: Pedestrian footpath crossing at km 18+290
 
Figure 26: Representative agricultural landscape</td><td></td></tr>
<tr><td>4.</td><td>From Kavaje South to Rrogozhine (km 23+800 to km 35+300)</td><td> 
Figure 27: Chicken farm at km 24+540
 
Figure 28: Example of cultivated area at km 26+100
 
Figure 29: Level crossing at km 25+120
 
Figure 30: Underpass at km 30+090
 
Figure 31: Old school in Lekaj
 
Figure 32: New school in Lekaj</td><td>○ Small businesses, such as chicken farms (Figure 27) are located 10 to 50 m from the railway, and are considered unaffected due to the distance and nature of operations.
○ Farming activities occur along the railway without crossings or interruptions (Figure 28); the closest distance between farmland and the railway is 7 to 15 m, mainly on the upper eastern side.
○ One legal crossing exists at km 27+450, but nine illegal crossings (Figure 29) and 11 pedestrian footpaths have been identified, despite nearby underpasses along the segment from km 15+000 to km 35+250 (Figure 30).
○ The segment includes 12 underpasses, and several urban waste dumps, including recyclable collection points used by the Roma community, have been observed.
○ An old school is located 5-10 m from the railway (Figure 31), with access leading directly to the tracks. Students regularly cross the railway to attend school.
○ A few meters from the railway line toward Rrogozhine is a newly built school (Figure 32) next to the old one and set to open this coming school year.
○ Further along the railway toward Rrogozhine, a Football Club training field is located within 20 m of the track, with spectator seating positioned as close as 10 m from the railway (Figure 33).</td></tr>
</table>

Railway segments		Photographs taken along the segment	Segment description
No.	Location (chainage)		
		 *Figure 33: Football stadium*	

Table 2: Description of specific structures or sites along the railway

Railway structures/sites		Photographs of the structure/site	Structure/site description
No.	Location (chainage)		
	Golem station (km 9+500)	 *Figure 34: Golem station*  *Figure 35: Access road bordering private property*  *Figure 36: Wastewater canal*	○ Golem Station (Figure 34) includes a passenger waiting room and an inspector's office. ○ An energy transformer with electrical cables, some crossing the railway, is located to the south, and a non-functional former HSH structure is about 30 m to the north. ○ On the eastern side, residential buildings are 10-15 m away, with a nearby neighbourhood of around 30 houses. An access road runs alongside the railway, bordering the settlement (Figure 35). ○ A canal carrying urban wastewater (Figure 36) runs south of the station under the railway through a pipeline. Further south, there is a deteriorated facility that was used for food storage prior to the 1990s.

Railway structures/sites		Photographs of the structure/site	Structure/site description
No.	**Location (chainage)**		
	Lekaj station (before Gose Village) (27+400 to 27+700)	 *Figure 37: Lekaj station (left side view)*	○ Lekaj station (Figure 37) is located on the western side of the railway. ○ Nearby, there is a 500 m² service and residential building. ○ Part of the station is occupied by a family. Further details are provided in the Updated Land Acquisition and Resettlement Framework (LARF). ○ An illegal level crossing near the station is used by residents, with the closest house being 12 m from the track.
	Tunnel (km 32+470)	 *Figure 38: Tunnel entrance*  *Figure 39: Dwelling, stable and olive orchard above the tunnel*	○ A tunnel is located between km 32+000 and km 32+500 (Figure 38). ○ At the tunnel exit, there are two houses situated on either side of the track, positioned 111 and 138 m from the tunnel entrance, with a distance of 12 to 28 m from the railway track. ○ The hill above the tunnel is planted with olive trees of varying ages, ranging from 10 to 60 years old. Approx. 46 m from its entrance, there is a house and a small animal stable (Figure 39).
	Rrogozhine station (km 34+700)	 *Figure 40: Rrogozhine station (close-up)*  *Figure 41: Rrogozhine station (view from across the railway)*	○ The Rrogozhine station includes a passenger waiting room, ticket office and inspector offices. (Figure 40 & Figure 41) ○ South of the station are residential and service facilities, and 500 m to the north, there is a residential and service facility located about 6 m from the railway track. (Figure *42* & Figure 44) ○ At km 35+200, there is a deteriorated and non-functional pedestrian overpass. ○ The station has two underpasses: one at km 34+600 used for vehicles, and another at km 34+900 but unusable due to lack of maintenance, vegetation overgrowth, urban waste, and polluted water. ○ The station has six railway tracks with ample space for temporary storage of rails, sleepers or ballast. ○ Part of the station building has been used to house two families. Further details are provided in the Updated Land Acquisition and Resettlement Framework (LARF).

Railway structures/sites		Photographs of the structure/site	Structure/site description
No.	**Location (chainage)**		
		 *Figure 42: Car wash and bar*  *Figure 43: Houses close to the railway*  *Figure 44: Rrogozhine Cemetery*  *Figure 45: Roma community barracks*	○ Additional facilities and issues near the railway line (within 5-10 m of the tracks) include a car wash and bar located within the station area (on the Elbasan side), houses close to the rail tracks with direct access to the railway, and small parcels of cultivated land (primarily olive and pomegranate trees) near the station, which are maintained by locals. ○ A cemetery near Rrogozhine station, located at km 34+900 and about 30 m from the railway centreline, has one access point via an official railway crossing (Figure 44). ○ Barracks belonging to the Roma community have been observed near the station (Figure 45).
	km 5+864 – bridge over Shen Vlash canal	 *Figure 46: Shen Vlash canal*  *Figure 47: Waste dump*	○ The bridge over Shen Vlash canal is located at km 5+864 on the railway line (Figure *46* & Figure *47*). ○ The bridge is in poor condition, with bars stripped from the concrete and no recent maintenance. ○ Sediment accumulation from rainfall has led to the growth of vegetation (figs, plums, reeds), obstructing water flow and extending up to the railway level. ○ Urban solid waste is being illegally dumped by residents near the bridge, creating an unauthorized landfill. ○ The nearest residential house is located 43 m from the bridge. ○ A secondary road runs parallel to the railway along the eastern side for approx. 2 km. ○ Empty spaces near the bridge could be used for temporary storage of rails, old and new sleepers, and ballast, offering space for future construction or maintenance activities.

Railway structures/sites		Photographs of the structure/site	Structure/site description
No.	Location (chainage)		
	km 23+154.94 bridge over Darsi River	 *Figure 48: Darsi Bridge*  *Figure 49: Darsi bridge underpass access road*	○ Darsi Bridge is an arch bridge located at km 23+154.94 and serves as a passage for the Darsi River (Figure 48). ○ The bridge is in good condition but with the presence of bars stripped from the concrete and no recent maintenance performed. ○ Sediment accumulation from rainfall has led to the growth of vegetation, such as reeds, Plain tree (poplar tree) obstructing water flow and extending up to the mid level of the bridge shoulders. ○ Additionally, residents have been illegally dumping urban solid waste near the bridge, creating an unauthorised landfill.
	Drainage canals along the railway	 *Figure 50: Golem drainage*  *Figure 51: Kanaparaj stream*  *Figure 52: Drainage canal at Kavaje km 21+300*  *Figure 53: Irrigation canal in Pegin Kavaje at 32+700*	○ The drainage system alongside the railway track is obscured by varying levels of vegetation, ranging from low to high. At Golem Station, the drainage system is clogged with sediment, solid urban waste, and overgrown vegetation, impeding its functionality (Figure 50). ○ Several box culverts and water passages were identified but contained little to no water, with the exception of bridges where water flow was present. The Kanaparaj stream (Figure *51*), located at km 15+420, requires maintenance due to pollution, solid urban waste, and vegetation, particularly reeds, eroded in the stream bed and harming the railway bridge. ○ At km 21+300, Kavaje, drainage canal is in need of maintenance as earthworks and sediment buildup have blocked the free flow of water. Polluted urban water is also present in this canal. (Figure 52) ○ The irrigation canal at km 32+700, Peqin–Kavaje, located 12 m from the underpass near the tunnel, remains functional for irrigating agricultural land west of Kavaje. However, polluted urban water from nearby houses is also present in the canal. (Figure 53) ○ The drainage canal at km 34+600 in Rrogozhine requires maintenance as it passes through an underpass. (Figure 54) Polluted urban water is also found in this canal. Similarly, the drainage canal at km 34+900, Rrogozhine (Figure 55), is blocked by sediment and earthworks, hindering water flow, with the presence of polluted urban water further complicating its condition.

Railway structures/sites		Photographs of the structure/site	Structure/site description
No.	Location (chainage)		
		 *Figure 54: Drainage canal in Rrogozhine at km 34+600*  *Figure 55: Drainage canal at Rrogozhine at km 34+900*	

3 Legal Aspects and Compliance with Relevant Laws and Policies

National Requirements. Implementation of the Project requires compliance with a set of national laws and bylaws on E&S issues, physical planning, railway (re)construction and maintenance, health and safety at work, labour, and land acquisition and resettlement.

The key laws relevant to railway (re)construction include the *Law on Railways*, the *Regulation on the Technical Use of Railways*, the *Law on EIA*, and the *Law on Expropriation and Temporary Use of Real Estate for Public Purposes*.

The *Law on Railways* sets the standards for railway construction, O&M, ensuring safety and interoperability with EU networks. The *Regulation on the Technical Use of Railways* provides specific technical requirements for infrastructure and safety systems, including track construction, signalling, and operational protocols. The *Law on EIA* specifies the requirement for conducting a national EIA procedure, assessing potential E&S impacts, and ensuring compliance with EU standards. Based on the opinion issued by the National Environmental Agency, the national EIA procedure must be carried out for this Project. The *Law on Expropriation and Temporary Use of Real Estate for Public Purposes* governs the land acquisition for public infrastructure projects, ensuring fair compensation for affected property owners and outlining procedures for temporary land use during construction.

