Preliminary Design for the Rehabilitation of the Railway Corridor VIII Rrogozhina – Pogradec

Specific Contract number: AA-010284-001

Non-Technical Summary (NTS) of ESIA

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Name of Project:

Preliminary Design for the Rehabilitation of the Corridor VIII Rrogozhinë - Pogradec Section, Albania

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Version	Date of issue	Author	Checked	Approved	Comments
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This technical assistance operation is financed under the EIB's Economic Resilience Initiative (ERI). The ERI is EIB's response to the European Council's call to intensify its support for the EU's neighbourhood, in pursuit of economic growth and the achievement of the sustainable development goals (SDGs). The objective of this initiative is to rapidly mobilise additional financing in support of sustainable growth, vital infrastructure and social cohesion in Southern neighbourhood and Western Balkans countries. The Economic Resilience Initiative focuses on both the public and the private sectors, in support of EIB activities during different stages of the project cycle. The EIB is contributing to the ERI TA window with an envelope amounting to EUR 90 million from its own budget resources".

TABLE OF CONTENTS

Tables

Figures

PROJECT DATA SUMMARY

ACTION	Preliminary Design for the Rehabilitation of the Corridor VIII Rrogozhinë - Pogradec Section, Albania
REFERENCE NUMBER	AA-010284-001
BENEFICIARY	Ministry of Infrastructure and Energy of Albania
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Key Experts	KE1 – Team Leader – Aris KARLAFTIS KE2 – Transport infrastructure engineer – Deputy TL – Hector MARTINEZ KE3 – Tunnel engineer – Alejandro Antonio VILLAESCUSA GONZALEZ KE4 – Rail signalling / telecom engineer – José Ignacio VIVAS ORTEGA

LIST OF ABBREVIATIONS

ALUIZNI	Agency on the Legalization of Informal Construction
AoI	Areas of Influence
ARA	Albanian Road Authority
ASIG	Albanian State Authority of Geospatial Information
CBA	Cost Benefit Analysis
CMD/DCM	Council of Ministers Decision
CoM	Council of Ministers
CTC	Centralized Traffic Control
DD	Detailed Design (also referred to as Main Design – MD)
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ERI	Economic Resilience Initiative
ESIA	Environmental and Social Impact Assessment
ETSI	European Telecommunications Standards Institute
EU	European Union
FS	Feasibility Study
GHG	Greenhouse Gas Emissions
GoA	Government of Albania
h	Hour
HSH	Albanian Railways - Hekurudha Shqiptare
IFI	International Financial Institutions
IPA	Instrument for Pre-Accession Assistance (EU)
IPF	Infrastructure Project Facility
IPRO	Immovable Property Registration Office
IR	Inception Report
JASPERS	Joint Assistance to Support Projects in European Regions
KE (s)	Key Expert (s)
Km	Kilometre
KOM	Kick-Off Meeting
KP	Kilometre Point
LARF	Land Acquisition and Resettlement Framework
LARP	Land Acquisition and Resettlement Action Plan
LC	Level Crossing
m	Metre
MCA	Multi-Criteria Analysis
MIE	Albanian Ministry of Infrastructure and Energy
MoM	Minutes of Meeting
NKE (s)	Non-Key Expert (s)
NTS	Non-Technical Summary
OB	Operational Backstopping
PAP	Project Affected Persons
PD	Preliminary Design
PEA	Public Expropriation Agency
PFS	Pre-Feasibility Study
PIU	Project Implementation Unit
PMIS	Project Management Information System
POC	Point of Contact
QA	Quality Assurance
QM	Quality Management

RAP	Resettlement Action Plan
REBIS	Regional Balkans Infrastructure Study
SC	Steering Committee
SDG	Sustainable Development Goals
SEETO	South-East Europe Transport Observatory
SEP	Stakeholder Engagement Plan
TA	Technical Assistance
TB	Technical Backstopping
TEN – T	The Trans-European Transport Network
TL	Team Leader
ToR	Terms of Reference
UIC	International Union of Railways
WP	Waypoint

1 Project Description

1.1 General Description

The railway project is located on the existing line Rrogozhinë-Pogradec and will be part of Corridor VIII.

The line is about 117.3 km long and passes through various landscapes and regions. It starts from Rrogozhinë, a small town in the coastal plain, and heads eastward towards Elbasan. The terrain is mostly flat or gently sloping in this area, with agricultural fields and orchards. Then, the line goes to Elbasan through a narrow passage between the hills that leads to the city of Elbasan. The terrain becomes rugged in this location, with rocky cliffs and forests. The line follows the valley of Shkumbin River, crossing some bridges and tunnels. Elbasan is a large city in central Albania, and the railway corridor in this location becomes part of the densest urban area of the project. Afterwards, it continues eastward towards Librazhd Qukës, Prrenjas, and Rajcë. The terrain in this area is hilly and mountainous, with some villages and farms. In Rajcë, the railway alignment continues as a serpentine, dividing this agricultural region into several parts. The line then goes in the Qafë-Thanë Tunnel and descends to the shore of Lake Ohrid.

The line follows the lake shore for about 18km till the end of the existing railway Guri i Kuq.

The preliminary design has been prepared for two construction LOTs:

- Lot 1, which is part of the core TEN-T network along corridor VIII, starts after the end of Rrogozhinë station and ends after approximately 91km (90.6km).
- Lot 2 starts after Lot1 and ends at Pogradec station for a length of approximately 27km (26.7km).

Figure 2-1: The footprint of the project

1.2 Exiting Situation

1.2.1 Rrogozhinë - Elbasan

The section from Rrogozhinë to Elbasan is approximately 41km long. Four stations exist along this section: Peqin, Bishqem and Paper, along with a major yard at Vidhas. The stations are located an average of 8 km apart.

Figure 2-2: Infrastructure condition of the railway line between Rrogozhinë and Elbasan

In general, the maintenance on this section has been poor and the Rrogozhinë track structure is requires major overhaul.

In this railway segment, there is no signalling, command and control system for the movement of trains and level crossings along the line, as well as telecommunications between stations according to safety standards in the system.

1.2.2 Elbasan – Prrenjas

This railway line section is approximately 51km long and includes the railway stations at Miraka, Librazd and Xhyre. The Krasta station was considered to be non-operational, even before the main line ceased its operation.

The terrain is hilly to mountainous, and the existing track alignment provides general minimum radius at curves Rmin=300m, allowing for design speeds of 80km/hr. However, the maximum gradient exceeds 2.2%.

Ballast is generally gravel, being in poor condition mainly due to the absence of good maintenance. The sleepers are of timber and are in very bad condition with many of them being broken. The existing embankments are in high height and are consolidated over the years, while multiple rockfalls have been identified in high cuts.

Figure 2-3: Railway line between Elbasan and Prrenjas

There is a complete lack of a signalling system for connecting and commanding trains, as well as communication system between stations.

1.2.3 Prrenjas – Pogradec

The railway line section Prrenjas - Lin - Pogradec has been constructed in 1973-1979, and has a length of 28.2 km. This railway section includes the longest railway tunnel of Qafë - Thanë, with a length of about 3km.

At km 137+500, Lin railway station is constructed, which will serve in the future to connect the link with Republic of North Macedonia railway network. The railway line from Lin up to railway station of Pogradec, with total length of 16.6 km, passes parallel with Lake of Ohrid, close to the reconstructed road of Lin – Pogradec.

Lack of maintenance has resulted the railway superstructure to be in poor condition and vegetation covers the track. The timber sleepers and the ballast have not been substituted with new material.

Figure 2-4: Railway line between Prrenjas and Pogradec

1.2.4 Road Crossings

Unauthorized (illegal) level crossings present a very serious risk to safety, of trains, passengers and road users. There is a mandatory requirement to provide a safe control at level crossing in order to protect users. This means that the unauthorized (illegal) crossings present a particular problem. Recent statistics are presented below.

Table 2-1: Rail/Road accidents recorded in recent years (source: TCPS report, 2022)

Year	No. of traffic accidents	No. of fatalities	No. of severely injured
2014	9	1	8
2015	9	3	6
2016	15	2	13
2017	4	2	2
2018	8	3	5
Total	**45**	**11**	**34**

According to the existing situation, we have identified the existing level crossing per each section of the route.

- Rrogozhinë – Elbasan: 41 LCs, 45 over/under-passes, 40 pedestrian paths;
- Elbasan – Prrenjas: 34 LCs, 48 over/under-passes, 33 pedestrian paths;
- Prrenjas – Pogradec: 32 LCs, 14 over/under-passes, 23 pedestrian paths.

Table 2-2: Existing Crossings along the Railway Line

Type of Crossing	Quantity (Pcs.)
Level Crossings (Authorised and Illegal)	73

Type of Crossing	Quantity (Pcs.)
Road Underpasses	86
Road Overpasses	7
Pedestrian Crossings	**73**

1.2.5 Railway Structures

The following Table presents a summary of the various structures along the railway line.

Table 2-3: Number of structures by type and section

Section	Bridges	Viaducts	Under passes (1)	Culverts (2)	Retaining walls (3)
Rrogozhinë – Elbasan	29	0	21	86	3 (375m)
Elbasan - Prrenjas	71	5	27	155	110 (11.2km)
Prrenjas - Pogradec	11	0	10	121	41 (8.25km)
Total	**111**	**5**	**58**	**362**	**154 (19.7km)**

(1) Includes also agricultural and pedestrian underpasses,

(2) Includes also drainage structures that could not be inspected (demolished or completely covered by vegetation),

(3) All types of retaining walls (stone masonry, gabion, concrete, reinforced concrete, etc).

1.2.6 Railway Tunnels

Lot 1: Rrogozhinë-Prrenjas

- 22 tunnels and 1 structure (No5 concrete shells);
- Total length is 6.607m;
- 5.701m are lined with concrete - 906m (in 9 tunnels) unsupported.

Lot 2: Prrenjas to Pogradec

- 2 tunnels;
- Total length is 3.223m;
- 3.133m are lined with concrete - 90m unsupported (both tunnels).

Table 2-4: List of existing tunnels and characteristics

Tunnel index	Section	Name	Chainage	Length (m)	straight (S) / curved (C)	Overburden est. (m)
T1	Rrogozhinë – Elbasan	Bishqem I	53+787	294.66	S	25
T2		Bishqem II	54+287	210.95	C	34
T3		Bishqem III	57+644	727.22	C	un.
T4		Bishqem IV	58.302	455.67	C	un.
T5		-	38+296	just a series of concrete shells on the rails		
T6	Elbasan – Librazhd	Mirake I	91+899	590.16	S	123
T7		Mirake II	92+626	460.55	S	>35
T8		Murrashi I	96+023	918.66	S	un.
T9		Murrashi II	96+750	283.28	S	>30
T10		Librazhd I	99+744	314.29	S	un.
T11	Librazhd - Prrenjas	Librazhd II	100+184	203.32	S -> C exit	>15
T12		Librazhd III	100+807	260.15	C	33
T13		Librazhd IV	102+487	245.53	S	>17
T14		Hotolisht I	107+785	414.57	S	>27
T15		Hotolisht II	109+003	170.16	S	23
T16		Xhyre I	112+368	95.53	C	16

Tunnel index	Section	Name	Chainage	Length (m)	straight (S) / curved (C)	Overburden est. (m)
T17		Xhyre II	112+567	111.80	C	38
T18		Qukës I	113+641	332.65	S	un
T19		Qukës II	118+527	94.09	S	20
T20		Qukës III	118+988	62.63	C	16
T21		Prrenjas I	121+843	53.20	C	20
T22		Prrenjas II	122+014	122.60	S	38
T23		Prrenjas III	123+003	132.82	S	21
T24	Prrenjas – Pogradec	Qafë Thane	134+667	3,013.66	S -> C entry	>35
T25		Piskupat	140+450	206.44	S -> C entry	16
Total:				**9,774.58**		

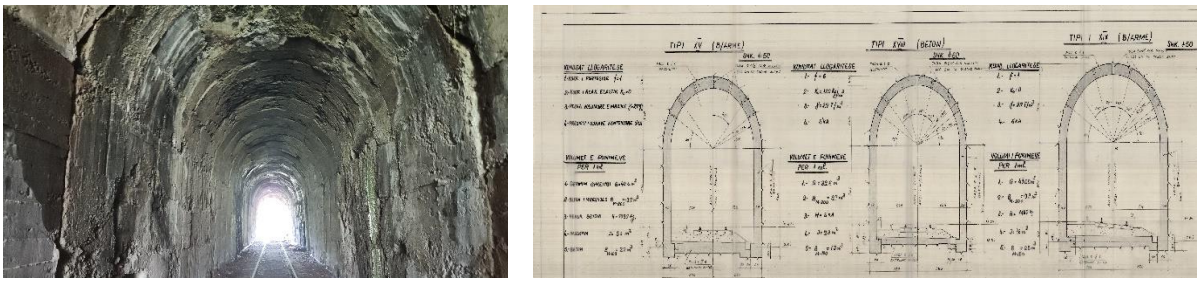


Figure 2-5: Existing railway tunnel of Qukës II and excerpt of old design

1.2.7 Railway Stations

As mentioned earlier, along the Rrogozhinë – Elbasan – Pogradec railway line, 12 railway stations are located to serve the traffic.