EBRD Requirements. EBRD's E&S Policy (2019) details the commitments of the Bank to promote environmentally sound and sustainable development. The Bank has defined specific Performance Requirements (PRs) for key areas of E&S issues and impacts as listed below:

- PR 1: Assessment and Management of E&S Risks and Impacts
- PR 2: Labour and Working Conditions
- PR 3: Resource Efficiency and Pollution Prevention and Control
- PR 4: Health, Safety and Security
- PR 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PR 7: Indigenous Peoples (not applicable to this Project)
- PR 8: Cultural Heritage
- PR 9: Financial Intermediaries (not applicable to this Project)
- PR 10: Information Disclosure and Stakeholder Engagement.

EIB Standards. EIB requires that all the projects it is financing are acceptable in E&S terms by applying appropriate safeguards to all its operations. The EIB E&S Standards (2022) provides an operational translation of those standards grouped across 11 thematic areas, as follows:

- Standard 1: Environmental and Social Impacts and Risks
- Standard 2: Stakeholder Engagement
- Standard 3: Resource Efficiency and Pollution Prevention
- Standard 4: Biodiversity and Ecosystems
- Standard 5: Climate Change
- Standard 6: Involuntary Resettlement
- Standard 7: Vulnerable Groups, Indigenous People and Gender (Indigenous People – not applicable to this Project)
- Standard 8: Labour Rights
- Standard 9: Health, Safety and Security
- Standard 10: Cultural Heritage

- Standard 11: Intermediated Finance (not applicable to this Project).

EU Requirements. EU requirements relevant to the Project are as following:

- EIA Directive,
- Habitats Directive,
- Birds Directive,
- Water Framework Directive,
- Floods Directive,
- Waste Framework Directive,
- Environmental Noise Directive,
- Ambient Air Quality Directive,
- Energy Efficiency Directive,
- Energy Performance of Buildings Directive,
- Directive on the Interoperability of the Rail System within the EU,
- Directive on Railway Safety,
- OHS Directives.

4 Baseline Information, Potential Impacts and Mitigation Measures

This chapter provides an overview of the baseline information, expected significant impacts, and suggested mitigation measures.

4.1 Air Quality

Baseline summary

The main sources of air pollution in the Project area are: (i) road traffic and (ii) the use of fossil fuels, mainly for heating, in nearby residential facilities and industries. According to the National Environmental Agency's report for 2023[3], which analysed the values of PM2.5 and PM10 particles in Durres, it was found that the value of PM10 particles exceeded the daily limits during January-March, in July, and in December. The average value of PM2.5 particles for January, February, and December 2023 was 44.47 µg/m^3, while the value for PM10 particles was 77.9 µg/m^3. The available data for NO_2 and SO_2 indicate that their values were within permissible limits. The air quality index for the cities of Durres and Rrogozhine is assessed throughout the year[4]. The average monthly values for the last 12 months are presented in the following table.

Table 3: Average air quality index

Municipality	Average air quality index												
	2023			2024									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct
Durres	54	35	50	43	60	44	50	56	45	61	56	40	62
Rrogozhine	50	33	55	41	58	45	45	51	40	42	44	28	60

The results show that air quality is generally good (0-50), meaning it is satisfactory with little or no risk. If the air quality is moderate (51-100), it is still acceptable but may cause mild health concerns for a small number of sensitive individuals.

Potential impacts and mitigation measures

Construction phase: Reduction in air quality due to: (i) emissions of construction dust as a result of demolition works, earthworks, transport and disposal of excavated materials, and (ii) emissions of exhaust gases from combustion processes in construction equipment and vehicles. The proposed mitigation measures for reducing negative impacts on air quality include developing an *Air Pollution Prevention Plan* that includes, among others, regular watering of the construction area, covering trucks and stockpiles, using low-sulphur fuels, scheduling works to avoid peak seasons, along with additional actions to minimise dust, reduce vehicle emissions, and ensure proper equipment maintenance.

O&M phase: Reduction in air quality due to reconstruction and maintenance works, as well as the use of diesel fuel by locomotives are expected. The proposed mitigation measures for reducing negative impacts during the railway O&M phase include applying the best international practices for mitigating environmental impacts related to the O&M of diesel locomotives, procuring energy-efficient trains, and applying the same air pollution prevention measures during maintenance activities as specified for the construction phase.

[3] https://monitor.al/en/the-air-pollution-ratio-exceeds-the-norms-in-some-cities-from-Tirana-to-Korce-and-Elbasan/

[4] https://www.ventusky.com/41.320;19.470

4.2 Noise and Vibrations

Baseline summary

Noise: Noise levels have been measured along the proposed alignment at 12 locations (see Figure 57 in Chapter 7). The noise level measurement results represent the total noise levels (the combined impact of all sources) in the vicinity of the railway. The comparison of baseline noise measurement results with the World Bank standards shows that, at 6 measurement locations, the noise levels exceed permissible limits during the day, and at 7 measurement locations during the night.

Vibrations: A vibration survey was conducted, identifying sections near the residential areas, with ortho maps and additional data used to exclude buildings not classified as sensitive receivers. The primary purpose of the measurements was to determine the soil characteristics, such as its stiffness, density, and damping properties, and to establish the vibration transfer function, which describes how vibrations propagate through the ground. During the measurements, the ground's response to human-induced vibrations, specifically those generated by a 250 kg special ground vibrator, was assessed at multiple defined distances from the source. This allowed for the evaluation of how the soil's properties influenced the intensity and attenuation of the vibrations as they travelled through the ground.

There are no data on the current vibration levels in the vicinity of the railway.

Potential impacts and mitigation measures

Pre-construction phase: Since the noise and vibration measurements conducted during the impact analysis phase were not comprehensive, thorough measurements must be carried out during the Main Design development phase, and no later than before the start of construction, to establish baseline conditions and reference values. This process will include a detailed measurement plan specifying locations, quantities, schedules, and compliance with relevant standards, such as ISO 1996-1, ISO 1996-2, DIN 4150, and DIN 45669-1.

The results of the railway traffic noise simulation during operation have determined that noise levels at all nearby settlements and sensitive receptors will remain below the adopted project limit. Therefore, no specific or generic noise mitigation measures are planned, apart from those already planned for optimal train operations, such as maintaining the track and ballast in good condition, lubricating the track and railroad switches, periodic maintenance of train wheels, rail grinding, etc.

To reduce the negative impact of vibrations during train operations, specific vibration mitigation measures are planned, which include the application of under ballast mats made from homogeneous elastomers.

Construction phase: Construction activities will generate noise and vibrations that may temporarily impact nearby individuals, including workers, as well as local flora and fauna. The proposed mitigation measures for reducing negative impacts during the railway reconstruction phase include developing a *Construction Noise and Vibration Management Plan*. Prior to the start of construction, sensitive noise and vibration receptors will be identified, along with machinery and activities likely to produce high noise or vibration levels. The Plan will outline the duration of construction activities, particularly those near sensitive receptors, and establish restrictions on the timing and location of specific activities. These measures will be agreed upon by the Contractor and local authorities. High-noise or high-vibration equipment will be positioned as far as possible from sensitive receptors, and sound-muffling devices will be installed on noisy machinery. The simultaneous use of equipment generating high noise and vibration levels will be minimised. Additionally, the Plan will ensure that the local community is informed about the type and duration of works, especially for unavoidable activities near sensitive sites that may produce elevated noise or vibration levels.

Night-time construction will be limited to essential activities and will require prior consultation with residents and local authorities. To reduce noise and vibration at the source, especially near residential,

educational, and healthcare facilities, the plan will outline a work program and construction methodology. Complaints about excessive noise or vibration will be addressed by reducing them at the source or along the propagation path, and by adjusting work hours when feasible.

O&M phase: Noise and vibrations generated during O&M stage are associated with train operations and maintenance activities. To mitigate potential noise and vibration impacts, HSH must develop and implement an *Operation Noise and Vibration Management Plan*, which includes applying best practices for noise and vibration reduction; conducting regular railway maintenance (such as rail grinding and lubrication); using noise-reducing technologies (such as k-blocks, LL-blocks, and wheel-tuned absorbers); and ensuring that new rolling stock complies with EU noise regulation standards.

Noise and vibrations can be reduced at the source, along the propagation path and the receiver[5]. The primary approach involves source-level reduction during the railway design, including optimising radius of curves and structural elements. For these measures to be effective, both the rolling stock and the railway infrastructure must be well-maintained. New rolling stock must comply with Commission Regulation (EU) No 1304/2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise'.

Although noise and vibration can also be reduced at the receiver (e.g., through improved sound-insulating joinery), such measures were deemed unnecessary due to the effectiveness of source and propagation path interventions. The exception is for station buildings, where sound insulation must be designed and applied in accordance with their design.

4.3 Climatic Conditions and Climate Change

Baseline summary

The Project area falls within the Mediterranean Plains Climatic Zone, marked by mild, wet winters and hot, dry summers. The average annual temperature is approx. 15°C, with an absolute maximum of 40.5°C. Annual rainfall averages around 1,000 mm at Kavaje station, reaching a maximum of 1,562 mm in Durres. Climate change projections indicate that by 2100, the average temperature could increase by 3.2°C, while annual precipitation may decrease by 18%. Although the railway crosses several streams, the Durres to Rrogozhine line has never experienced flooding. Bridge and culvert designs have already accounted for potential erosion due to increased river and stream discharge.

In 2022, total GHG emissions in Albania reached 7.983 Mt CO_{2eq}/yr, despite a decrease in population. The sectors most significantly contributing to increased emissions were (i) industrial combustion and processes; and (ii) agriculture. The transport sector experienced a significant 119% increase in emissions compared to 1990 levels, though it showed a 35% decrease compared to 2005 levels[6].

Potential impacts and mitigation measures

Pre-construction phase: The Project design incorporates measures for protection against floods, erosion, and heat waves. However, due to the time elapsed between the preparation of the Detailed Design and the upcoming Main Design, it is essential to consider updated climate-related projections and impacts.

Construction phase: Negative impacts from droughts, fires, and floods on construction materials and activities are anticipated, with particular concern that construction may increase flood risk from nearby streams during heavy rainfall if materials are discarded into stream beds. Additionally, environmental pollution from GHG emissions related to construction materials and equipment is expected. To mitigate potential negative impacts, the Contractor must develop and implement a *Construction Emergency*

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

[6] European Commission, GHG Emissions of All World Countries, 2023

Preparedness and Response Plan addressing climate-related hazards such as drought, fire, and floods, including hazard identification, stakeholder communication, protection measures for the environment and public, emergency response structure, evacuation procedures, and regular training and review protocols for continuous improvement. To mitigate environmental pollution from GHG emissions, the same measures outlined in the *Air Pollution Prevention Plan* should be implemented.

O&M phase: There is a potential for negative impacts from droughts, fires, and floods on railway infrastructure. Additionally, GHG emissions will be generated from fossil fuel consumption and inefficiencies in existing energy systems within railway substations, as well as from the use of diesel-powered locomotives. To mitigate negative impacts, HSH must develop an *Operation Emergency Preparedness and Response Plan* addressing climate-related hazards and emergency response measures, as well as a *Stations' Energy Efficiency Management Plan* incorporating renewable energy production, energy-efficient systems, adaptive lighting, smart thermostats, water-saving devices, and regular maintenance, alongside the air quality measures outlined previously. HSH should also prioritise the implementation of the railway electrification project.

4.4 Land (Geology, Seismicity and Soil Quality)

Baseline summary

The railway line runs over deposits from the Pliocene (N2) and Quaternary (Q) geological periods. The Project area is characterised by developed land with buildings, cultivated fields (crops and gardens), meadows, and pastures. Gray-brown soils, found mainly in the western lowlands and the Durres-Rrogozhina Project area, are formed in colluvium deposits of limestone, sandstones, and other rocks, under a Mediterranean climate. These soils have a deep humus horizon, a neutral reaction, and a high carbonate content. They are used for agriculture, including cereals, vegetables, vineyards, and orchards, requiring balanced fertilisation and erosion control. The coastal hills feature soils with a slope over 12%, medium to fine texture, and high carbonate content. From km 8+560 to km 24, gray-brown meadows formed in alluvial and colluvium deposits have good structure and stable aggregates, while soils from km 24 to km 35 transition between gray-brown soils and meadows with moderate porosity and neutral reaction.

Figure 58 in Chapter 7 presents a topographic map of the Project area.

No official data on soil quality or contamination exists within the Project area.

The railway line crosses an area of high seismic risk, particularly from Shkozet to Plepa, where the expected seismic intensity is IX-degree MSK-64 (see Figure 59 in Chapter 7). A significant earthquake occurred in the area in 2019, with a magnitude of 6.4, and intensity reaching IX degree at the epicentre (see Figure 60 in Chapter 7)[7]. Figure 61 in Chapter 7 illustrates the role of soil conditions in amplifying the earth-shaking during this earthquake. The Detailed Design has already accounted for the seismic risk, which has been calculated based on tectonic features, the geotechnical model of the ground, and the water table level.

Potential impacts and mitigation measures

Pre-construction phase: There is a potential for land subsidence and erosion due to inadequate railway design, as well as damage to bridges caused by earthquakes. Proposed mitigation measures, to be included in the Tender Documentation and implemented during the Main Design development, involve conducting a comprehensive geotechnical investigation, selecting suitable materials, replacing unsuitable fill material, and assessing seismic risks based on regional tectonic factors and geotechnical characteristics, with confirmation of compliance from the relevant authorities.

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

Baseline soil quality monitoring will be conducted along the railway alignment, focusing on agricultural areas and locations with visible pollution. This will include a minimum of three urban and two agricultural monitoring points, as well as one control point located outside but close to the Project area, assessing parameters such as pH, metals, and organic matter.

Construction phase: During construction activities, there is potential for: (i) damage to and loss of fertile topsoil due to inadequate topsoil management temporary, (ii) erosion of terrain due to soil liquefaction and subsidence, and (iii) reduction in soil quality as a result of accidental spillage of fuel, oils, and other chemicals from equipment, improper waste/spoil disposal, and loss of fertile topsoil. To reduce potential negative impacts, the Contractor will develop a *Topsoil Management Plan* to preserve topsoil by properly removing and storing it, using existing roads to minimise disturbance, and avoiding the removal of valuable soils. *Erosion and Sedimentation Control Plan* will be implemented, which will include minimising construction in riverbeds, using erosion control blankets, and revegetating disturbed areas with native species. The Contractor will also develop and implement a *Construction Water and Soil Quality Management Plan* that includes measures to prevent soil compaction, limit vehicle movement on soft ground, ensure the non-toxicity of drilling mud, and prevent pollution from fuel or chemical spills. Furthermore, the Contractor will conduct regular inspections of pollution control measures and soil quality, take corrective actions when necessary, and ensure that spill kits are available on-site.

O&M phase: There is a potential for terrain erosion due to soil liquefaction and subsidence during reconstruction activities, as well as a reduction in soil quality as a result of O&M activities, primarily due to the use of hazardous substances and accidental fuel and oil spills. To mitigate negative impacts, HSH will monitor erosion, particularly in river and streambeds, and, in case of extensive reconstruction activities, implement the measures outlined in the *Erosion and Sedimentation Control Plan* for the construction phase. An *Operation Water and Soil Quality Management Plan* will be developed to prevent soil pollution, loss, and degradation, including measures such as maintaining track drainage systems, particularly on slopes close to the railway alignment, controlling the use of polluting substances, ensuring the integrity of septic tanks, and regular maintenance of sediment traps, slope stability, and drainage structures. Soil quality will be monitored in case of spills, and corrective actions will be taken as specified in the *Operation Emergency Preparedness and Response Plan*. The same topsoil management and water/soil quality measures from the construction phase will be applied during O&M activities.

4.5 Water

Baseline summary

The surface waters in the Project area include several streams, drainage and irrigation channels, and two rivers: the Lishati River and the Darsi River. The most significant project structures (bridges) will cross the following watercourses: Shen Vlashi (Flakke) Channel, Agai Stream, Lishati River, Darsi River, and Gose Stream. However, no site-specific baseline water quality data is available for the watercourses crossed by the railway.

The railway alignment distance from the Adriatic Sea ranges from 170 m (at Kavaje Rock, km 6+800 of the railway) in Durres municipality to 1.4 km (at Qerret, km 13+000 of the railway line) in Kavaje municipality.

Groundwater of the wider area is primarily found in Quaternary (Q) and Pliocene (N2) deposits[8]. The Quaternary deposits consist of marshy areas with low water-bearing capacity and high pollution, making the water unsuitable for drinking. Beneath the Quaternary deposits lies the Rrogozhine formation, composed of sandstones and conglomerates with a high water-bearing capacity but medium to low

[8] Quaternary and Pliocene deposits refer to layers of earth that were formed during specific periods in the past. Quaternary deposits are the most recent, formed within the last 2.6 million years, while Pliocene deposits are older, dating back to a period between 5 and 2.6 million years ago.

permeability, while the Helmasi unit contains high clay content and does not function as a water-bearing formation. From Shkozet to km 6+100 (Plepa), the water table is close to the surface, fluctuating between 0.5 to 1.0 m due to the area's former marshland nature. In the Pliocene formations in the hilly foothills, the water table is deeper than 5.0 m, with Golem village also having a water table deeper than 5.0 m. This suggests that groundwater levels in the Project area are generally deeper than 5 m, and given the nature of the works, this is not considered a critical factor for the Project implementation. However, specific information regarding groundwater locations, depths, and quality within the Project area is lacking.

The urban and semi-urban areas from Shkozet to the Durres/Kavaje administrative border are supplied with drinking water from the Fushe Kuqe Aquifer, located 38 km north of Durres. Kavaje Municipality is supplied with drinking water from: (i) the Shkumbini River Quaternary Gravel Aquifer, with wells in the Village of Cerme, far from the railway line, and (ii) local hydrogeological wells. Rrogozhine Municipality is supplied from (i) the Shkumbini River Quaternary Gravel Aquifer, with wells located approx. 600 m from the end of the Rrogozhine station, and (ii) local hydrogeological wells, although detailed information about these wells is not available.

Potential impacts and mitigation measures

Pre-construction phase: In order to obtain baseline information on water quality before construction, the Contractor should identify all watercourses crossed by the railway alignment and conduct baseline surface water quality measurements at key locations, such as the Lishati River, Darsi River, Shen Vlashi Canal, Agai Stream, and Gose Stream. Monitoring will follow the Water Framework Directive's guidelines, with a focus on physical-chemical and ecological parameters. Additionally, the Contractor will gather detailed information on the use of water wells by nearby households and implement precautions to protect these areas. Comprehensive geological surveys will be conducted to assess groundwater levels, locations, and quality, particularly in sensitive areas including designated drinking water protection zones, with water quality monitoring based on the same Directive's parameters.

Construction phase: Water use during the construction phase will be limited to sanitary purposes for site personnel (e.g., drinking water) and the preparation of raw materials such as concrete, machinery and equipment cleaning, dust control, etc. There is potential for water quality degradation due to: (i) erosion and sediment runoff, (ii) uncontrolled discharge of effluent from construction areas, (iii) improper and uncontrolled discharge/treatment of sanitary wastewater, (iv) emissions of drainage water from tunnels, (v) surface runoff and washout at worksites, (vi) maintenance of construction vehicles, and (vii) deposition of waste into watercourses. Additionally, construction activities at river-crossing locations (e.g., bridges) may temporarily affect watercourse flow, velocity, connectivity, and the stability of river or stream banks. To reduce negative impacts, the Contractor will implement several mitigation measures. These include identifying activities requiring water use and assessing the volume needed, establishing communication with relevant authorities, and agreeing on water sources in advance. A *Construction Water and Soil Quality Management Plan* will be developed, which includes measures such as using gabions for erosion protection, constructing culverts away from the Project area, and using erosion control methods like silt fences and sediment traps. The Plan will also address proper waste disposal, machinery maintenance to prevent leaks, and the installation of oil interceptors. Work camps will be located away from surface waters, and transportation of materials will avoid crossing watercourses. Monitoring of water quality and erosion will be conducted regularly, with visual inspections and turbidity checks. The Contractor will also develop a *Watercourse Crossing Plan*, ensuring minimal disruption to watercourses, protecting riparian areas, and avoiding construction during sensitive periods like fish spawning. Additionally, measures will be taken to prevent water contamination from wastewater, spills, and construction activities, including proper handling of repair facilities and sanitation. Appropriate emergency and preparedness response measures will be included in the *Construction Emergency Preparedness and Response Plan*.