Table 2-5: Existing railway stations' characteristics

No.	Station	Building Type	Main Lines	Turnouts	Platforms
1	Peqin	Small	2x600m	7	1 Platform (150x5m)
2	Bishqem	Small	2x750m, 4x600m	8	1 Platform (150x5m)
3	Papër	Small	2x500m	5	1 Platform (150x5m)
4	Vidhas	Small	2x700m, 2x500m	8	1 Platform (150x5m)
5	Elbasan	Medium	2x750m, 4x600m, 3x500m	18	2 Platforms (200x5m)
-	Krasta	Small	Has not been used for over 10 years before closure of the line		
6	Miraka	Small	2x500m	5	1 Platform (150x5m)
7	Librazhd	Medium	2x600m, 2x500m, 1x500m	10	1 Platform (200x5m)
8	Xhyra	Small	1x400m, 2x500m, 1x500m	6	1 Platform (150x5m)
9	Qukës	Small	1x300m, 1x250m	4	1 Platform (150x5m)
10	Prrenjas	Medium	2x750m, 2x500m, 2x600m	16	2 Platforms (200x5m)
11	Lin	Small	2x500m, 1x300m	6	1 Platform (150x4m)
12	Pogradec	Medium	2x500m, 2x300m	8	2 Platforms (200x5m)

Figure 2-6: Railway stations of Peqin and Pogradec

1.3 Railway Line Components and Planed Interventions

1.3.1 General Issues

The rehabilitation of the railway foresees the revitalisation of the line, an increase of the freight traffic and a speed of 80-120 km/h. The new conditions of the railway pose a real danger to the local community. A mandatory requirement is to provide safe control at level crossings to protect users. For this reason, the railway corridor must be fenced, and the unauthorised (illegal) crossings must be eliminated. One solution to improve safety is to minimise the number of existing level crossings. This could involve closing some crossings and redirecting road traffic through alternative routes, or, if possible, should be converted to grade-separated interchanges. For those level crossings that cannot be eliminated, enhancing safety through technical equipment and signalisation is crucial. This might include the installation of warning lights, barriers, and alarms to alert road users of approaching trains.

The railway alignment starting point is the end of the section ''Durrës - Rrogozhinë''. The starting point of the design alignment chainage is Ch.35+384 according to the ending chainage of the previous section. The existing railway line horizontal alignment needs to be improved to the expected transport services and increased safety and speed.

The terrain characteristics of the existing improved Railway Line differentiate two broad sections of the project, as below:

- The generally flat terrain section from the project start (Ch. 35+384) up to Ch.90+400;
- The hilly – mountainous terrain section from Ch.90+400 up to the project end. (Ch. 152+384).

The initial improvement alternative analysed by the team included a horizontal alignment with full compliance to the TSI, with speeds up to 120km/h for the flat terrain and 80 km/h for the mountainous sections, while the longitudinal gradient would not exceed 1.2%. This alternative also included the bypass of Elbasan, as proposed by the local Municipality. However, it was quickly understood that this alternative deviates significantly from the existing line creating significant connectivity issues (as more than 40% of the populated areas would not be easily connected to the line), is outside the parameters of the PFS and existing studies prepared, and outside the scope of a railway line upgrade and rehabilitation.

The proposed alternative of the railway alignment is:

- Alternative, which allows speed V=120km/h in flat terrain and V=80km/h in hilly/mountainous terrain, which mostly remains within the right-of-way of the existing railway line. (The segment Rrogozhinë - Prrenjas should be considered in the framework of Corridor VIII, that will connect Albania with Republic of North Macedonia. Segment Prrenjas - Pogradec will remain as an alternative.)

Figure 2-7: Track alignment design speed

1.3.2 Technical Parameters of the Alignment

The following table summarizes the performance parameters to be fulfilled by the design of the railway line.

Table 2-6: Elements of the whole railway line Rrogozhinë – Pogradec

Element	Parameter	Reference Code/Standard
Line category	P5 – for passenger traffic F1 – for freight traffic	EU TSI
Structural Gauge	GC structure gauge: (speed of freight trains up to 100km/h, maximum axle load of 225kN, max train length 740m)	INF TSI
Type of track	Single Ballasted track	
Nominal track gauge	1435 mm (standard gauge)	INF TSI
Maximum Axle Load	22.5 t	INF TSI
Load Gauge	UIC D4 (22.5 t/axle, 8.0t/m)	UIC
Switching & crossing geometry	UIC 60 -R300 – 1:9	INF TSI
Platform Length & Height	L = 150-200m H=0+55 m	INF TSI
Type of Rail	UIC 60 (S60) Continuous Welded Rails (CWR)	UIC
Sleepers	pre-stressed concrete with length: 2.60 m for the open line 2.40 m for stations	INF TSI and UIC
Track ballast height below sleeper	min 32 cm	

Element	Parameter	Reference Code/Standard
Ballast shoulder width	40 cm	
Fastening system	Padrol	
Distance between sleepers	60 cm	
Signalling	ETCS Level – 1	
Telecommunication	GSM – R	

Limiting Values for Design Speed 80, 100 & 120 km/h

The following table shows these parameters for speeds of 80 km/h, 100 km/h and 120 km/hr.

Table 2-7: Track alignment limiting values according to Design Speed

	Parameter	Design Speed		
		80 km/h	100 km/h	120 km/h
Horizontal Alignment	Minimum radius of horizontal curves, **R_{lim}**	R_{lim}=300m	R_{lim}= 450m	R_{lim}=600m
	Type of transition curve	Clothoid		
	Minimun length of transition curve **Lt,min**, in compliance with radius of horizontal curve R_{lim}	$L_{t,min}$=72m	$L_{t,min}$=89m	$L_{t,min}$=107m
	Minimun length of constant cant	NL: V_{max}/2 = 40m EL: 20m	NL: V_{max}/2 = 50m EL: 20m	NL: V_{max}/2 = 60m EL: V_{max}/5+2 = 24m
Vertical Alignment	Maximum track gradient, **Pmax**	NL = 1.0% (1.4%) Gradients as steep as 3.5% are allowed for main tracks at the design phase provided the following 'envelope' requirements are observed: · the slope of the moving average profile over 10km is less than or equal to 2.5%; · the maximum length of continuous 3.5% gradient does not exceed 6 km.		
	Maximum gradient for passenger platform	0.25%		
	Minimum radius of convex curve, **$R_{V,lim}$**	NL: $R_{V,lim}$=2,300m EL: $R_{V,lim}$=10	NL:$R_{V,lim}$=3,500m $R_{V,lim}$=1,500m	NL: $R_{V,lim}$=5,100m $R_{V,lim}$=2,200m
	Minimum radius of concave curve, **$R_{V,lim}$**	NL: $R_{V,lim}$=2,300m $R_{V,lim}$=900m	NL:$R_{V,lim}$=3,500m $R_{V,lim}$=1,300m	NL: $R_{V,lim}$=5,100m $R_{V,lim}$=1,900m
	Upper limits for abrupt change of track gradients, **Δp**	NL= 1‰ EL= 2‰	NL= 1‰ EL= 2‰	NL= 1‰ EL= 2‰
	Minimum length of vertical curve, **Lv**	Lv=20m	Lv=20m	Lv=20m
	Maximum gradient for stabling yards	0.25%		
Cant	Upper limit of cant, **D**	D=160mm		
	Upper limit of cant deficiency, **I**	NL: I=153mm EL: I=180mm		
	Upper limit of cant excess, **E**	NL: E=153mm EL: E=180mm		
	Upper limit for rate of change of cant, dD/dt	NL = 50mm EL = 70mm		
	Upper limit for rate of change of cant deficiency, Di/dt	**NL = 55mm EL = 100mm**		

1.3.3 Proposed Crossings & Local Road Network Connectivity

The general approach for the proposal of crossings is:

- The LC should be eliminated as much as possible as they pose an elevated danger to road users with increased speed and volume of railway traffic.
- Almost all road underpasses will be retained as underpasses.

The table below shows the number of crossings along the railway line.

Table 2-8: Proposed Crossings along the Railway Line (Lot1)

Type of Crossing	Quantity (Pcs.)
Level Crossings (Authorised and Protected)	10
Road Underpasses (incl. bridges)	98
Road Underpasses	49
Bridges also used as Road Underpass	48
Road Overpasses	9
Pedestrian Underpasses	13
Pedestrian Overpasses	9

Table 2-9: Proposed Crossings along the Railway Line (Lot 2)

Type of Crossing	Quantity (Pcs.)
Level Crossings (Authorised and Protected)	7
Road Underpasses (incl. bridges)	11
Road Underpasses	10
Bridges also used as Road Underpass	1
Road Overpasses	4
Pedestrian Underpasses	10
Pedestrian Overpasses	1

Level Crossings (LC)

LCs will operate with signage & safety equipment, and their design will ensure their safe operation. In some cases, this will result in necessary local relocations of the existing roads, which may require expropriations.

Road Underpasses (RU)

In the case of existing underpasses that are demolished and reconstructed, the new structures will have an appropriate width according to the road cross-section and the maximum possible height clearance of up to 5m. In order to ensure this height, in some cases, the superstructure must have the minimum permissible structural thickness, and of course, the existing road must also be locally lowered. Lowering the road redline will be feasible only if there are no roadside constraints, no problems with rainwater runoff, and the terrain/ground conditions allow such road modification.

Concerning the existing underpasses that will be retained, they will continue serving the road passage with their existing widths & height clearances (i.e., same as today).

Road Overpasses (RO)

In the case of the existing overpasses that are demolished and reconstructed, the maximum possible reduction of the superstructure thickness in combination with the local lowering of the RW redline is required. Lowering the RW redline will be feasible only if there are no problems, mainly in rainwater runoff and no lateral constraints.

Pedestrian Crossings

Pedestrian underpasses or overpasses are provided along the most used pedestrian paths.

Pedestrian underpasses must have no issues with rainwater runoff, and lighting must be provided wherever required.

Pedestrian crossings are proposed considering the final arrangement of the road crossings and the results of public consultations. All the relevant pedestrian crossings will be converted to pedestrian underpasses or overpasses.

Table 2-10: Segments with dense populations along the railway

Rrogozhinë-Prrenjas (Lot I)	52+100 to 52+900 (Bishqemi
	54+600 to 55+500 (Paulesh)
	76+000 to 78+000 (Elbasan Urban Area
	104+800 to 105+700
	115+000 to 118+300 (Qukës)
Prrenjas-Pogradec Lot II	127+800 to 132+800 (Rajcë)
	151+000 to 152+200 (Memelisht)

Figure 2-8: Segments with dense populations along the railway

Local Road Network

The proposed local road networks which needed to be designed according to the rehabilitation of the railway line, depending on their purpose and usage, are categorised as:

a) Those that ensure access to the crossings in the areas of railway alignment and restore the connectivity of the road network (residential areas, buildings, fields, etc.),

b) Those which need to be restored on a specific location at level crossing areas to make them appropriate for use in terms of safety for the vehicles and the passengers,

c) Those that need to be restored (locally or broadly) because the proposed RW realignment affects them,

d) Those meant to be in the future and will probably have conflicts with the RW line. At the present stage, the only known RW axes affecting the RW line is Elbasan Qafë-Thane Road, section Elbasan – Librazhd, Phase 2, from RW Ch.91+800 to Ch.92+900 approximately. The specific road project is under construction, and the tendering process is ongoing. A meeting with ARA about this issue of railway–road interaction has already taken place.

For the existing road network affected by the Railway corridor, the following road types are proposed to restore the road network connectivity:

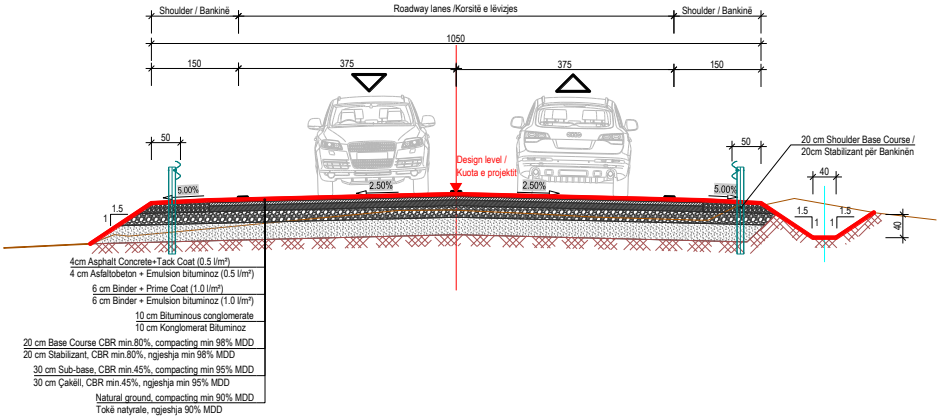


Figure 2-9: Typical Cross section No.1 - Interurban road "C1" (New National Road)

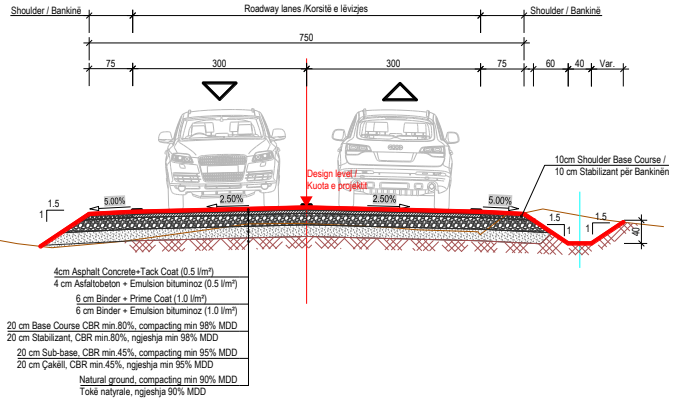


Figure 2-10: Typical Cross section No. 2 - Local Road "F2" (New Rural Road)

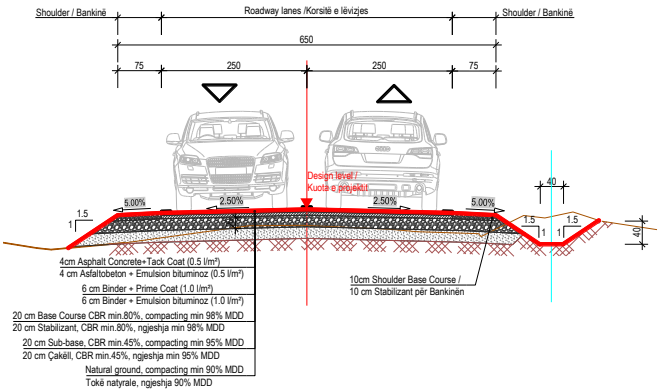


Figure 2-11: Typical Cross section No. 3 - Local Road "F2-mod" (New Rural Local Road)