O&M phase: A reduction in water quality may occur due to: (i) discharge of untreated sanitary wastewater or contaminated runoff from station facilities, (ii) sediment accumulation around bridge piers, (iii)

discharge of contaminated runoff from the track drainage system or during bridge maintenance works, (iv) accidental spills of hazardous materials from railway traffic incidents, and (v) surface water contamination from herbicide application. To mitigate water quality impacts, HSH will develop an *Operation Water and Soil Quality Management Plan*. Sanitary wastewater from station facilities will be treated before discharge, with septic tanks regularly cleaned by licensed companies, and contaminated runoff from parking areas treated in oil and silt traps if required. Verge vegetation will be planted along waterways to control soil erosion and reduce suspended particles in runoff. Water quality monitoring will be conducted following any spills and in line with national water regulations. Maintenance areas for locomotives and wagons will be located away from surface waters, and all relevant water protection measures from the *Construction Water and Soil Quality Management Plan* and *Watercourses Crossing Plan* will also be applied during operation.

4.6 Biodiversity and Protected Areas

Baseline summary

Rapid biodiversity surveys were performed for habitats, flora, amphibians, reptiles, birds, bats and mammals to make a preliminary identification of habitats and species present along the railway line. The railway passes through urban, suburban and agricultural areas as well as semi-natural habitats such as patches of forests, stream beds with trees and reeds and dense vegetated fences. The railway line also passes near one protected area Shkëmbi i Kavajës Natural Monument which is located approximately 15 m from the railway line from km 6.1+0.00 to km 6.9+0.00. This protected area is a natural geo-monument, a large rock formation, classified as a category III protected area according to *Law 81/2017 on protected areas*. Additionally, protected area Divjaka-Karavasta National Park, which is also designated as an Important Bird Area (IBA), Important Plant Area (IPA), wetland of international importance under the Ramsar Convention (Ramsar site) and Emerald candidate site[9], is located approx. 10 km from the nearest point of the railway line, Rrogozhine station.

The Project area features riparian forests of the Mediterranean and Black Sea basin[10] characterised by species white willow and white poplar, located along specific parts of Darci and Lishati River. This habitat type is a natural habitat particularly valuable for biodiversity and require conservation action to maintain their ecological integrity and ensure long-term survival and the protection of the species across the EU. Flora along the railway is characterised mostly by species that thrive in environments altered by human activities. There is a high presence of non-native and invasive plant species, often forming dense galleries along the railway, including tree of heaven, black locust, sticky fleabane, Canadian horseweed and giant reed.

Regarding fauna, the field survey registered eight species of amphibians and reptiles, out of which the Albanian water frog and Hermann's tortoise represent key species due to their endangerment status. The Project area supports a diverse array of bird species, with 24 species recorded during field survey, including species of conservation concern such as lesser kestrel, European roller and European bee-eater. Field survey of mammals identified the presence of otter and badger along the Darci River which are species of high conservation concern. Regarding bats, 12 species were confirmed, and three roosting sites were identified, one of which is located in Rrogozhine tunnel that is planned to be rehabilitated and two in the immediate vicinity of the Project area.

[9] The Emerald Network is a pan-European ecological network established under the Bern Convention on the Conservation of European Wildlife and Natural Habitats to protect habitats and species of European importance. It complements the EU's Natura 2000 network, extending conservation efforts to non-EU countries.

[10] 92A0 *Salix alba* and *Populus alba* galleries. Habitat type is listed on Annex I of the Habitats Directive (Council Directive 92/43/EEC).

Potential impacts and mitigation measures

Pre-construction phase: To minimise the impacts on fauna, the Main Design must include design features such as underpasses for otters at the Darci and Lishati River crossings and passages for Hermann's tortoise. If the railway is electrified, measures will be implemented to prevent bird electrocution, such as insulating power lines, using covered conductors and installing diverters to help reduce bird collisions.

Since the biodiversity surveys performed to date are not sufficient and did not cover appropriate seasons, pre-construction surveys are proposed to assess the presence of important species and habitats along the railway line. These surveys will focus on habitats of importance, amphibians and reptiles (during spring season), birds (breeding, migrations and winter surveys) and bats (surveys of roosting sites to determine the way bats use the habitats adjacent to the railway and the Project's impact on bats year-round). Before reconstructing the Rrogozhine tunnel, surveys will identify potential bat roosting sites within a 1-2 km buffer around the tunnel to support safe bat relocation and offset measures. If no suitable roosts are found nearby, a new roosting site must be created.

Construction phase: During construction activities, impacts on flora and fauna are anticipated and they include: (i) habitat loss, modification and fragmentation, (ii) noise, vibration and dust disturbances, (iii) potential spread of invasive species, (iv) disruption from material handling, (v) stress and mortality. The impacts are expected to be temporary, reversible and localised to the working strip. Construction activities will be planned outside the breeding season of sensitive species and limited to the existing railway footprint, no-go zones and sensitive habitats will be designated to prevent habitat destruction. The proposed mitigation measures for reducing negative impacts on the biological environment includes developing a *Construction Biodiversity Management Plan* that is to include, among others, measures for minimising habitat disturbance, vegetation clearance, site management in sensitive areas, vegetation and invasive species management, and fauna specialist surveys to ensure safe handling and relocation of species encountered during construction phase.

O&M phase: During the operation phase, the following impacts on biodiversity are expected: (i) noise and light pollution, (ii) train collisions, especially where the railway crosses migration routes, feeding grounds, or nesting areas, (iii) risk of electrocution for birds, and (iv) potential spread of invasive species. To mitigate the impacts on biodiversity during the operation phase, the following measures will be implemented: invasive species control and monitoring during the first three growing seasons after construction, riparian habitat restoration along Darci and Lishati Rivers, amphibians and reptiles monitoring with species relocated to suitable habitats, collision and breeding bird survey, and monitoring of newly established or relocated bat roosts to ensure successful use and assess the effectiveness of mitigation measures.

4.7 Land Acquisition and Resettlement

The railway line and the associated stations are the property of Albanian Railways. However, several groups and activities have been identified as potentially affected, underscoring the need for careful planning and engagement to mitigate any adverse impacts. Some families currently live in railway station buildings and will require resettlement, and the Project is committed to ensuring that resettlement is conducted fairly and in line with international standards. Roma communities live in close proximity to some railway stations; there is a possibility that these communities could face temporary or permanent resettlement due to construction activities or land requirements. Therefore, special attention will be given to understanding and addressing their specific needs, with a focus on minimising disruptions to their lives and livelihoods. Informal dumping sites are occasionally found along the railway corridor, often used by Roma community members who engage in waste picking as a livelihood activity. If these sites are removed as part of the Project, it will be essential to ensure alternative livelihood opportunities or support for those affected. In addition, numerous businesses operate near the railway line, and construction activities may impact their operations, particularly during the construction phase. Measures will be taken to minimise disruptions and compensate for any losses incurred.

To address these potential impacts, the Project has developed a LARF which outlines the key principles, procedures, and organisational arrangements that will guide resettlement and compensation efforts. The LARF has been prepared in accordance with the requirements of the EBRD and EIB. The LARF is part of the Project's Disclosure Package.

The specific land requirements of the Project will be determined during the preparation of a Land Acquisition and Resettlement Plan (LARP). The LARP will be informed by a detailed census and inventory of all affected property, households and businesses and other entities, as well as a socio-economic survey to understand the socio-economic conditions of affected groups. The LARP will provide a clear roadmap for implementing land acquisition and resettlement activities, including compensation measures, livelihood restoration programs, and monitoring mechanisms.

4.8 Infrastructure Utilities

Baseline summary

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.

Potential impacts and mitigation measures

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.

4.9 Landscape and Visual Amenity

Baseline summary

The railway alignment passes through various areas, including urban, semi-urban, and rural locations such as Durres, Arapaj, Plepa, Shkallnur, Qerret, Kavaje, Shtodher, Lekaj, Gose, and Rrogozhine. Throughout the Project route, numerous visual receptors will be affected. These receptors can be categorised based on their proximity to the route, the characteristics of the surrounding landscape and the sensitivity of the receptors:

1. Residents in the urban area of Durres (high sensitivity)
2. Residents in semi-urban and rural areas (medium sensitivity)
3. Residents in the south seaside area of Durres (high sensitivity)
4. Tourists in the south seaside area of Durres (high sensitivity)
5. Workers along the Project route (medium to low sensitivity)

Potential impacts and mitigation measures

Pre-construction phase: Neglecting the protective fencing design during the pre-construction phase can lead to inadequate integration of fences into the environment. The proposed mitigation measures include incorporating detailed fence designs into the Main Design, with a focus on integrating green walls where feasible. Priority will be given to densely populated areas where green walls can enhance overall visual quality. If green walls are not feasible, alternative greening strategies will be considered, such as incorporating climbing plants, green planters, or other vertical gardening solutions into the protective fencing.

Construction phase: There will be inevitable visual disturbance due to construction activities along the working strip, new service roads, fencing, and walls. The proposed mitigation measures include developing a comprehensive *Landscape Management Plan* that focuses on restoring vegetation within the working strip, minimising the width of the working strip and access roads, vegetation of potential

green walls to support local ecosystems, avoiding the use of concrete, and coordinating the plan with the *Erosion and Sedimentation Control Plan*.

O&M phase: The current visual continuity of the space has been largely intact due to the absence of fencing and the low frequency of railway traffic. The introduction of fencing along the entire 33 km alignment will create a visual barrier, potentially fragmenting the landscape and altering the visual experience for all nearby receptors. Upgraded and secure level crossings, along with newly developed service roads, bridges, underpasses, and drainage channels, will provide a substantial improvement over the current facilities and elevate the aesthetic appeal. HSH will implement regular vegetation care, including pruning, fertilising, and replacing dead or unhealthy plants, to maintain both the visual appeal and ecological function of the landscape during the O&M phase.

4.10 Cultural Heritage

Baseline summary

The railway line is located at a sufficient distance from any known cultural heritage assets, ensuring minimal risk of direct interference. Additionally, assessments have confirmed that none of the train station buildings along the route are designated as protected or listed structures under heritage conservation laws.

Potential impacts and mitigation measures

While no adverse impacts on identified cultural heritage assets are anticipated, the potential risk of encountering unknown cultural artifacts or structures during excavation and construction works remains. To address this, the Contractor will develop a Chance Find Procedure detailing the necessary steps to be taken should any culturally significant assets be found during excavation works, and to train its workers on the procedure.

4.11 Waste

Baseline summary

Within the Project area, waste is collected and disposed at the Sharre landfill in the Tirane municipality territory, and in Lekaj municipality. Additionally, several smaller dumpsites were identified near the railway alignment.

The main types of waste expected to be generated during railway (re)construction include waste from terrain preparation and dismantling of the existing railway (including tracks, wooden sleepers, track accessories, waste ballast, and excess soil from excavation), demolition waste from railway substations including potential asbestos containing materials, food, packaging, office waste, sanitary waste, as well as liquid (hazardous) waste such as oils, fuels, paints and solvents. A key concern is the management of wooden sleepers, which are classified as hazardous waste due to treatment with creosote.

Similar waste types, though in smaller quantities, are expected during the O&M phase. Additionally, waste generated from the maintenance of diesel-powered rolling stock, particularly used oil, is identified as a significant byproduct.

HSH does not maintain a comprehensive waste management policy or systematically record waste categories from its existing infrastructure or activities along its railway lines. However, HSH typically manages heavy scrap metal, such as rails, nails, levelling plates, and screws, through a bidding process to secure the highest possible price on the local market. For (re)construction projects, waste management responsibility is transferred to the contractor, who is expected to maintain comprehensive records and categorise all types of waste generated during the project implementation.

Potential impacts and mitigation measures

Construction phase: There is a potential for environmental damage caused by improper materials and chemicals management, as well as accidental spills. Contamination of the environment may result from the leakage and spillage of wastes associated with poor handling, transportation, and storage/disposal arrangements for various types of waste generated during construction activities, including demolition waste, rail tracks, wooden sleepers, excavated materials, food, packaging, office waste, sanitary waste, oils and fuels, as well as paints and solvents. The Contractor will develop a *Construction Materials and Waste Management Plan* to address waste generation during construction, focusing on maximising reuse and recycling. Key measures include identifying waste types and quantities, reusing excavated materials and demolition debris, classifying waste into inert, non-hazardous, or hazardous categories, and providing on-site waste segregation facilities. Temporary storage sites for wooden sleepers, demolition waste, and rail tracks and accessories, will be established away from sensitive areas and closed post-construction. In case of wooden sleepers' removal, a safe, isolated storage area will be designated with fire safety protocols, firefighting equipment, and worker training. Wooden sleepers will be stored with adequate firebreaks and access for loading and unloading without disrupting local areas. Decommissioned wooden sleepers will first be transported to the nearest stations and then to Shkozet station. They will be stored on hard surfaces and covered to protect them from rain and fire. The sleepers will then be delivered to a licensed waste subcontractor as soon as possible. Waste track ballast will be classified and tested by a licensed laboratory, with hazardous materials segregated and managed according to national regulations. Public and maintenance waste bins will be provided, waste will be segregated, and recyclable materials such as used oil and metal waste will be sent for recycling. Records will be kept of waste collected, and hazardous waste will be handled and disposed of by licensed contractors in compliance with relevant regulations.

Asbestos surveys will be conducted, and asbestos-containing materials will be removed by licensed contractors. Stockpiling will be managed to reduce dust, with waste removed by licensed subcontractors to designated municipal disposal sites.

O&M phase: There is potential for environmental contamination due to leakage and spillage of waste caused by poor waste handling, transportation, and storage arrangements during the O&M phase, including municipal and packaging waste from passengers using the stations, track maintenance waste, and ancillary infrastructure waste. Therefore, similar types of waste are expected as those during the construction phase. To reduce negative impacts, HSH will develop an *Operation Waste Management Plan*, which will include several key mitigation measures for the different waste types, as previously explained for the construction phase.

4.12 Occupational Health and Safety

Certain construction activities, particularly tunnel reconstruction, pose elevated risks such as confined spaces, rock falls, dust generation, limited ventilation, and heavy machinery operations. In addition to specific high-risk activities, construction work involves general hazards such as slips, falls, machinery accidents, electrical hazards, heavy lifting and excavation. The demolition of aging railway stations introduces risks associated with asbestos-containing materials (ACMs).

Given the scale and complexity of construction activities, robust health and safety measures will be implemented to protect workers and minimise risks to nearby communities. The Contractor will therefore establish comprehensive procedures to ensure worker health and safety. A Construction Occupational Health and Safety Plan will be implemented to identify these risks and outline mitigation measures. Strict safety measures will be implemented particularly for tunnel expansion activities, including air quality monitoring, ventilation systems and the use of personal protective equipment. Emergency response plans will be tailored to the Project's specific risks, outlining hazard mitigation strategies and communication protocols to manage potential incidents effectively. Comprehensive safety training will be provided to workers, with task-specific protocols such as mechanical lifting aids, fall protection

systems, height-specific training and safe excavation practices, including trench shoring and pre-excavation surveys. To address asbestos-related risks, the Contractor will develop an Asbestos Management Plan. This plan will ensure that ACMs are identified, documented, and safely handled or removed by certified professionals, in compliance with EU Directive 2009/148/EC.

4.13 Community Health and Safety

Baseline summary

The existing railway passes through the municipalities of Durres, Kavaja, and Rrogozhine, traversing areas with diverse land uses, including residential zones, businesses, agricultural fields and recreational spaces. Numerous residents live or work in close proximity to the railway, with some homes and businesses located as near as 5 to 15 m from the tracks. Roma families are present along the corridor, living either directly on or near the route and often collecting waste from informal dumpsites scattered along the railway line. Certain facilities near the railway hold significant importance for local communities. For instance, in Rrogozhine, a newly constructed school situated just a few meters from the railway is set to open in the upcoming school year. Additionally, a football club training field is located within 20 meters of the tracks, with spectator seating positioned as close as 10 meters from the railway line.

There are numerous railway crossings along the railway alignment, including both authorised and unauthorised ones. The majority of these crossings will be closed as part of the project, with alternative crossings constructed to comply with safety regulations. A visual representation of the current and future railway crossings is provided in Chapter 7 (Figure 62 – Figure 70).

Potential impacts and mitigation measures

To ensure community needs are addressed, HSH will conduct inclusive consultations with all impacted residents, including smaller or underrepresented groups, providing clear information on planned crossings and road closures. Feedback will be incorporated into the Detailed Design to ensure infrastructure meets local needs, avoiding delays or additional costs. To address community concerns effectively, HSH will organise consultations during the Main Design phase with municipal authorities and village leaders, ensuring stakeholder feedback is incorporated into the design.

Construction works near urban and residential areas can pose significant health and safety risks to nearby communities. Activities such as demolition, earthworks, and heavy machinery operations can generate noise, vibrations, and dust emissions that disrupt daily life and degrade air quality. Exhaust gases from construction vehicles and equipment further exacerbate these impacts. Improper handling of hazardous materials and construction waste, including demolition debris, oils, fuels, and solvents, risks contaminating soil and water, potentially endangering community health. Insecure construction sites may attract unauthorised access, particularly by children, leading to accidents and injuries. Failure to address community grievances promptly and transparently can erode trust, resulting in opposition to the Project and potential delays. Furthermore, construction traffic may pose risks to both workers and local communities.

To address these risks, the Contractor will develop a Community Health and Safety Plan to ensure secure construction sites, situate compounds away from sensitive receptors, and restore construction areas to their original condition upon completion. The Contractor will also develop a Construction Traffic Management Plan to include measures such as transport planning, vehicle maintenance, speed limits, and safe access routes.

Additionally, the Contractor will establish a clear grievance mechanism, prominently displayed on-site, to allow community members to report concerns. Grievances will be promptly forwarded to the Project Implementation Unit (PIU) for resolution within 24 hours. These measures aim to minimise community health and safety risks while fostering transparency and trust throughout the construction phase.

To ensure the long-term safety and functionality of the railway, an Operation and Maintenance Plan will be developed. This plan will include service schedules, asset registers, operational protocols, and regular inspections of critical infrastructure, such as railway fencing, to promptly address maintenance needs.

4.14 Labour and Working Conditions

The construction phase of the railway project may pose risks related to non-compliance with labour regulations, particularly due to seasonal work, subcontracting, and potential cost-cutting measures. These risks include practices such as undeclared work, excessive working hours, and inadequate adherence to labour standards. To address these risks, robust measures will be implemented to ensure compliance with national and international labour standards and to promote fair and safe working conditions.

The Contractor will be required to submit a formal statement confirming compliance with national labour regulations and committing to uphold these regulations throughout the construction phase. To further safeguard workers' rights and conditions, the Contractor will be required to develop and implement a Labour and Working Conditions Management Plan. If worker accommodation is required, the Contractor will prepare and implement a Workers' Accommodation Management Plan. This plan will include provisions to ensure safe and sanitary living conditions that meet international best practices and national standards.