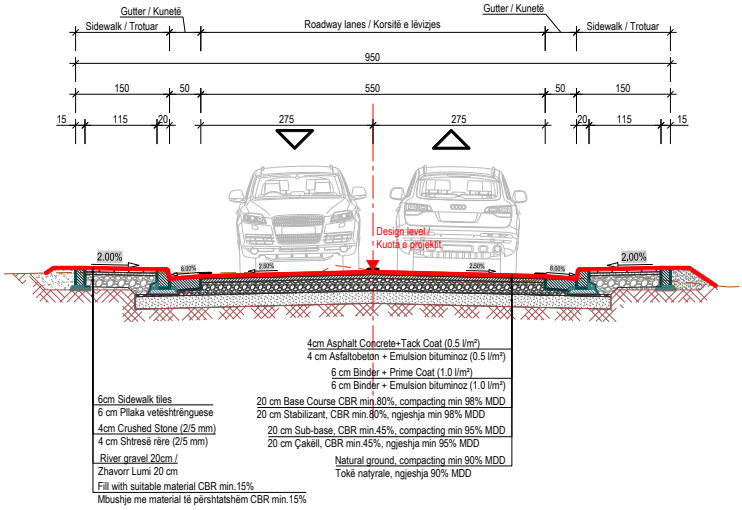


Figure 2-12: Typical Cross section No. 4. - Urban Local Road "F3"

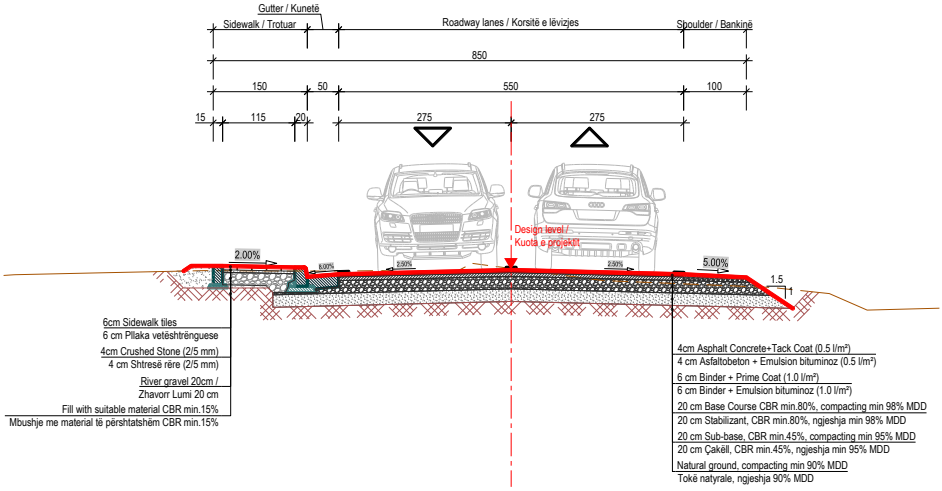


Figure 2-13: Typical Cross section No. 5 - Urban Local Road "F3-mod"

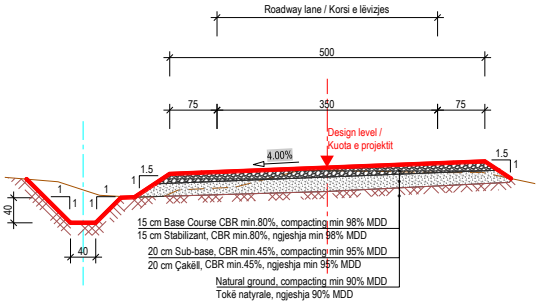


Figure 2-14: Typical Cross section No. 6 - Agricultural Road

For the existing road network affected by the Railway corridor, the following road types are proposed to restore the road network connectivity:

Table 2-11: Proposed Side Roads along the Railway Line (Loti1)

Type of Road	Length (km)
Interurban Road "C1" (Type 1)	2.43
Local Road "F2" (Type 2)	0.53
Local Road "F2-Mod" (Type 3)	3.84
Urban Local Road "F3" (Type 4)	0.29
Urban Local Road "F3-Mod" (Type 5)	2.10
Agricultural Road (Type 6)	18.39
Total Length	**27.58**

Table 2-12: Proposed Side Roads along the Railway Line (Loti2)

Type of Road	Length (km)
Interurban Road "C1" (Type 1)	0.53
Local Road "F2-Mod" (Type 3)	1.46
Urban Local Road "F3" (Type 4)	0.07
Urban Local Road "F3-Mod" (Type 5)	0.19
Agricultural Road (Type 6)	5.91
Total Length	**8.16**

1.3.4 Railway Alignment

The railway alignment starting point is the end of the section ''Durrës - Rrogozhinë''. The starting point of the design alignment chainage is Ch.35+384 according to the ending chainage of the previous section. According to the first stage's (Option Analysis) results and decisions the flat terrain section up to Ch.~90+400 is designed with V=120km/h. The main characteristics of the proposed improvements for this first section (with a length of about 55km) are as follows:

- The existing alignment is improved at 37 curves in total
- The longitudinal profile has gradient values less than the normal limiting value (1.40%);
- 23 horizontal alignment improvements / realignments are proposed

Major intervention's locations are shown on the next table:

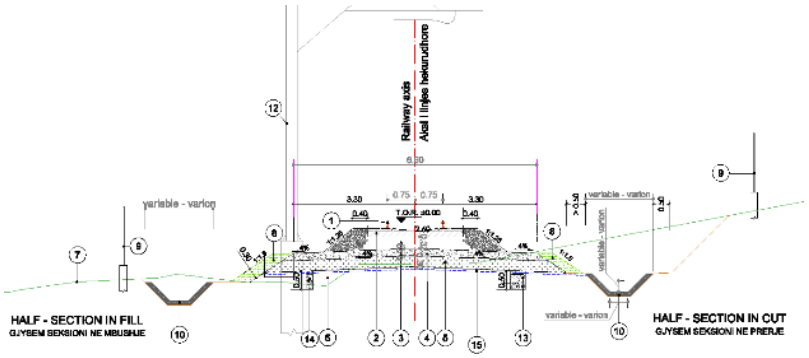
Table 2-13: Location of major interventions

No	Chainage		Length (m)
	From	To	
1	44+200	45+700	1500
2	60+450	61+050	600
3	62+650	63+400	750
4	77+508	77+875	370
5	78+450	79+200	750
6	81+768	82+036	270
7	85+450	87+050	1600

Typical cross sections

The typical cross sections for the "open line" are presented on the drawings of the preliminary design (in fill sections, in cut sections and in curves). The proposed railway typical cross section is in accordance with the TEN-T and TSI standards. The width of 6.60m provides for the future electrification needs. Also, it has almost the same characteristics with the typical cross section applied

on the Detailed Design of the project ''Rehabilitation of Durres-Rrogozhinë'' of the previous section. The details of the proposed superstructure configuration are initially identified as shown below:



1. Main track CWR rails 60E1 (UIC60) Shine CWR 60E1 (UIC60)
2. Main line precast prestressed sleepers type B70, L=2.60m
3. Ballast (min thickness 32 cm) as in Technical Req's
4. Sub-base protective layer of 20 cm thickness ($E_d \geq 120$mPa as instructed in the superstructure design and the Technical Req's)
5. Sub-grade layer of 30 cm ($E_d \geq 80$mPa as instructed in the superstructure design and the Technical Req's)
6. Filling with selected material, 45mPa ≤ E_v≤80mPa
7. Existing ground
8. Cover of fill slopes with top soil of 30 cm thickness
9. Fencing (types are shown in the fencing design)
10. Drainage RC Channels, if required, according to Book2 drainage design drawings, shown also on the RW & Roads plans
12. Space for the future Catenary pole and foundation construction for railway electrification
13. Signalling cable trench approx. 0.50m (depth from embankment top) x 0.40m width (2xPVC Φ160 + 1HDPE Φ50 fiber optic). Yellow marking protective tape.
14. Telecommunication cable trench approx. 0.50m (depth from embankment top) x 0.20m width (2HDPE Φ50 fiber optic). Yellow marking protective tape.
15. Geotextile layer, according to the Geotechnical design and the Technical requirements

Noise barriers shall be installed where the residents are impacted. Initial noise modelling should be conducted to determine exactly the location of necessary noise barriers.

The railway line is in general proposed as fully fenced. The following figure shows the proposed type of fencing.

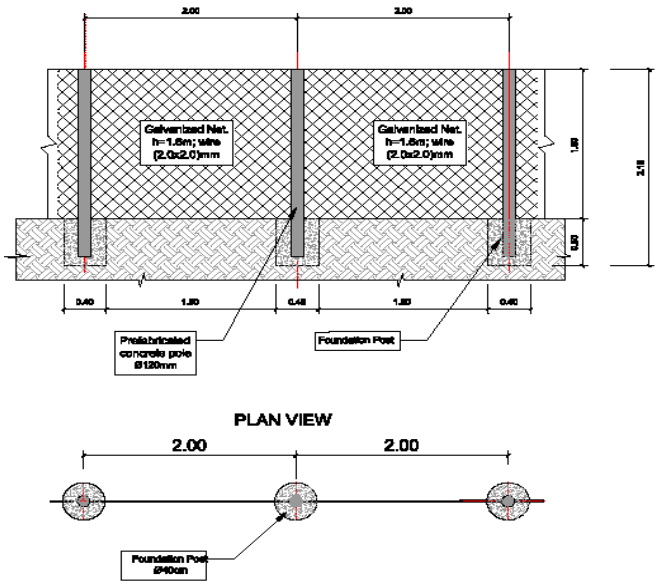


Figure 2-15: Proposed type of fencing

1.4 The Civil Works

The civil works for the rehabilitation of the railway line Rrogozhinë – Pogradec will be divided into five Sections as presented in the table below.

Table 2-14: Civil works as per Section 1 Rrogozhinë (km 35+000) - Paulesh (km 55+400)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Rrogozhinë (km 35+000) - Paulesh (km 55+400)				
Road Underpass (RU)	24	Road Underpass (RU)	30	6
Road Underpass (RU) -Intersection with national road		Road Underpass (RU) -Intersection with national road		0
Road Overpass (RO)		Propose to convert Road Overpass (RO)		0
Road Overpass (RO) -Intersection with national road		Road Overpass (Ro) -Intersection with national road		0
Level Crossing (LC)	5	Authorised & Protected LC	1	-4
2 Railway Stations (Peqin, Bishqem)				

Table 2-15: Civil works as per Section 2 Paulesh (km 55+400) - Miraka (km 89+600)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Paulesh (km 55+400) - Miraka (km 89+600)				
Road Underpass (RU)	29	Road Underpass (RU)	34	5
Road Underpass (RU) -Intersection with national road	3	Road Underpass (RU) -Intersection with national road	3	0
Road Overpass (RO)	0	Propose to convert Road Overpass (RO)	2	2
Road Overpass (RO) -Intersection with national road	3	Road Overpass (Ro) -Intersection with national road	3	0
Level Crossing (LC)	13	Authorised & Protected LC	8	-5
5 Railway Stations (Papër, Vidhas, Elbasan, Krastë & Mirakë)				

Table 2-16: Civil works as per Section 3 Miraka (km 89+600) - Qukës (km 112+000)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Miraka (km 89+600) - Qukës (km 112+000)				
Road Underpass (RU)	12	Road Underpass (RU)	15	3
Road Underpass (RU) -Intersection with national road	3	Road Underpass (RU) -Intersection with national road	3	0
Road Overpass (RO)	2	Propose to convert Road Overpass (RO)	2	0
Road Overpass (RO) -Intersection with national road	2	Road Overpass (Ro) -Intersection with national road	2	0
Level Crossing (LC)	3	Authorised & Protected LC	0	-3
2 Railway Stations (Librazhd, Xhyra)				

Table 2-17: Civil works as per Section 4 Qukës (km 112+000) - Rrajcë (km 133+000)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Qukës (km 112+000) - RRajcë (km 133+000)				
Road Underpass (RU)	13	Road Underpass (RU)	14	1
Road Underpass (RU) -Intersection with national road	3	Road Underpass (RU) -Intersection with national road	3	0
Road Overpass (RO)	1	Propose to convert Road Overpass (RO)	1	0

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Road Overpass (RO) -Intersection with national road	1	Road Overpass (Ro) -Intersection with national road	1	0
Level Crossing (LC)	2	Authorised & Protected LC	3	1
1 Railway Stations (Prrenjas)				

Table 2-18: Civil works as per Section 5 Rrajcë (km 133+000) - Pogradec (Gur i Kuq) (km 152+800)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
RRajcë (km 133+000) - Pogradec (Gur i Kuq) (km 152+800)				
Road Underpass (RU)	6	Road Underpass (RU)	7	1
Road Underpass (RU) -Intersection with national road	0	Road Underpass (RU) -Intersection with national road	0	0
Road Overpass (RO)	0	Propose to convert Road Overpass (RO)	0	0
Road Overpass (RO) -Intersection with national road	2	Road Overpass (Ro) -Intersection with national road	2	0
Level Crossing (LC)	6	Authorised & Protected LC	5	-1
2 Railway Stations (Lin, Pogradec)				

Table 2-19: Civil works as per Section 1 Rrogozhinë (km 35+000) - Paulesh (km 55+400)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Rrogozhinë (km 35+000) - Paulesh (km 55+400)				
Level Crossing (LC)	2	Level Crossing (LC)		-2
Pedestrian Path Level Crossing (PP)	5	Pedestrian Path Level Crossing (PP)		-5
Pedestrian Overpass (PO)		Propose Pedestrian Overpass (PO)	5	5
Pedestrian Underpass (PU)		Pedestrian Underpass (PU)	4	4