HSH will oversee and enforce these commitments as part of its role in managing the Project's implementation.

5 Additional Activities to be Undertaken for the Project

In addition to mitigation measures proposed in the previous chapter, HSH will implement the following activities (described in detail in the Environmental and Social Action Plan) to meet local and Lender(s)/EU requirements:

STRENGTHEN CAPACITIES FOR E&S PROJECT MANAGEMENT:

- Establish a Project Implementation Unit (PIU), engage a PIU Support Consultant, and assign E&S roles for the Project implementation.
- Officially adopt and implement the corporate-level E&S Policy and E&S Management System (ESMS) developed in June 2022.
- Require from the Contractor to appoint at least: Environmental Expert, Social Expert, H&S Expert, Biodiversity Expert.
- Prepare and submit 6-monthly E&S reports to Lender(s) during construction.

IMPLEMENT NATIONAL PERMITTING REQUIREMENTS:

- Obtain all required permits for Project implementation.
- Conduct the national EIA procedure.

SUSTAINABLE MATERIALS SOURCING

- Develop and implement a supply chain management system to monitor supplier performance in environmental and social (E&S) management. The system will include requirements for sourcing materials from authorised suppliers who adhere to environmental, social, and labour standards, demonstrate sustainable practices, hold relevant certifications, comply with applicable laws and regulations, and confirm the absence of forced or child labour.

SUPERVISE THE WOK OF CONTRACTOR:

- Require from the Contractor(s) to submit and implement a Construction Environmental and Social Management Plan (CESMP), and to comply with all requirements specified in the Detailed Design and Project ESMP for all project components, as well as to implement construction mitigation measures and monitoring plan as per obtained permits.

CARRY OUT STAHEHOLDER ENGAGAMENT:

- Implement the SEP for the Project and update it a regular basis throughout the Project duration.
- Implement the grievance mechanism as defined in SEP to ensure stakeholders are able to raise their concerns about the Project and that these concerns are addressed promptly.

6 Disclosure and Communication

A detailed **Stakeholder Engagement Plan** (SEP) has been developed for this Project, outlining the stakeholder engagement and communication programme, including access to the Project's Grievance Mechanism. A contact person appointed by HSH will be specifically responsible for implementation of the SEP, and the contact details are provided in the SEP.

As elaborated in the SEP, HSH will disclose the following documents:

- The Updated SEP with the the Public Grievance Form (Appendix 1 of SEP);
- This Updated NTS; and
- The Updated LARF.

The documents will be publicly available in Albanian[11] and English language in electronic and printed forms at:

Name of organisation	Website	Address
Ministry of Infrastructure and Energy	https://www.infrastruktura.gov.al/	Rruga Abdi Toptani, 4, Tirana
HSH	https://hsh.com.al/	Lagjia nr.3, Egnatia Street, Durres
Durres Municipality	https://www.durres.gov.al/	Sheshi "Liria", 2000 Durres
Kavaja Municipality	http://www.bashkiakavaje.gov.al/	Bulevardi Josif Buda, Kavaja
Rrogozhina Municipality	https://www.facebook.com/brrogozhine/	Lagjja. nr. 1,Rruga e . " Kavajës", Blloku "12 Shtatori", Rrogozhine

HSH has also outlined a comprehensive consultation plan to engage stakeholders and address community needs during the Project's design and operation phases:

- During the Detailed Design update stage, community-level meetings will be organised in all villages within the three municipalities impacted by the railway. These meetings aim to include smaller communities and underrepresented groups, ensuring their concerns and input are captured. Clear and accessible information, including detailed maps of crossings, road closures and redirections, will be provided. HSH will evaluate feedback to determine whether additional crossings or design modifications are necessary and incorporate these adjustments into the Detailed Design. Notices for meetings will be widely disseminated 10 days in advance through various channels, including online platforms, posters in public places, and local media. A "comments matrix" summarising stakeholder feedback and HSH's responses will be published online for transparency. Targeted consultations will also be conducted with Roma families using culturally sensitive communication and trusted intermediaries.
- During the Main Design development stage, in collaboration with the Project designer, HSH will consult municipal authorities and village leaders to present the design and gather feedback on issues of community significance. A summary report documenting all feedback, along with explanations for its inclusion or exclusion, will be published.

[11] The Roma population in this region of Albania speaks Albanian, so translation into the Roma language is not deemed necessary.

- During the O&M phase, HSH will implement awareness and education campaigns to prevent fence jumping and vandalism. Initial campaigns will coincide with fence installation, with additional campaigns targeting identified hotspots.

HSH will also provide notifications about planned works, including their location, timing, and duration, at least 30 days in advance through multiple channels such as online platforms, municipal websites, posters, local community spaces, direct notices to village heads, and national and local media to ensure broad accessibility for all stakeholders.

HSH will implement the Project-specific grievance mechanism to ensure that it is responsive to any concerns and complaints particularly from affected stakeholders and communities.