Table 2-20: Civil works as per Section 2 Paulesh (km 55+400) - Miraka (km 89+600)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Paulesh (km 55+400) - Miraka (km 89+600)				
Level Crossing (LC)	1	Level Crossing (LC)		-1
Pedestrian Path Level Crossing (PP)	2	Pedestrian Path Level Crossing (PP)		-2
Pedestrian Overpass (PO)		Propose Pedestrian Overpass (PO)	2	2
Pedestrian Underpass (PU)	3	Pedestrian Underpass (PU)	5	2

Table 2-21: Civil works as per Section 3 Miraka (km 89+600) - Qukës (km 112+000)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Miraka (km 89+600) - Qukës (km 112+000)				
Level Crossing (LC)		Level Crossing (LC)		0
Pedestrian Path Level Crossing (PP)	1	Pedestrian Path Level Crossing (PP)	1	0
Pedestrian Overpass (PO)		Propose Pedestrian Overpass (PO)	4	4
Pedestrian Underpass (PU)		Pedestrian Underpass (PU)		0

Table 2-22: Civil works as per Section 4 Qukës (km 112+000) - Rrajcë (km 133+000)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
Qukës (km 112+000) - RRajcë (km 133+000)				
Level Crossing (LC)	7	Level Crossing (LC)		-7
Pedestrian Path Level Crossing (PP)	4	Pedestrian Path Level Crossing (PP)		-4
Pedestrian Overpass (PO)		Propose Pedestrian Overpass (PO)	1	1
Pedestrian Underpass (PU)	1	Pedestrian Underpass (PU)	11	10

Table 2-23: Civil works as per Section 5 Rrajcë (km 133+000) - Pogradec (Gur i Kuq) (km 152+800)

Existing Crossing Type	Number	Proposed Solution	Number	Change, improvement in number
RRajcë (km 133+000) - Pogradec (Gur i Kuq) (km 152+800)				
Level Crossing (LC)		Level Crossing (LC)		0
Pedestrian Path Level Crossing (PP)	3	Pedestrian Path Level Crossing (PP)		-3
Pedestrian Overpass (PO)		Propose Pedestrian Overpass (PO)	1	1
Pedestrian Underpass (PU)		Pedestrian Underpass (PU)	2	2

1.4.1 Construction of Freight & Passenger Stations

A new freight station is proposed to be built in the Elbasan and Prrenjas. The territory of these stations is in the property of the Albanian Railways. Currently the space planed for construction is occupied by illegal constructions. It is assessed that the land area affected for train stations and platforms amounts to ≈14 ha.

Table 2-24: Data about the train stations (length, width and respective surfaces affected)

No.	Station	Building Type	No. of Lines	Length of Lines (m)	Average width between line (m)	Average surface of the trains stations (ha)	Turnouts	Platforms	Average surface of the trains platforms (ha)
1	Peqin	Small	2	600	5	0.6	7	1 Platform (150x5m)	0.075
2	Bishqem	Small	2	750	5	0.75	8	1 Platform (150x5m)	0.075
			4	600	5	1.2			
3	Papër	Small	2	500	5	0.5	5	1 Platform (150x5m)	0.075
4	Vidhas	Small	2	700	5	0.7	8	1 Platform (150x5m)	0.075
			2	500	5	0.5			
5	Elbasan	Medium	2	750	5	0.75	18	2 Platforms (200x5m)	0.2
			4	600	5	1.2			
			3	500	5	0.75			
-	Krasta	Small	Has not been used for over 10 years before closure of the line						
6	Miraka	Small	2	500	5	0.5	5	1 Platform (150x5m)	0.075
7	Librazhd	Medium	2	600	5	0.6	10	1 Platform (200x5m)	0.1
			2	500	5	0.5			
			1	500	5	0.25			
8	Xhyra	Small	1	400	5	0.2	6	1 Platform (150x5m)	0.075
			2	500	5	0.5			
			1	500	5	0.25			
9	Qukës	Small	1	300	5	0.15	4		0.075

No.	Station	Building Type	No. of Lines	Length of Lines (m)	Average width between line (m)	Average surface of the trains stations (ha)	Turnouts	Platforms	Average surface of the trains platforms (ha)
			1	250	5	0.125		1 Platform (150x5m)	
10	Prrenjas	Medium	2	750	5	0.75	16	2 Platforms (200x5m)	0.2
			2	500	5	0.5			
			2	600	5	0.6			
11	Lin	Small	2	500	5	0.5	6	1 Platform (150x4m)	0.06
			1	300	5	0.15			
12	Pogradec	Medium	2	500	5	0.5	8	2 Platforms (200x5m)	0.2
			2	300	5	0.3			
Total						**13.325**			**1.285**

The railway stations are also proposed as fully fenced.

Peqin Station: Rehabilitation is not always considered the most economical solution, and demolition and new construction is a better solution for the station of Peqin. The total area considered for this masterplan is 7690 m^2.

Figure 2-16: Peqin station master plan and building view

Bishqem railway station: new construction

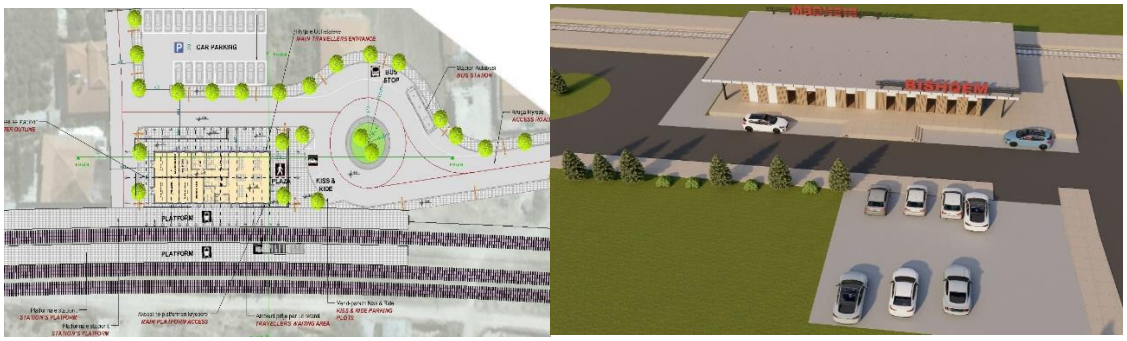


Figure 2-17: Bishqem station master plan and building view

Paper train Station: New construction. Total area: 258 m²

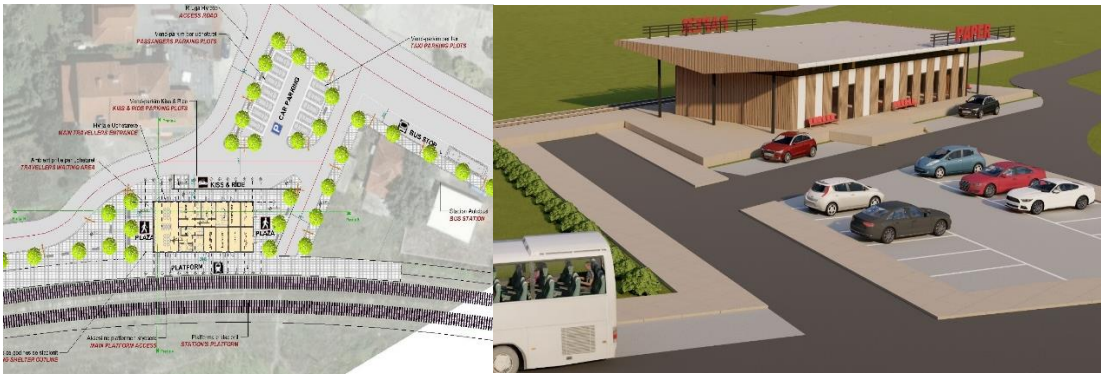


Figure 2-18: Paper station master plan and building view

Vidhas Train Station: Refurbishment

The station building is located within the plants of the Ferro-chrome ore processing industry, next to the railway freight lines. The station building is accessed only by walking, through hard terrain, then on-level crossing the railway lines. Vidhas station is going to be used as a freight only station. The structure is decided to be preserved and it will be restructured and refurbished with modern amenities.

Figure 2-19: Vidhas station master plan and building view

Elbasan train station: Refurbishment. Total area: 612 m²

Figure 2-20: Elbasan station master plan and building view

Miraka train Station: New Construction. Total area: 120 m²

Figure 2-21: Miraka station master plan and building view

Librazhd train Station: Refurbishment: Total area:691 m²

Figure 2-22: Librazhd station master plan and building view

Xhyrë Station: New Construction. Total area: 228 m²

Figure 2-23: Xhyrë station master plan and building view

Qukës Train station: New Construction. Total area: 212 m²

Figure 2-24 Qukës station master plan and building view

Prrenjas Train station: Refurbishment. Total area: 779 m²

Figure 2-25: Prrenjas station master plan and building view

Lin train station: New Construction. Total area: 84 m²

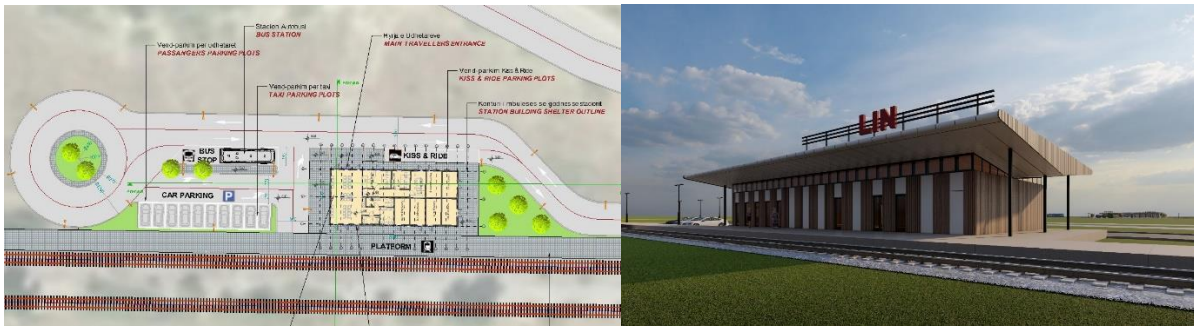


Figure 2-26: Lin station master plan and building view

Pogradec Train station: Refurbishment. Total area: 408 m²

Figure 2-27: Pogradec station master plan and building view

1.4.2 Construction of Side Roads

Several kilometres of local roads are proposed to be built for reaching the level crossings that will be formalized and secured. The construction of these local roads will replace unauthorized crossings. A part of this land surface belongs to Hekurudha Shqiptare (railway belt), while the other part belongs to private landowners or the local governments. It is assessed that the land area needed for local roads, outside the railway belt amounts to ≈18 ha.

Table 2-25: The length of side roads per Option

Side Road Code		Start Railway Chainage - End Railway Chainage	Side Road Length (m)
Rrogozhinë (km 35+000) - Paulesh (km 55+400)			
LC	Level Crossing	km 35+000 - km 55+400	90
RU	Pedestrian Path Level Crossing	km 35+000 - km 55+400	3517

Side Road Code		Start Railway Chainage - End Railway Chainage	Side Road Length (m)
RO	Pedestrian Overpass	km 35+000 - km 55+400	
SR	Side Road	km 35+000 - km 55+400	7204
Paulesh (km 55+400) - Miraka (km 89+600)			
LC	Level Crossing	km 55+400 - km 89+600	726
RU	Pedestrian Path Level Crossing	km 55+400 - km 89+600	2615
RO	Pedestrian Overpass	km 55+400 - km 89+600	1,049
SR	Side Road	km 55+400 - km 89+600	6905
Miraka (km 89+600) - Qukës (km 112+000)			
LC	Level Crossing	km 89+600 - km 112+000	
RU	Pedestrian Path Level Crossing	km 89+600 - km 112+000	1461
RO	Pedestrian Overpass	km 89+600 - km 112+000	522
SR	Side Road	km 89+600 - km 112+000	1479
Qukës (km 112+000) - Rrajcë (km 133+000)			
LC	Level Crossing	km 112+000 - km 133+000	103
RU	Pedestrian Path Level Crossing	km 112+000 - km 133+000	646
RO	Pedestrian Overpass	km 112+000 - km 133+000	292
SR	Side Road	km 112+000 - km 133+000	5008
Rrajcë (km 133+000) – Pogradec (Guri i Kuq) (km 152+800)			
LC	Level Crossing	km 133+000 - km 152+800	365
RU	Pedestrian Path Level Crossing	km 133+000 - km 152+800	670
RO	Pedestrian Overpass	km 133+000 - km 152+800	334
SR	Side Road	km 133+000 - km 152+800	3077

Local Road Network:

Table 2-26: Total Length of side roads

Road Type	Rrogozhinë-Prrenjas -Lot I (km)	Prrenjas-Pogradec – Lot II (km)	Total (km)
Interurban Road "C1" (Type 1)	**2.43**	**0.53**	**2.96**
Local Road "F2" (Type 2)	0.53	-	0.53
Local Road "F2-Mod" (Type 3)	3.84	1.46	5.30
Urban Local Road "F3" (Type 4)	0.29	0.07	0.36
Urban Local Road "F3-Mod" (Type 5)	2.10	0.19	2.29
Agricultural Road (Type 6)	18.39	5.91	24.3
Total	**27.58**	**8.16**	**35.74**

1.4.3 Horizontal Alignment Improvements

The existing railway line horizontal alignment needs to be improved to allow for the increased design speed. The rehabilitation of Rrogozhinë - Pogradec railway line maintains the geometric alignment and profile of the exiting line, therefore the project works are confined within the boundaries of the existing right of way of the railway. There are some areas of design improvements as shown in the table below:

Table 2-27: Area of horizontal alignment improvements

No.	From Ch.	To Ch.	Length (m)	Existing Curve Radius (m)	To be improved Curve radius (m)	No of the affected land parcels
1	39+200	39+400	200	500	600	5
2	62+600	63+400	800	300	600	35
3	86+400	87+000	600	500	500	1
4	101+500	101+700	200	300	500	7

The line alignment radius will be improved in the ≈ 13 section as is shown on below table:

Table 2-28: Main Railway Lines Alignment segments, deviating from the existing railway ((Included are segments out of Railway Stations)

From Ch	To Ch	Relative Impact	Deviation average distance	Corridor width	Area Estimate (in ares or 100m2)
39+000	39+600	Minor	~ 8.5 m		27
44+200	45+700	Minor	~ 9.0 m		72
58+700	59+500	Minor	~ 2.0 m		9
60+500	61+000	Major	~ 20.0 m		53
62+650	63+400	Major	~ 100.0 m	~ 28.0 m	185
66+900	67+150	Minor	~ 5.0 m		7
69+100	69+550	Minor	~ 7.8 m		19
77+600	77+800	Minor	~ 4.5 m		5
78+500	78+850	Major	~ 24.0 m		45
85+500	86+350	Major	~ 17.0 m		77
86+400	87+000	Major	~ 30.0 m	~ 27.0 m	95
89+150	89+500	Minor	~ 7.0 m		13
132+800	133+050	Minor	~ 1.0 m		2

The sum of the areas of the above main segments of deviation makes the rough estimate around 61000 m² (≈6.1 ha), not including any area for the stations. The estimate refers to the additional land (without subtracting any land of the existing track freed by the deviation.