7 Maps and Figures

Figure 56: Administrative map and the railway line Durres - Rrogozhine

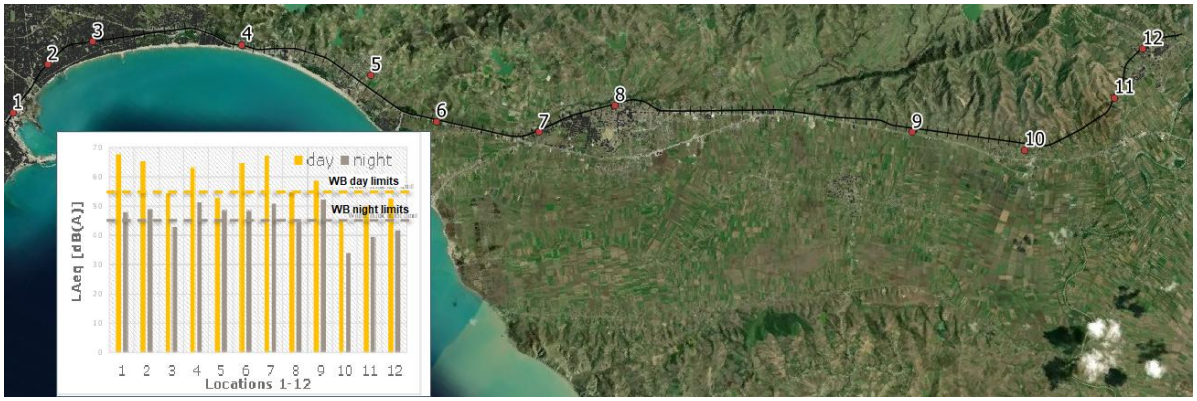

Figure 57: Environmental noise measured and the railway line alignment

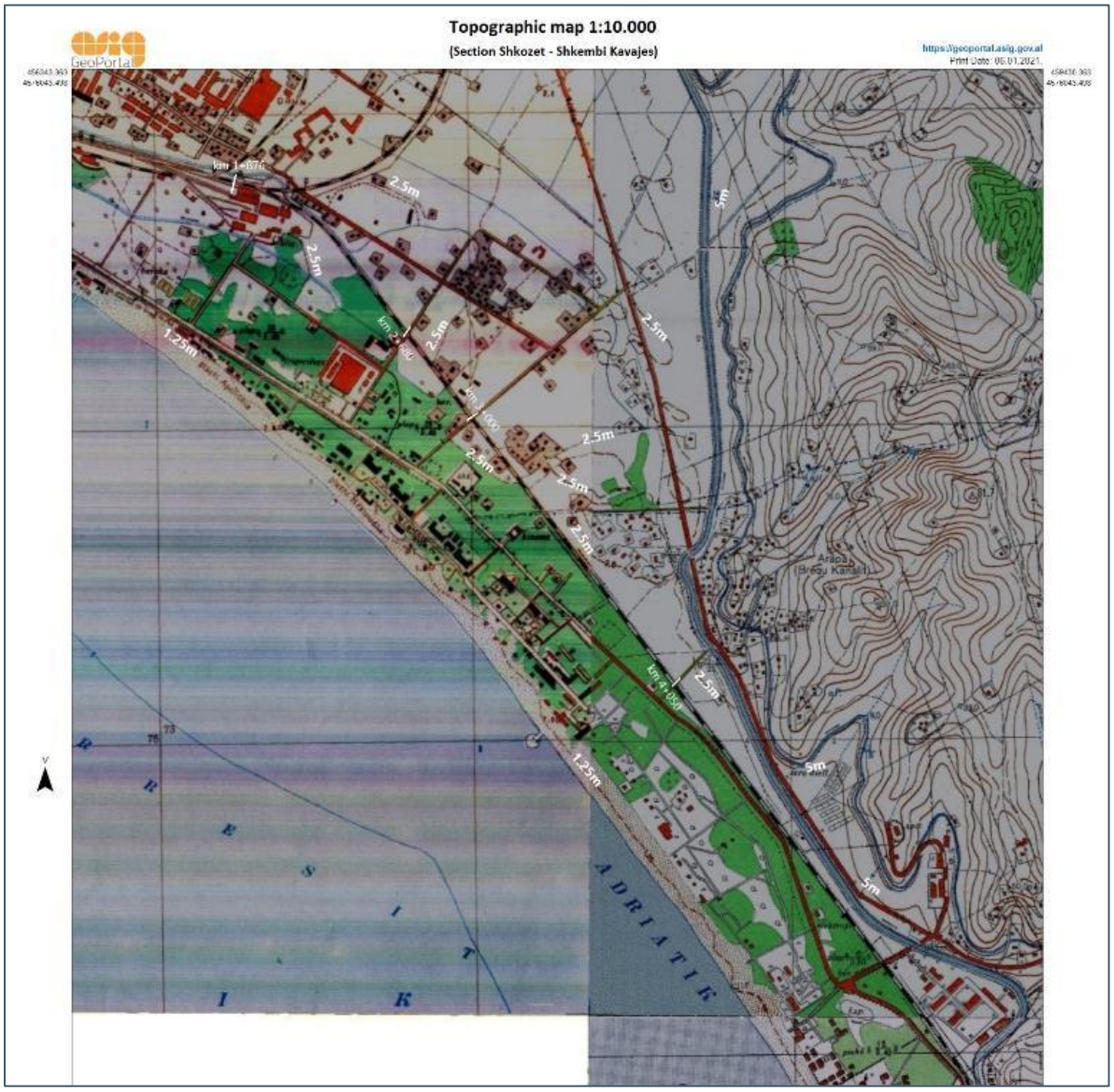

Figure 58: The railway line Shkozet – Shkembi Kavajes on the topographic map

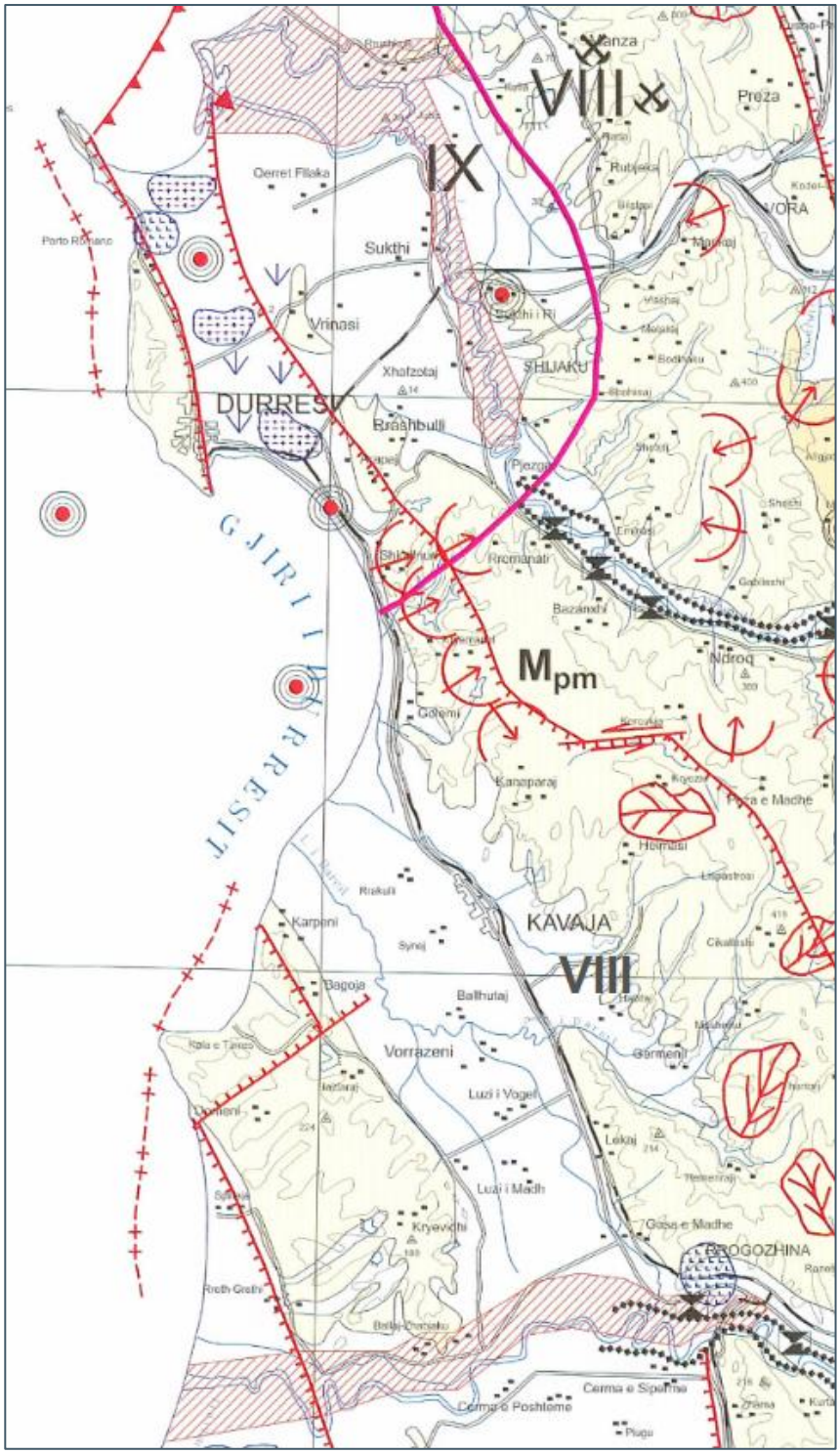

Figure 59: Geohazard map of Albania and expected intensity of the earthquakes

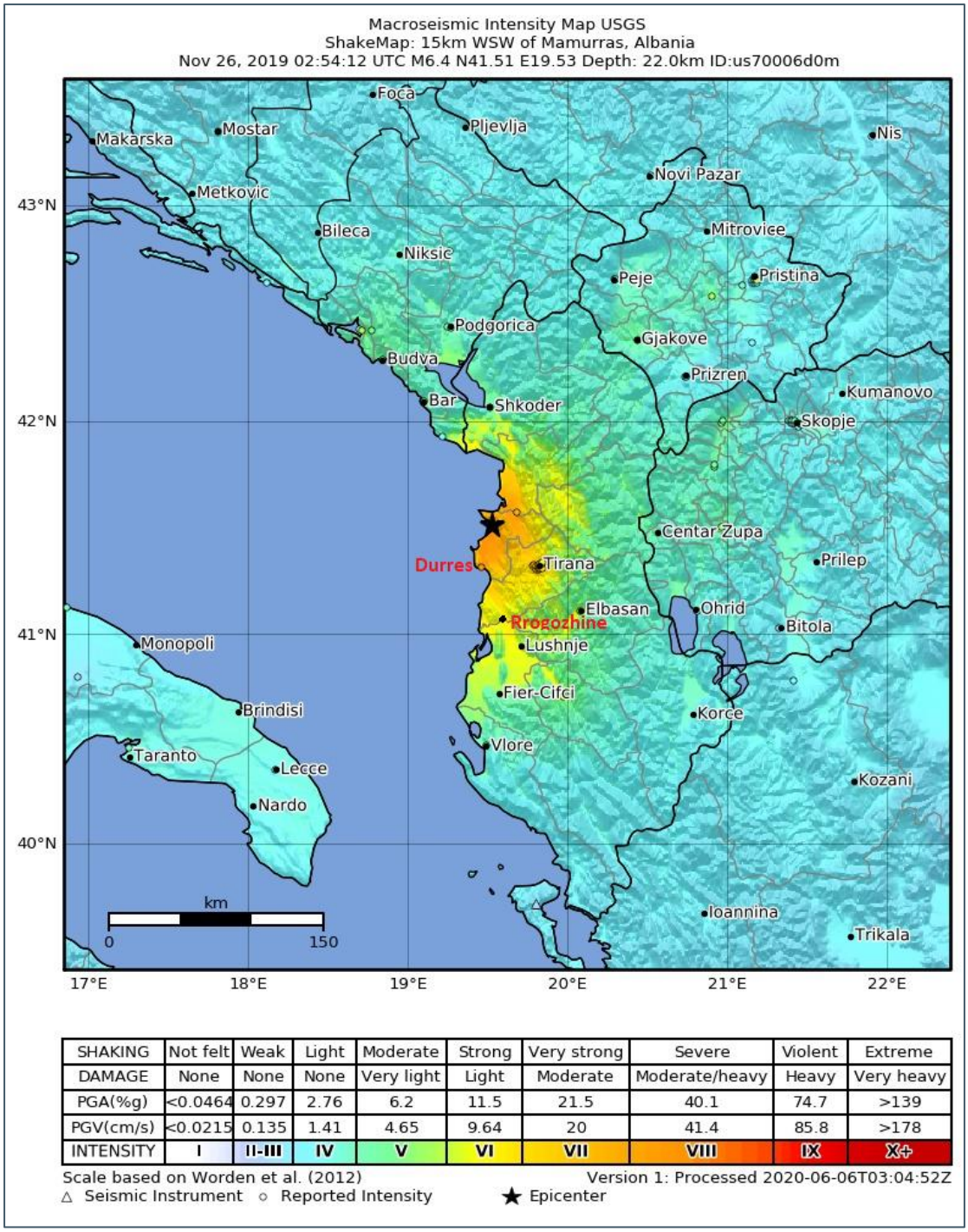

Figure 60: Amplification of earth shaking within the Project area

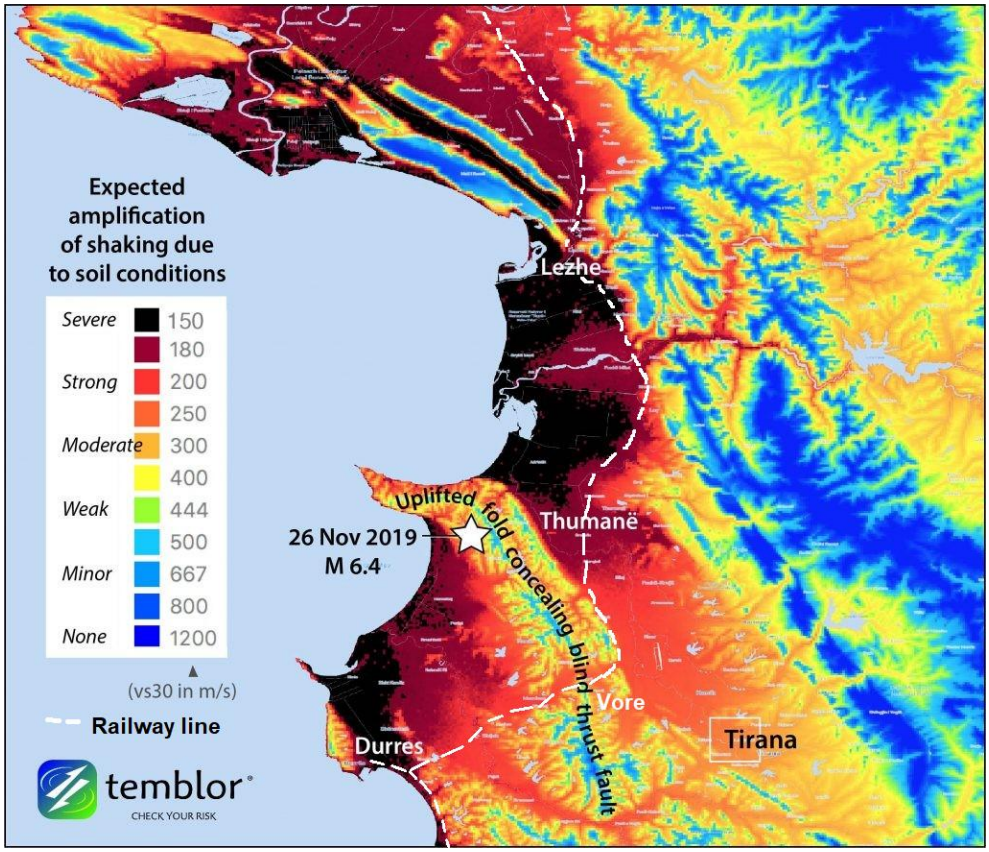

Figure 61: Amplification of the earth shaking due to soil conditions

Figure 62: Existing and planned railway crossings in Durres area