The detailed percentage of land to be expropriated in relation to the whole property, is yet to be calculated.

At this stage of project development, it is assessed that the rehabilitation works will not affect any immovable property, such as houses and/or businesses.

1.4.4 Vertical Alignment Improvements

New overpasses will be constructed in the rehabilitation works. The construction of underpasses is not expected to require the land surface to be occupied permanently, as the needed land surface is assessed to be found within the railway belt.

1.4.5 Drainage Channels Improvements

The rehabilitation of the railroad will respect the existing drainage and irrigation system. Special attention has been provided to the areas that are prone to floods, for the railroad not to play the role of embankment or barrier and therefore to allow the water circulation between both railway sides. Due to the necessary rehabilitation works of the drainage system along the existing railway corridor, limited localized expropriations might be necessary.

1.4.6 Level Crossing Improvements

A major safety objective of this railway rehabilitation design is to minimize the existing level crossings

and to secure the remaining ones with technical equipment and signalisation. Solutions to the closure of the existing level crossings have been carried out taking into account traffic rerouting to restore the road network functionality or by grade separation was technically feasible and acceptable from a social impact perspective.

The unauthorized crossings are grouped to reduce at minimum their number and will be secured with technical equipment and signalisation, in the function of the new situation of the newly created settlements.

In addition, to bring the local roads in standards to enter and/or exit the authorized level crossing areas, some land will be required to improve the local roads entry and exit from these secured level crossings. This area is assessed at about 18 ha.

1.4.7 Railway Tunnels

Preliminary Design proposed rehabilitation (LOT I & II)

- Unlined sections have proved to be stable: Widening is done by pre-bolting with fiberglass bolts to ensure stability during construction;
- Lined sections are assumed to be unstable: Widening is done following a grouting scheme around the tunnel to ensure stability during construction.
- Shotcrete layer is applied on the final excavation for temporary support.
- Waterproof membrane and drainage layer is applied on the shotcrete covered walls of the excavation.
- Final lining by concrete and fire-resistant layer is applied.

Lot I and Lot II:

- All tunnels, regardless of their condition, do not fulfil the requirements for the new tunnel section dimensions following the application of European standards;

Lot II: Tunnel No24 requires a section with independent escape way.

Figure 2-28: Horizontal and longitudinal drawings of preliminary design

1.5 Subsequent Maintenance/Operation

The railway line will be part of the Railway network (system) and the maintenance of the respective infrastructure is regulated by the Railway Code of the Republic of Albania. Responsible for the

maintenance of the railway infrastructure is the "Infrastructure administrator", or the Railway Entrepreneur, licensed by the Railway Safety Authority, according to the Railway Code of the Republic of Albania, Law No. 142/2016.

This Code is partially aligned with the Directives of the European Parliament and the Council on the railways sector.

The railway infrastructure management and administration to which an infrastructure administrator is legally assigned consists of the entire railway lines, railway branches, communication devices and installations, signalling and electrical equipment, and stations, necessary for the circulation of railway vehicles and traffic safety.

Maintenance of permanent railway consists of:

- Regular maintenance: consists repairing of small defects and shortages permanently, dewatering of ballast, protection of tracks from outwears, lubrication and protraction of track accessories, replacement of tracks, replacement of tracks accessories, etc. Regular maintenance of the railway corridor is also needed to control vegetation.
- Investment maintenance: reconstruction of part of the railway and servicing consists of all works which cannot be done under regular maintenance. For all works under-investment maintenance, a project for reconstruction needs.
- Unplanned maintenance: includes maintenance and repairs needed as a consequence of force majeure (floods, landslides, sliding, or emergencies).

2 Background

2.1 Rational for the Project

Currently, the railway is operational for the segment Rrogozhinë – Elbasan, while from Elbasan to Pogradec has not been operational, due to its seriously degraded technical condition, since 2011.

The railway line Rrogozhinë - Pogradec has a total length approximately of 117 km. The Railway has been constructed between the 1950s and the 1970s, according to the following sections:

- Section Rrogozhinë - Peqin: constructed in 1947;
- Section Peqin - Elbasan: constructed in 1950;
- Section Elbasan - Librazhd: constructed in 1972;
- Section Librazhd - Prrenjas: constructed in 1974;
- Section Prrenjas - Pogradec: constructed in 1979.

The baseline information on the railway line conditions conducted on the frame of the Project shows that in the current situation, the railway line cannot handle the expected increase of the transit freight. Furthermore, community safety issues are in question due to lack of signalling, unprotected authorised level crossings and emergence of many unauthorised level crossings, downgraded engineering networks, abandoned rail stations and other elements.

In addition, the baseline surveys have identified the existing level crossing per each section of the route:

- Rrogozhinë – Elbasan: 41 LCs, 45 over/under-passes, 40 pedestrian paths.
- Elbasan – Prrenjas: 34 LCs, 48 over/under-passes, 33 pedestrian paths.
- Prrenjas – Pogradec: 32 LCs, 14 over/under-passes, 23 pedestrian paths.

2.2 Project location and access to site

The maps in figure present the alignment of the railway line by sections Rrogozhinë – Mirake length 55km (flat terrains) , Mirake – Prrenjas length 35.7 km (mauntain terrains) and the section Prrenjas – Pogradec length 26.2 km (mauntain terrains and near Ohrid lake).

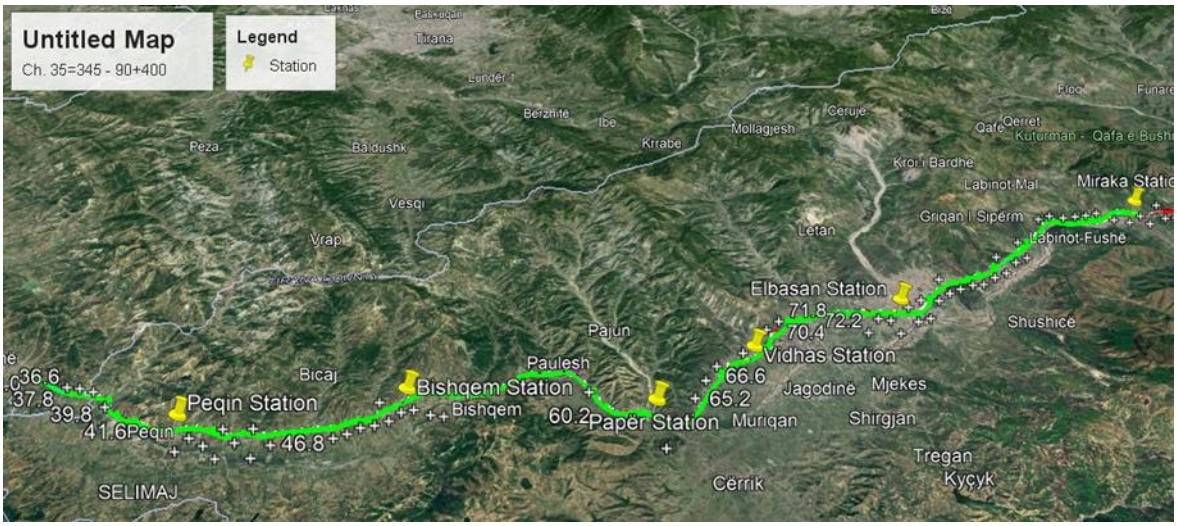


Figure 2-1: *The map of the first section Rrogozhinë – Mirake (lot1)*

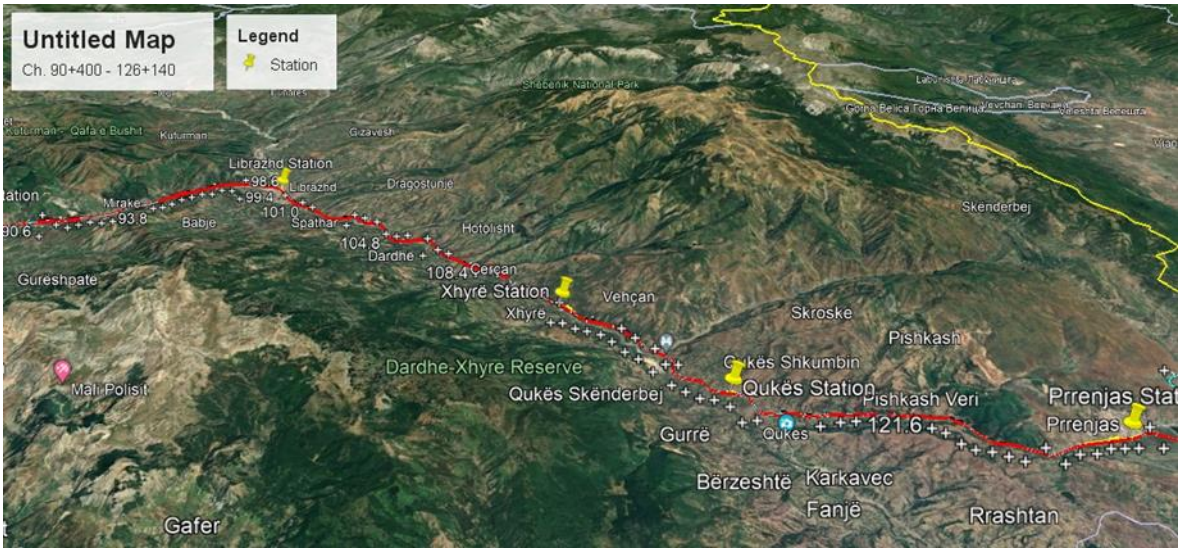


Figure 2-2: Map of the second section Mirake – Prrenjas (Lot1)

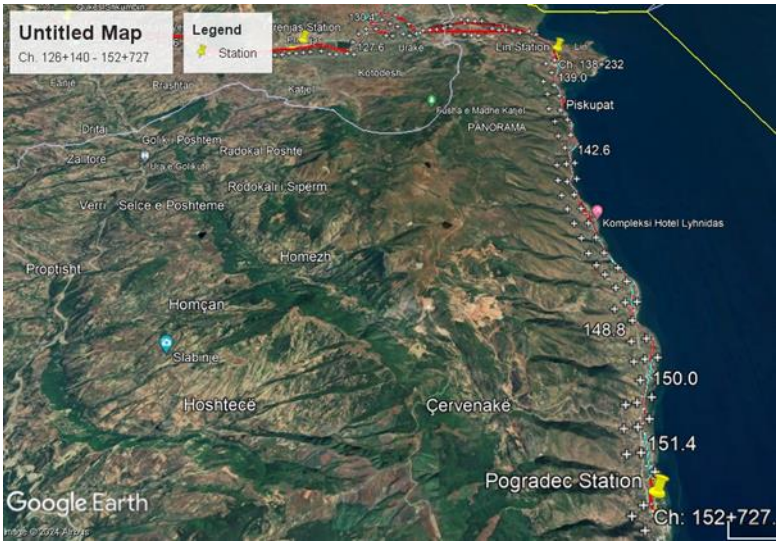


Figure 2-3: *Map of the third section Prrenjas – Pogradec (Lot 2)*

The railway line Roogozhinë – Pogradec passes through six municipalities – Rrogozhinë, Peqin, Elbasan, Librazhd, Prrenjas and Pogradec. The railway line passes mainly through urban, suburban, and agricultural areas and E&S sensitive areas. This area has experienced also the migration of population from the mountainous region to flat terrains, which has led to many unauthorized level crossings serving this population. Across the urban areas (i.e., Elbasan, Librazhd, Prrenjas and Pogradec) many formal and informal buildings have been built at an inappropriate distance from the railroad. Besides, these buildings have damaged the drainage channels on both sides of the railroad.

Across the environmental and social sensitive areas:

- The segment Mirakë – Librazhd passes along the perimeter of the Nature Managed Reserve Kuturman Qafë – Bushi.
- Lin – Pogradec goes through the Landscape Protected Area of Pogradec. The area is IBA and Emerald site.
- Along the Lin Peninsula, with its natural and cultural assets as the springs of Drilon, numerous endemic species made it part of UNESCO.

Given the geographic and economic structure of the area, it can be expected that the main impact of the Project will be on land acquisition, land access and livelihood restoration.

2.3 Existing documents

The railway segment Rrogozhinë – Pogradec is part of the Durrës-Pogradec railway line, which is expected to connect with Northern Macedonia (in the village of Lin). There are several documents, that have been as reference for the project of "Preliminary Design for the Rehabilitation of the Corridor VIII Rrogozhina - Pogradec Section, as follows:

- "Feasibility study for the rehabilitation of the railway line Durrës – Elbasan – Pogradec and a new rail line link to border with the former Yugoslav Republic of Macedonia", Component 1: Pre-feasibility Study (WB13-ALB-TRA-01), 2018"Albanian Transport National Plan", Louis Berger S.A. (EU funded), Sept 2004 including the "First Five-year Review of ANTP", Louis Berger S.A. (also EU funded), June 2010.
- "Transport Infrastructure Priority Projects" Albanian Ministry of Transport and Infrastructure, 2014.
- "National Sector Strategy for Transport - Transport Sector Strategy in Albania", "Final Strategy and Action Plan 2016-2020", TIEG, Jan 2016.
- "SEETAC Financial Plan", ERDF PP9 – A.U.Th., Sept 2012.
- "Strategic Framework for Implementation of ITS on TEN-T Core/Comprehensive Network on the WB6", TA to Connectivity in the Western Balkans, December 2018.
- "Preparation of Maintenance Plans 2018-2022 for Road/Rail TEN-T indicative extension to WB6", TA to Connectivity in the Western Balkans, December 2018.
- Apart from the regional and national strategic documents presented above, the most relevant studies to this task (as listed hereafter) will be provided by HSH and MIE and reviewed by the Consultant.
- "Albanian Railway Network: Infrastructure and Signalling Improvement"; (WBIF TA-ALB-06), Nov 2009.
- "Detailed design of railway line Durrës -Tirana Public Transport Terminal (PTT) and of the new railway connection to Rinas's airport (TIA) and financial/economic appraisal of the whole Albanian railway network", "Component B"; Consortium led by Dromos Consulting (WBIF –WB4-ALB-TRA-09), Oct 2015.

Various other older studies, as below, have been performed and considered by consultant:

- "Pre-feasibility Study on the Development of the Railway Axis – Corridor VIII", "Final Report"; Multinational Railway Working Group, Italferr and Italian National Railways Agencies, (funded by Italian Ministry of International Trade – Corridor VIII Secretariat and Central European Initiative CEI), Sept 2007.
- "Feasibility Study for railway line Tirana-Durrës-Elbasan-Lin (border with the FYROM)", Sudop Praha A.S. (sponsored by Ministry of Transport and Communications of the Czech Republic), Dec 2002.
- "Feasibility Study on Rail Connection Albania-Macedonia", Albanian Institute of Transport, 2003.
- "Technical Documentation on Study Level and Preliminary Design of Railway Corridor VIII Kichevo-

border Republic of Albania, Annex", Eurotransproject (funded by PE for Railway Infrastructure "Macedonian Railways" Skopje), 2010.

- "Updating the Regional Balkans Infrastructure Study" (REBIS); SYSTEMA Transport Planning Consultants & WYG International (funded through WBIF, WB7-REG-TRA-SD-02), 2015.
- "Pre-feasibility Study on the Development of the Railway Axis – Corridor VIII", "Final Report"; Multinational Railway Working Group, Italferr and Italian National Railways Agencies, (funded by Italian Ministry of International Trade – Corridor VIII Secretariat and Central European Initiative CEI), Sept 2007.
- "Feasibility Study for railway line Tirana-Durrës-Elbasan-Lin (border with the FYROM)", Sudop Praha A.S. (sponsored by Ministry of Transport and Communications of the Czech Republic), Dec 2002 A Feasibility study for the rehabilitation of the railway line Durrës – Elbasan – Pogradec and a new rail line link to border with Republic of North Macedonia was prepared in 2018 and financed under the Western Balkans Investment Framework (WBIF). The Detailed Design for the Rehabilitation of the Durrës – Rrogozhina Section has recently been prepared.
- "Feasibility Study on Rail Connection Albania-Macedonia", Albanian Institute of Transport, 2003.

2.4 Actual status of the Project regarding the EIA approval by the authorized Ministry

The project refers to the phase of preliminary design in which are already assessed the alternatives proposed. The purpose of the ESIA in this phase is to assess and predict potential adverse social and environmental impacts and to develop suitable mitigation measures, which are documented in an Environmental and Social Management Plan (ESMP) since in this phase of the project based on the existing situation of the environment and social life, alternative proposed and on inception report.

During the inception period, the ESIA team prepared the initial ESIA inputs for the Inception Report.

ESIA study shall be updated and re assessed during the detailed design of the project in which phase are obtained even the relevant permissions from the Institutions (Environment and Tourism Ministry).

Environmental issue referring at this stage of project (preliminary design) include environmental existing situation based on site surveying and relevant existing documents /studies.

The quality of environment in this stage of the project is based on the data obtained from documents (reports, relevant studies carried out in the project area). These data are used as a comparison of the quality of environment near the project area.

Local Government Units and National and Regional Institutions, as well as Focus Groups with community participation Administrative Units Impacted by Project, transboundary stakeholders (UNESCO) are notified since in this phase of the project.

Environmental and Social impact assessment at this stage (Preliminary design) is a planning tool, that aims to ensure that environmental and social issues throughout the entire project lifecycle are anticipated and considered. It also serves as a risk assessment tool and allows the establishment of ownership, to a certain extent, over the Project by reducing or preventing adverse social impact.

Social impact assessment is prepared by using the local knowledge and involvement of stakeholders in participatory processes to analyze the concerns during the alternative assessment and monitoring of affected social receptors.

This tool together with other documents part of ESIA, especially the Resettlement Policy Framework (RPF) and the Stakeholder Engagement Plan (SEP) provide analyses and arguments and

opinion/considerations of stakeholders to decision-makers regarding the environmental and social costs for alternatives presented.

No approval from the Albanian institutions is required to be obtained during the preliminary design.

ESIA in preliminary design phase helps the ***Consultant in detail design*** to be focus on:

- **Environmental quality** data will be ensured in the most sensitive and representative area of the project by measurements with laboratory for air quality, noise & vibration level, air and noise modelling as well to assess the extension of the impact during operation phase of the project.
- **ESIA for Detailed Design** shall be focused on the selected alternative and shall assess and predict potential adverse social and environmental impacts and to develop suitable mitigation measures.
- **During Detail design phase** the focus shall be on the chosen alternative and more actions will be required as:
    - It is requested to consider Detailed local plans for each municipality of the project.
    - The map of stakeholders will be expanded at the capillary level (administrative units, elders, and interview with direct Project Affected People (PAP).
    - More meetings and interactions with stakeholders, detailed inventory of properties and assets shall be evaluated.
    - ESIA shall assure the Investors that all factors have been taken into consideration before starting the construction phase.
    - Transborder parts shall be included (not just notifying) during this phase of the project.
    - International agencies with focus protection of cultural /natural heritage (as UNESCO) etc.
    - Detailed biodiversity baseline surveys, both aquatic and terrestrial, for Lake Pogradec Landscape Protected Area, IBA and Emerald Site as well as Qafë Bush – Kuturman Nature Managed Reserve shall be conducted.
    - Appropriate Assessment to be conducted for the Candidate Emerald Site of Pogradec Landscape Protected Area in accordance with Article 6/3 of Habitats Directive as well as in accordance of the requirements for Water Framework Directive stipulated in the document “Water Framework Directive JASPERS Checklist tool”.
    - Updating impact assessment for all indicators (as may have changed by passing the time from preliminary design). ESIA study (even in detail design phase) is not considered relevant if the construction activities do not start within 2 years of obtaining Environmental Declaration from the MoET (as per Albanian legislation).
    - Update of avoidance and mitigation measures complying with mitigation hierarchy.
    - Specifying information regarding No Net Loss and Net Gain measures respectively for Priority Biodiversity Features and Critical Habitats.

2.5 Implementation of the steps foreseen in “Water Framework Directive JASPERS Checklist tool”.

The steps implemented to check/ensure the compliance of the project with Water Framework Directive are:

- Step 1 - Context and Screening - Recording the future ecological and chemical status objectives for relevant EU protected areas. In this context, there is a Management Plan for Lake Pogradec (a Candidate Emerald Site) and its conservation objectives are highlighted in 6.2. Impacts and mitigation during design, construction, and operation. For the other Candidate Emerald Site of Kuturman - Qafë Bush there is no Management Plan.
- Step 2 - Scoping the assessment - is used to determine whether any further assessment is needed and, if so, which WFD elements should be investigated. In this context, the need for an Appropriate Assessment is highlighted above. It stresses that the Assessment should take in account the requirements of the Water Framework Directive (see 3.4 Actual status of the Project regarding the EIA approval by the authorized Ministry).
- Step 3 - Further data collection or investigations - ESIA foresees “Appropriate Assessment to be conducted for the Candidate Emerald Site of Pogradec Landscape Protected Area in accordance with Article 6/3 of Habitats Directive as well as in accordance with the requirements for Water Framework Directive stipulated in the document “Water Framework Directive JASPERS Checklist tool”. (see 3.4 Actual status of the Project regarding the EIA approval by the authorized Ministry).
- Step 4 – Application of Tests for the Article 4(7) of Water Framework Directive - Checklist tool" will be performed during Detailed Design and in accordance with the annexes of “Water Framework Directive JASPERS Checklist tool”.

2.6 Other related EIA approvals

During this phase of the project (preliminary design) is not required any submission to the institutions or any relevant approvals. This phase of the project helps the Developers and Consultant to follow the next step of the study which is the detail design phase. All relevant approval and permits are obtained during detail design phase.

During detail design phase of the project, based on the Law 10440/2011 “On Environmental Impact assessment “, appendix 1, point 7/a (Construction of the railway lines in a long distance) this project required *Detail Environmental impact assessment* Report.

The ESIA (in detail design phase) shall meet the requests of DCM 686/2015 "On the rules, responsibilities, and timelines for the environmental impact assessment procedure and the procedure for the transfer of the environmental declaration". It should be stressed that this DCM fully complies with the EIA Directive 2014/52/EU. DCM 686/2015 requires the ESIA report.

Given that the project area covers the territory of several municipalities, the construction permit for the proposed project needs to be approved by the National Council of Territory Planning (NCTP), which is led by the Prime Minister. The necessary documents are the Environmental Permit and the approval from the National Agency of Territorial Planning (NATP).

Article 39(1) of Law 107/2014, “On Territory Planning and Development”, as amended, states “a Construction permit is required for any construction, repair, restoration or demolition of existing buildings, installation or building of temporary constructions, except for the cases provided by Article 41 of this Law”.

3 ESIA Process

3.1 ESIA process carried out and integration with design

The Consultant during development of ESIA for this phase of the project (preliminary design/feasibility study) followed the requirements of ToR. Existing studies were taken into consideration as well (Pre-feasibility Study).

ESIA process stages during preliminary design phase passes through these steps:

- Inception report in which was included the main topics to be taken into consideration during ESIA report.
- Alternative analyses in which were considered and assessed the alternatives proposed.
- ESIA report draft (preliminary design)
- ESIA report final (preliminary design)

Following are shown the national and EU regulations and EIB/EBRD standards on the stages and steps of the EIA process during detail design phase.

The table below gives the stages and steps to be followed during the EIA process (in detail design), as provided by the EU EIA Guidance on the preparation of the EIA report.[1] As shown in the column on comments, the requirements of the EIA Directive[2], the Albanian Law 10440 "On EIA"[3] and the EIB/EBRD Environmental and Social Policy[4] (April 2019), on the different stages of this process are almost the same. This resemblance derives from the fact that the EIA Law complies with the EIA Directive and the EIB/EBRD is a signatory to the European Principles for The Environment[5].

Table 3-1: ESIA process stages and steps, and EU, Albanian, and EIB/EBRD requirements

No.	Stage	Description	Comment
1	Screening (as appropriate)	The Competent Authority (MoTE) decides whether an EIA is required and if it does, then which level of assessment is required.	For preliminary design this step is not applicable Not required for projects included in Annex I of EIA Directive, Annex II of the Albanian EIA Law, and Appendix II of EBRD ESP (2019); Required for projects included in Annex II of EIA Directive and Annex I of the Albanian EIA Law.
2	Scoping (as appropriate)	Identifies the key issues and impacts, the content and extent of the assessment, and specifies the information to be included in the EIA Report. Thus, scoping refers to: Preparation of ToR for EIA	For preliminary design this is not applicable. Albanian regulations require a scoping stage when submitting ESIA for Environmental declaration (detail design phase) but not a scoping report; EU EIA Directive foresees Scoping to be mandatory only when it is requested by the Developer to the Competent Authority and if it is included in ToR; (Not

[1] https://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf
[2] ec.europa.eu/environment/eia/pdf/Revised EIA.pdf
[3] Law 10440/2011 "On Environmental Impact Assessment"
[4] https://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html
[5] https://www.ebrd.com/key-sustainability-downloads.html

No.	Stage	Description	Comment
			included in ToR for this phase of the project).
3	EIA report preparation	EIA report includes[6]: Information on the project, Baseline information; Likely significant effects; Proposed Alternatives; Mitigation measures; and a Non-Technical Summary (during detail design phase of the project)	Required by Albanian legislation, EU, EIB and EBRD. EIA report to be prepared after the Scoping stage. During preliminary design as per Albanian there is not any regulations because there is not any submission to the institutions. As per ToR ESIA shall be prepared after inception report. Structure and content of the EIA report shall be prepared as per ToR during preliminary design (feasibility phase of the project) Required by Albania: Structure and content of the EIA report during feasibility phase will be prepared as per ToR as requested by the Developer to the Competent Authority. During detail design the structure of ESIA Report shall be as per the Decision No. 686, dated 29.7.2015 "for the approval of rules, responsibilities and deadlines for the development of the environmental impact assessment procedure (EIA). SEP, LARF, ESAP, and ESMP to be prepared parallel to EIA report
4	Information and consultation	EIA Report is consulted with the public and stakeholders; EIA improved where necessary subject to consultations information	Required by EU, Albania (during detail design when submitting ESIA for Environmental Declaration, EIB and EBRD. Required by EU and Developer (during preliminary design). EIA Report is consulted with stakeholders since in the alternative analyses phase and even during ESIA drafting; Consultation with public is not required during this phase of the project. This is required during detail design, and it is leaded by MoTE.
5	Decision Making and Development Consent	Based on the EIA report and the consultation results, the Competent Authority decides whether the project causes significant environmental effects. This must be incorporated into the final Development Consent decision.	For preliminary design this request is not applicable. There is not any report to be submitted to the Institution during this phase of the project. Required by EU, Albania, EIB and EBRD during detail design of the project.
6	Information on Development Consent	The public is informed about the Development Consent decision.	For preliminary design this request is not applicable. Required by EU, Albania, EIB and EBRD during detail design phase.
7	Monitoring (as appropriate)	During construction and operation, the developer must monitor the identified significant adverse effects as well as the proposed mitigation measures	For preliminary design this request is not applicable. Required by EU, Albania, EIB and EBRD during detail design of the project.