Figure 63: Existing and planned railway crossings in Shkembi and Kavajes area

Figure 64: Existing and planned railway crossings in Golem area

Figure 65: Existing and planned railway crossings in Kavaje area (part 1)

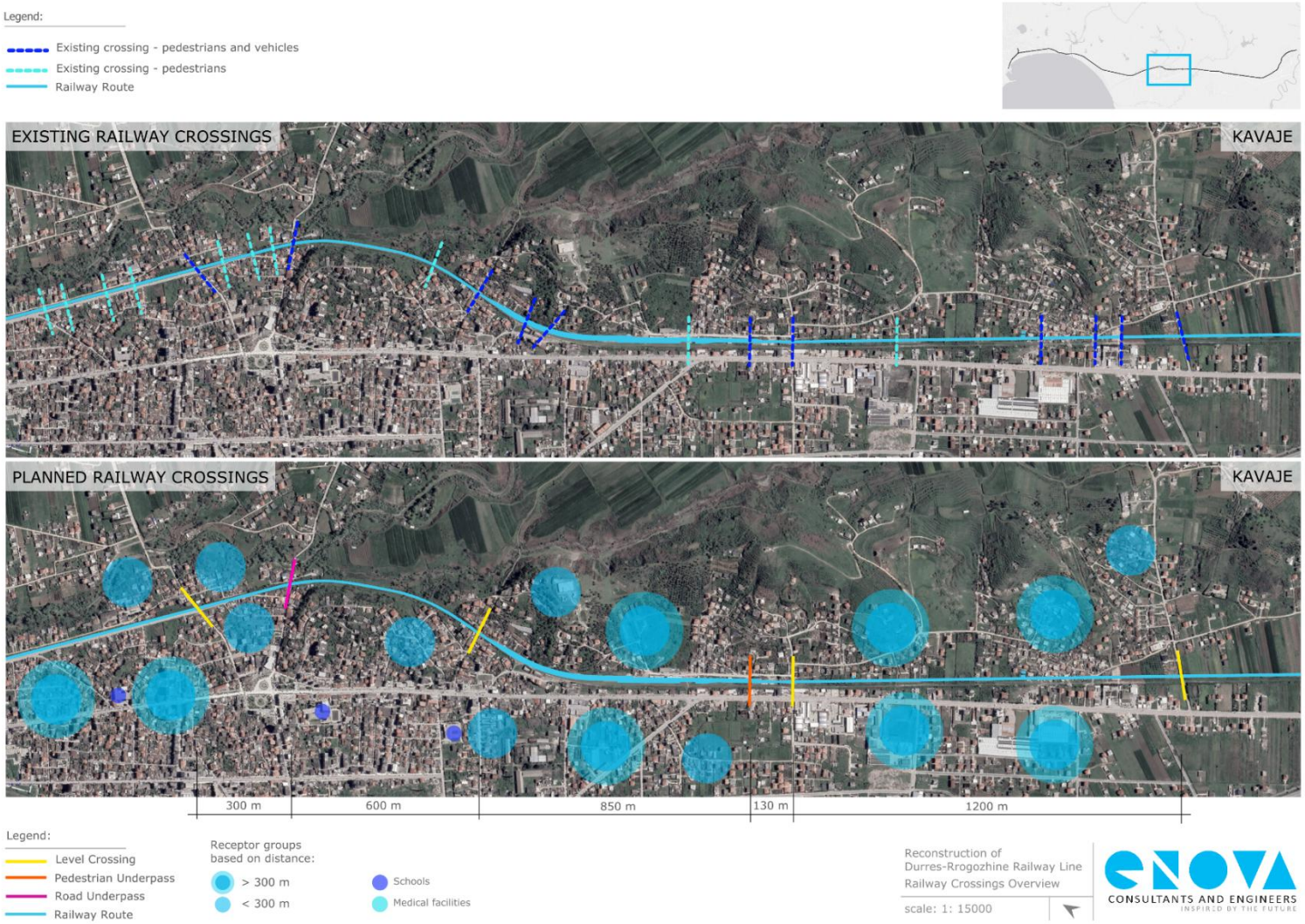

Figure 66: Existing and planned railway crossings in Kavaje area (part 2)

Figure 67: Existing and planned railway crossings in Kavaje and Rrogozhina area

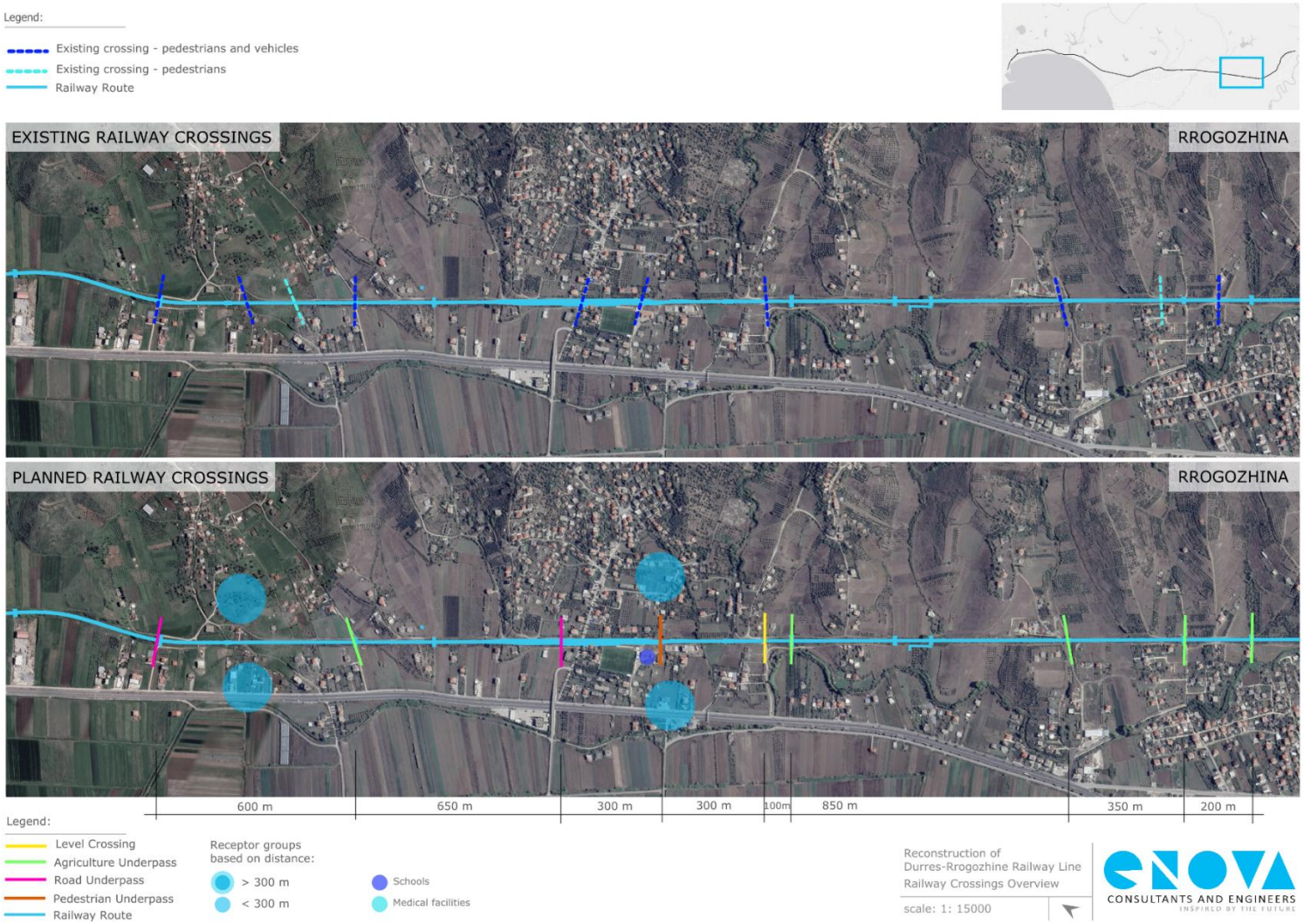

Figure 68: Existing and planned railway crossings in Rrogozhina area (part 1)

Figure 69: Existing and planned railway crossings in Rrogozhina area (part 2)

Figure 70: Existing and planned railway crossings in Rrogozhina area (part 3)