[6] Annex IV of the EIA Directive 2011/92/EU as amended

3.2 A statement of the Project's current state of compliance with national regulatory requirements and relevant EU requirements

Concerning the proposed railway Rrogozhinë – Pogradec rehabilitation project in this phase of preliminary design (feasibility phase) and the related ToR provisions endorsed by EIB/EBRD, the required ESIA process stages and the related outputs are described hereinafter.

Based on the provisions of the Albanian environmental legislation, the ESIA prepared during the Preliminary Design cannot fully satisfy the requirements of the Law 10440/2011 "On EIA", which is in line with the EIA Directive. Some of the unsatisfied requirements of the Law, include:

ToRs on the Preliminary Design for Rrogozhinë – Pogradec railway line do not require any detailed construction plan including its implementation's timeline, quantity of generated waste, sources of construction material for the railway body, quantity and disposal of waste including wastewater, pollution released into atmosphere, etc., elements required by the EIA Law during detail desing;

According to EIA Law, a full ESIA (or comprehensive ESIA – EU Directive terminology), is prepared during the Detailed Design, only.

The Environmental Declaration is based on the conclusions of an ESIA study that is prepared during the Detailed Design. The Environmental Declaration is valid for a period of two years from its issuing date. If the construction works do not start within two years from this date, then the EIA study procedure must be done from the beginning.

Therefore, at this stage of the project, it is not feasible to secure an Environmental Decision from the competent authority and the "Building Permits".

The ESIA deliverables, includes the standards referred at this study stage, as well as their limitations:

- ESIA report: As explained hereinabove, the ESIA report will be a slightly simplified form of a comprehensive ESIA that will aim at avoiding the main potential impacts through suggesting the most environmentally friendly spatial and technical options of the project that should be taken into consideration during the next stage (Detailed Design). The full ESIA (comprehensive ESIA – EU Directive terminology) should be prepared during the Detailed Design.
- Non-Technical Summary (NTS): NTS will satisfy the national, EU and EIB standards.
- Environmental and Social Management Plan (ESMP): ESMP will be further elaborated during the next stage of the Project development (Detailed Design and full ESIA), as at the PD stage the potential impacts are not known in detail (e.g. lack of complete information on the groundwater and erosion because the PD does not include geotechnical drillings).
- Climate Change Resilience and Vulnerability Assessment Report (CC Report): CC Report will be further elaborated during the Detailed Design and full ESIA, as at the PD stage the sources of impacts are not yet fully known (e.g. impacts on groundwater, erosion and sedimentation, impacts on biodiversity, access roads within the steep and fragmented mountainous terrain, etc.).
- Stakeholder Engagement Plan (SEP): SEP will include consultations at the administrative unit level, and whether necessary at village level. That is necessary to foresee the necessary level crossings, side/parallel roads, underpasses and/or overpasses for local population, businesses, etc. No public hearing will be included during the PD, as the directly affected properties and landowners cannot be known in detail at this stage. Public hearing will be performed during detail design, and it is leaded by the MoTE.
- Land Acquisition and Resettlements Framework (LARF): LARF will satisfy the national, EU and EIB

requirements. Wherever they differ from each-other, the most stringent will be selected.

3.3 Public consultations and disclosure and dealing with objections

Overall, stakeholder engagement during the preliminary design phase according to EIB and EBRD standards aims to foster a collaborative approach to project development, ensuring that project will be designed in a manner that respects and responds to the needs and interests of all stakeholders involved. By engaging stakeholders, the project identified and understood the stakeholder concerns, expectations, and potential impacts of the project. The early inputs allow for adjustments to project plans and designs and can lead to improvements in the design that enhance project feasibility, effectiveness, and sustainability.

Transparent and inclusive stakeholder engagement processes build trust and credibility among stakeholders, that is crucial for gaining social acceptance and support for the project.

Engaging stakeholders during the preliminary design phase ensures that the project complies with relevant environmental, social, and regulatory standards. This includes addressing concerns related to human rights, cultural heritage, biodiversity conservation, and other pertinent issues.

Effective stakeholder engagement during the preliminary design phase establishes a foundation for continued dialogue and collaboration throughout the project lifecycle. It sets the stage for ongoing communication, consultation, and feedback as the project progresses.

The detailed description of the stakeholders is provided in the SEP document. The recommendations/opinions of the municipalities expressed during the meetings and via formal communication have been presented and taken into consideration by the technical team of preliminary design.

During the preliminary design were conducted the following meetings:

- Meeting with Albanian Road Authority (ARA), date 29/03/23.
- Meeting with Municipality of Elbasan, date 23/03/23.
- Meeting with Municipality of Rrogozhinë, date 15 Sep 2023.
- Meeting with Municipality of Peqin, date 15 Sep 2023.
- Meeting with Municipality of Elbasan, date 14 Sep 2023.
- Meeting with Municipality of Librazhd, date 18 Sep 2023.
- Meeting with Municipality of Prrenjas, date 18 Sep 2023.
- Meeting with Municipality of Pogradec, date 18 Sep 2023.

To all municipalities and main institutions affected/interested of the project, the project sent the official letters with the request for review and confirmation for the proposed level crossings Road Underpasses, Road Overpasses, and the information for the closure of unauthorized crossings along the railway. Letters were sent to:

- Albanian National Commission for UNESCO
- Ministry for Europe and Foreign Affairs
- Ministry of Culture
- National Institute of Cultural Heritage Tirana
- Regional Directorate of Cultural Heritage Korçë, date16.02.2024
- Albanian Road Authority, 12.02.2024

- Rrogozhinë Municipality, 12.02.2024
- Peqin Municipality, 12.02.2024
- Elbasan Municipality, 12.02.2024
- Librazhd Municipality, 12.02.2024
- Prrenjas Municipality, 12.02.2024
- Pogradec Municipality, 12.02.2024

Feedback letter was received only from Peqin municipality with some recommendations for improvements that were presented and considered by the technical team.

For the concern expressed by Elbasan Municipality, the project team in the frame of the preliminary design, has considered a connection node that will ensure access to the existing railway route with the proposed project in the future.

Future Stakeholder Engagement Programme includes disclosure of SEP and NTS of ESIA by HSH on its official website, as part of the activities in the frame of ESIA public consultation and disclosure.

4 Summary of Environmental Benefits, Potential Adverse Impacts, Mitigation and Management Measures

4.1 Air Quality

The baseline data on the air quality refers to urban areas Elbasan, Librazhd, Prrenjas and Pogradec. Air quality in Elbasan city (Referring to the annual report 2019 - 2021 compiled by Co-Plan):

- It was determined that in central area of Elbasan city during 2019, the level of NO2 in the majority of the nine monitored plots exceeded the allowed limits.
- Level of VOC, compared to the standard which is 0.500 µ/m3, data show a concentration of 0.9-1 µ/m3 for at least 10 different points throughout the monitored territory.
- PM2.5 level in 25 stations show the data within the standard, while in the remaining 22 stations, the values exceeded the standard, ranging from 30 µ/m3 to 180 µ/m3.
- PM10 level: out of 47 measurements at various points, it is evident that in 8 of them, the standard is surpassed, ranging from 32 µ/m3 to 122 µ/m3, in comparison to the EU norm of 30 µ/m3.
- Regarding the concentration of CO, it reached the maximum value of 12µ/m3, while the average value was 2.6µ/m3 compared to the EU standard which is 10µ/m3.
- CO2 shows an average value in the entire surface of the city of Elbasan of 531.3 ppm, from 350 ppm which is the EU standard, while the maximum value was recorded at 860 ppm.
- Ozone (O3) across the monitored area recorded an average value of 84.4 ppm, exceeding both the Albanian norm of 65 ppm and the EU norm of 120 ppm.

Air quality in Pogradec city:

- Pogradec exhibits relatively low concentrations of the emission in the air compared to other cities; however, the levels of PM10 and PM2.5 remain a cause for concern, and several factors contribute to this, including a significant number of vehicles , old vehicles , un favourable topography, surrounded by mountains and hills, limiting the smooth circulation of air, use of wood for heating
- The levels of carbon monoxide (CO) in Pogradec are attributed to the prevalent use of firewood as a fuel source for residential heating.
- SO2 is directly linked to the sulfur content in the burned fuel, allowing for immediate reductions.
- Vehicle exhaust stands as the primary source of NO2 pollution, with the highest levels observed near roads with heavy traffic
- NO2 levels recorded are relatively low.
- The level of PM10, PM2.5 reaching respectively 60 µg/m3 and 35 µg/m2, can be attributed to various factors, including number of vehicles, the prevalence of diesel-fueled vehicles un favourable topography surrounded by mountains and hills impeding air circulation , use of wood for heating

Air quality in Librazhd city:

- Air quality is good to very good in rural areas.
- In some specific road segment along the Shkumbin valley is identified as a problematic area concerning air quality, due to traffic, leading to a notable increase in dust particles (PM10 and PM2.5).
- Other parameters of emitted gases align with national or local circulation network norms.
- Insufficient road infrastructure in rural areas contributes to significant dust levels. Air quality in these areas surpasses EU daily standards, with specific concern regarding elements like PM10, PM2.5, and SO2, associated with the use of wood for heating.

Air quality in Prrenjas city:

- The air quality in rural areas is consistently good to very good.
- The area of the national axis crossing the city of Prrenjas poses a more severe issue, surpassing the EU daily standard (50µg/m3) on several days, where the permissible limit is 35 days.
- In urban areas, the level of NO2, SO2, O3, CO, and BTEX is not very good, primarily attributed to cars, fires, burning of biomass, waste burning, and constructions activity.
- Real pollutants of concern include PM10, PM2.5, and SO2.

IMPACTS AND MITIGATION

Air pollution will result during the construction activities, such as the emission of dust from demolishing of existing structures and buildings, the process of excavation works, dust from transport, gases by the heavy equipment and vehicles due to the fuel combustion, as well as from dust particles from soil movement, transport of the material etc.

This impact will be local and only during the construction phase. Potentially it may result a moderate increase in the level of PM10 and PM2.5 in the air near the construction site.

Dust and gas emissions potentially affect health of workers and the residents / local near construction site, vegetation, water sources especially taking into consideration the footprint of the project go through along Shkumbini.

Impacts on local air quality are likely to occur during construction and preliminary phase (pre-construction), and decommissioning phase.

Temporary dust emissions will be emitted from earthworks, clearing vegetation, earth excavations, vehicle movement, stockpiles, unpaved surfaces, etc. near the Project area.

Temporary emissions of exhaust gases into the atmosphere from vehicles involved in the construction of the Project (i.e., emissions from excavators, bulldozers, trucks, vehicles/cars), from use of equipment, such as generators, during work activities.

Mitigations

- The appointed Contractor shall provide a site hoarding of 2.4m height along sensitive boundaries, close to the resident area to minimize the potential increasing dust impacts off-site.
- Remove existing asbestos from the existing buildings (that shall be demolished) by specialised trained staff (to avoid asbestos spreading in the air) before starting construction activity.
- Minimise open excavation areas; minimise vegetation clearance (when is possible) to reduce exposure of bare soil and revegetate cleared areas as soon as possible.
- Restrict vehicle speeds on construction sites and all access roads to minimize potential generation of dust.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimize exposure to wind.
- Water misting or sprays (or similar dust suppression methods) will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of dust-generating materials both on and off-site, trucks will be covered with tarpaulin and before entrance onto public roads/ resident area, trucks will be checked to ensure the tarpaulins are properly in place.
- Daily visually monitor of presence of dust on site and monitor the air quality by the laboratory based on the provisions of the relevant regulations, including the DCM 352/2015 "On the assessment of environmental air quality and the requirements related to some pollutants".
- Contractor will keep the effectiveness of the mitigation measures under review and revise them as necessary. In the event of dust nuisance occurring outside the works boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures implemented to rectify the problem.
- Take appropriate measures, including personal protective equipment (PPE) to protect the health of the workers from the dust and polluting substances.
- Respect the deadlines for technical control of the vehicles.
- Use fuels, which comply with official standards (as per Ordinance No. 6, of 09.10.2007; the content of the Sulphur in diesel fuel, starting from 01.01.2011 must be 10mg/kg).
- Mitigation of impacts in relation to generation of dust and vehicle / machinery emissions will be managed through the development of the ESMP/CEMP for the construction phase which will specify appropriate measures for the management of site clearance, excavation and construction activities.

4.2 Biodiversity and nature conservation

The baseline study on biodiversity in the project study area found 100 plant taxa, identified along the Rrogozhinë-Pogradec railway; Nevertheless, the list of species present in the exiting railway is higher considering that the survey duration is limited.

Some rare and endemic species were recorded and are present in serpentine habitats and Lake Pogradec (Ohrid Lake).

The survey recorded the presence of 12 different habitats and 374 vertebrate species; Nevertheless, the list of species present in the exiting railway would be higher considering that the survey duration has been limited in time, access in some areas (tunnels important for bats and other nocturnal animals) and some railways segments was difficult and further surveys needed during the detailed design project phase.

Pogradec (Ohrid) Lake conserves over 200 species of plants and animals, endemic algae, turbellarian flatworms, snails, crustaceans and 17 endemic species of fish.

The project area crosses through the protected areas of Pogradec Protected Landscape and Managed Nature Reserve of Kuturman-Qafë Bush. Both areas are designated as well as:

- Candidate Emerald Site RNM Kuturman-Qafë Bush (AL0000018),
- Candidate Emerald Site of Pogradec Protected Landscape (AL0000019),

- Important Bird and Biodiversity Area (IBA) Lake Ohrid and the surrounding area (AL002),
- Key Biodiversity Area (KBA) of Lake Ohrid and surrounding area,
- UNESCO Transboundary World Natural and Cultural Heritage Site (in 2019), and
- Transboundary Biosphere Reserve Ohrid-Prespa (designated in 2014).

The Emerald Network is an ecological network of Areas of Special Conservation Interest (ASCIs), which was established to conserve the species and habitats of the Bern Convention requiring specific protection measures. Article 6(3) of the Habitats Directive requires appropriate assessment to be carried out if a planned project might affect integrity of a Natura 2000 site. Considering the Emerald sites are predecessors of Natura 2000 sites in non-EU countries, an Appropriate Assessment is needed also for the Candidate Emerald Sites of Pogradec. Considering that the railway crosses the Candidate Emerald Sites of Kuturman-Qafë Bush through a tunnel, an Appropriate Assessment is not considered relevant for this site.

The preliminary Critical Habitat Assessment based mainly on data obtained from literature, identified the following:

A. Lake Ohrid is a freshwater ecosystem, outside the EU and not yet assessed by IUCN, but of high priority for conservation on the basis of high level of endemism for several aquatic species. Lake Ohrid could be considered as a Unique Ecosystem. It meets the threshold for Criteria 1.

B. 43 species which meet the thresholds for Criteria 2-3.

C. Five habitats are assessed as Critical: (a) Shkumbin river mostly for restricted range fish species, (b) Ohrid lake for restricted range aquatic species, (c) caves in the surroundings and railway tunnels for bats, (d) surrounding forest and shrubland for reptiles and (e) serpentine habitats for plants of restricted range.

D. Lake Ohrid meets the Criteria 4, 5 and 6 for Critical Habitat. Lake Ohrid supports migratory or congregatory species during periods of environmental stress. The ecosystem services of Lake Ohrid are crucial for the local communities' livelihood. Finally, Lake Ohrid is a landscape with high spatial heterogeneity and therefore high levels of species diversity.

The importance of the above findings will be further elaborated during ESIA. Nevertheless, it's worth stressing here that in accordance with Standard 4 of the EIB ESS, the project should not lead to a net reduction in the population of any vulnerable, endangered or critically endangered species over a reasonable period. In addition, positive conservation outcomes (Net Positive Impact) and continued ecological functionality are achieved through appropriate compensation measures for residual impacts that would otherwise occur despite impact avoidance, minimisation and restoration measures. As a last resort and in response to residual impacts, compensation measures may be implemented to reach a minimum of no loss of biodiversity overall. If the project is taking place in an area of critical habitat, a Net Positive Impact on biodiversity and ecosystem services must be achieved. Furthermore, compensation or offsets shall not be used as a mechanism to achieve no loss or a Net Positive Impact until other forms of mitigation have been fully implemented possible.

IMPACTS AND MITIGATION

- Reducing the working area out of the existing railway will reduce the impact on the natural habitats along it.
- Working camps, to be located within the existing railway stations, to reduce the impact during the construction phase.

- The planned service and connectivity roads will be located within the existing local roads, arable lands and the railway line belt. No service and connectivity roads fall within the railway line belt in the line sections crossing the shrubby and forested areas. The expected impacts across the shrubby and forest area will be caused by the vegetation clearing within the working strip.
- Construction activity in the railway segment along the lakeshore must be carried out within August-April in order to avoid disturbance of breeding birds and accidental destruction of nest and offsprings.
- The deviation or widening of the existing railway footprint should be avoided as much as possible especially in the serpentine area where species with conservation concern are found (endemic, rare or endangered species, etc.) and in the sensitive habitats such as aquatic habitats of Ohrid lake and riverine ones. As it is described above, the riparian vegetation will be affected by the deviation of the railway and by construction of the bridges as well. The construction works will temporarily affect the physical and chemical properties of river water, downstream from the working area. Accidental release of chemicals and fuel during the construction work can deteriorate habitat quality. Firstly, digging and similar construction works will affect the sediment and the physical properties of water (mudding). The impact will be reduced downstream from the construction work area, and it will not cause a significant impact along the whole length of the watercourse. The mudding of water flow might locally affect some freshwater species and their distribution. Since the construction work period is short, the impact is acceptable in case of the application of the environmental protection measures.
- Because of the high sensitivity of aquatic ecosystem, the construction works on watercourses should be conducted during the periods of low water level (works during dry season);
- The duration of any necessary flow diversion should be minimised as much as possible;
- Reed beds along the lake shore are very important for nesting of water birds. Construction activity in the railway segment along the lakeshore must be carried out within August-April in order to avoid disturbance of breeding birds and accidental destruction of nests and offsprings;
- Construction work requires the presence of a botanist to monitoring cases of invasive alien species and recommend control measures;
- Translocation and seed collection will be applied for species of conservation concern in the railway footprint and in the impacted habitats;
- With the application of environmental management plans during the construction period (i.e. usual environmental protection precautionary measures for the construction sites, appropriate waste and soil management, use of approved equipment, etc.) any eventual accident will be significantly reduced.
- Finally, it is recommended that the amount of habitat being lost due to construction, be rehabilitated once the railway is built. The rehabilitation of the habitats and the enhancement of the impacted forests along the segments of the railway crossing through protected areas, will be performed under the supervision of the Regional Agency for Protected Areas. Details on the areas that will be rehabilitated and on those that will be enhanced will be described in the Biodiversity Action Plan (BAP). The main lines of BAP will be provided in the ESMP.

4.3 Consistency with policy, law and other plans

This ESIA is prepared for the Study Section of the Project of the Preliminary Design for the Rehabilitation of the railway line Rrogozhinë - Pogradec Section, Albania. This project is developed by the Ministry of Infrastructure and Energy (MIE) and the Albanian Railways (HSH) based on the Contract number: AA-010284-001: "Preliminary Design for the Rehabilitation of the Corridor of VIII Section Rrogozhinë - Pogradec",

The project consists of the rehabilitation of the existing line of the Rrogozhinë - Pogradec section with a total length of 119.5 km.

It is an important project that will contribute to the phased rehabilitation and improvement of the railway Corridor VIII in the territory of Albania to enable the provision of transport services and increased safety and speed to EU standards.

The Project would lead to improved transport connectivity, reduction of road traffic congestion, decrease of transit traffic in cities and reduction of local pollution and GHG due to vehicle emission. The Project is of regional importance, and it will facilitate trade, regional integration, and sustainable growth and it will have a positive impact on the economy of Albania.

The project footprint starts at Km 35+300, which belongs to the existing station of Rrogozhina in the direction of Elbasan, and ends at Km 152+800, which belongs to the station of Guri i Kuq (Pogradec).

The existing railway line, from Rrogozhina to Pogradec, has been constructed in sections from ‘50s to ‘70s and includes 12 stations. It has been designed to serve both freight and passenger operations.

The ESIA report (this document) for this phase of the project (Preliminary design) is part of the Environmental and Social Impact Assessment (ESIA) study package on the Project that is prepared by the consortium SUEZ - Consulting (SAFEGE).

Two main segments of the footprint of the project are:

- Rrogozhinë -Prrenjas section
- Prrenjas –Porgadec Section

4.4 Cumulative impacts Induced (indirectly consequential) impacts

Cumulative impact refers to the Interaction between different Projects in the same area: Cumulative effects can occur at different temporal and spatial scales. The spatial scale can be local, regional or global, while the frequency or temporal scale includes past, present and future impacts on a specific environment or region. Impacts that act together with other impacts resulting from other plans/projects in the same project area or the same sector (e.g. noise from the operation phase of the railway and the existing level of noise produced from the road transport passing close to railway line etc.)

Cumulative impact on noise shall be taken into consideration during detail design phase due to the noise generated by vehicles traveling on the highway, almost close to or very close to the track of the railway project. This will be evaluated at noise modelling study.

Significant Potential Impacts Cumulative impacts are also those that arise as a result of an impact of the Project when added to impacts from other projects or developments. The assessment extends to potential interactions with Project activities and other activities. Cumulative impacts may have the potential to arise during any stage of the Project.

The current facilities existing or in operation of other projects:

Elbasan-Qafë Thanë Road, Part of Corridor VIII with Significant Impact on Tourism Development is a project being developed in the area of the Project. The project has been divided into eight sections, while the construction is under development for the first two sections. The work schedule anticipates the construction of two other sections in 2024 and the two last ones will start in 2025. The road starts in the village of Labinot Fushë and has a length of 44 kilometres up to Qafë Thanë, the border crossing point with North Macedonia.

The Area of Influence as regards cumulative impacts as defined under EIB ESS 1/EBRD PR 1 EBRD Performance Requirement 1 (para. 9) references the need for the ESIA process to consider the cumulative impacts of the project in combination with impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location.

The EIB ESS 1 provides a framework to systematically evaluate and manage environmental and social risks associated with projects, emphasizing sustainable development and compliance with international best practices. Cumulative impact assessment is integral to this framework to ensure that the EIB-funded projects contribute positively to environmental and social outcomes over the long term.

Impacts and Mitigations

The most prevalent anthropogenic activities in the AoI are existing activities (e.g., agricultural development, habitation, road use and resource use). The cumulative impacts of the existing Projects are assessed through consideration of baseline conditions.

- Ecosystems: Habitat fragmentation, and Loss of fish and wildlife populations
- Socioeconomics: Overburden services and Unstable labour markets
- Community structure: Changes in community dynamics as a result of displacement of critical community members.
- Cultural Resource: Cultural site degradation / vandalism and Fragmentation of historic district.

Mitigation

In order to reduce project risk from the key potential unplanned events, the standard mitigation hierarchy should be applied. Unlike impacts from planned activities, mitigation of unplanned events should consider both prevent preventative actions (that reduce the likelihood of the cause of the potential impact) and post-event mitigation that reduces the magnitude of the consequence. These measures will include, where possible/appropriate:

- reducing Project traffic volume;
- routing traffic to avoid sensitive receptors;
- speed restrictions near sensitive receptors and accident ‘hot spots’;
- installation of safe crossing areas;
- driver awareness activities about sensitive areas and accident ‘hot spots’; and
- awareness raising activities in schools and other sensitive areas.
- Roads will be left clear of obstacles during road construction activities, Road construction equipment will be secured at night in a locked storage area to prevent community members from accessing this equipment;
- In the event of a traffic accident between a Project vehicle (including contractor vehicles) and a community member(s), the Project will contact local emergency services to provide medical support to affected community members. Following any such accidents and of ‘near misses’, the Project will conduct a root cause analysis to identify causes and corrective actions that can be implemented.
- The Project will also include 24 hours site security to restrict access to community members.

Security will serve to prevent theft and damage of equipment on-site and to avoid potential injury to community members;

• Community Safety Awareness Raising - Training/education/awareness to community members well in advance of construction and on an on-going basis to inform local communities about Project construction and the risks of entering construction sites and acceptable alternatives.

4.5 Landscape and visual impacts

The plain terrain predominates in a delimited zone, primarily tracing the valley of the Shkumbin river. Originating from river sedimentation, this plain unit spans approximately 1.5-2 km in width. The Elbasan field and its adjacent plains lie within this area, crisscrossed by an intricate network of drainage and irrigation canals, alongside lowland streams feeding into the Shkumbin River. This expanse notably impacts the City of Elbasan and the Administrative Units of Shirgjan, Gjergjan, Labinot Fushë, Bradashesh, and Papër. The flow direction of these rivers, including the Shkumbin, typically runs from the east and southeast towards the west and northwest. During periods of heavy rainfall, these rivers, characteristic of Albanian waterways, have been known to breach their banks, inundating nearby agricultural lands.

The Librazhd municipality's landscape reflects neotectonic features prevalent in the continental region, spanning two structural levels. These include the horsts, comprising the mountains encircling the valley, and the graben, which encompasses the Librazhd basin and beyond.

The municipality of Pogradec is situated along the southern shoreline of Lake Ohrid, nestled amidst hills that form a natural amphitheater, gradually descending towards the lake. Positioned at a lowland elevation of 694 meters above sea level, the landscape offers a picturesque vista of the surrounding mountains, reaching heights of approximately 800 meters in the northwest. This area also boasts remnants of the ancient settlement of Dasaretia (Enkelana).

The railway passes across the environmental and social sensitive areas:

- From Km 136- km 152 (Loti 2) the railway passes along a very beautiful scenery for the passengers to be enjoyed,
- River valleys crossed by the RL: Shkumbin river valley, Rrapuni, Lingajca
- Footprint of the project crosses water bodies Shkumbini basin: Shkumbini river, streams, Ohri Lake
- Important historical areas, Domosdova near Project Area /Librazhd;
- Important archaeological heritage (7,500-year-old Palafitti) settlement near Buceze village close to Ohri lake;
- The segment Mirakë – Librazhd passes along the perimeter of the Nature Managed Reserve Kuturman Qafë – Bushi.
- Lin – Pogradec goes through the Landscape Protected Area of Pogradec. The area is IBA and Emerald site.
- Along the Lin Peninsula, with its natural and cultural assets as the springs of Drilon, numerous endemic species made it part of UNESCO.

Performed field observations showed that the railway rehabilitation will follow the existing track, with minor widening at the level crossings, affecting thin strips of land along the sides, for which no

significant land expropriation is required.

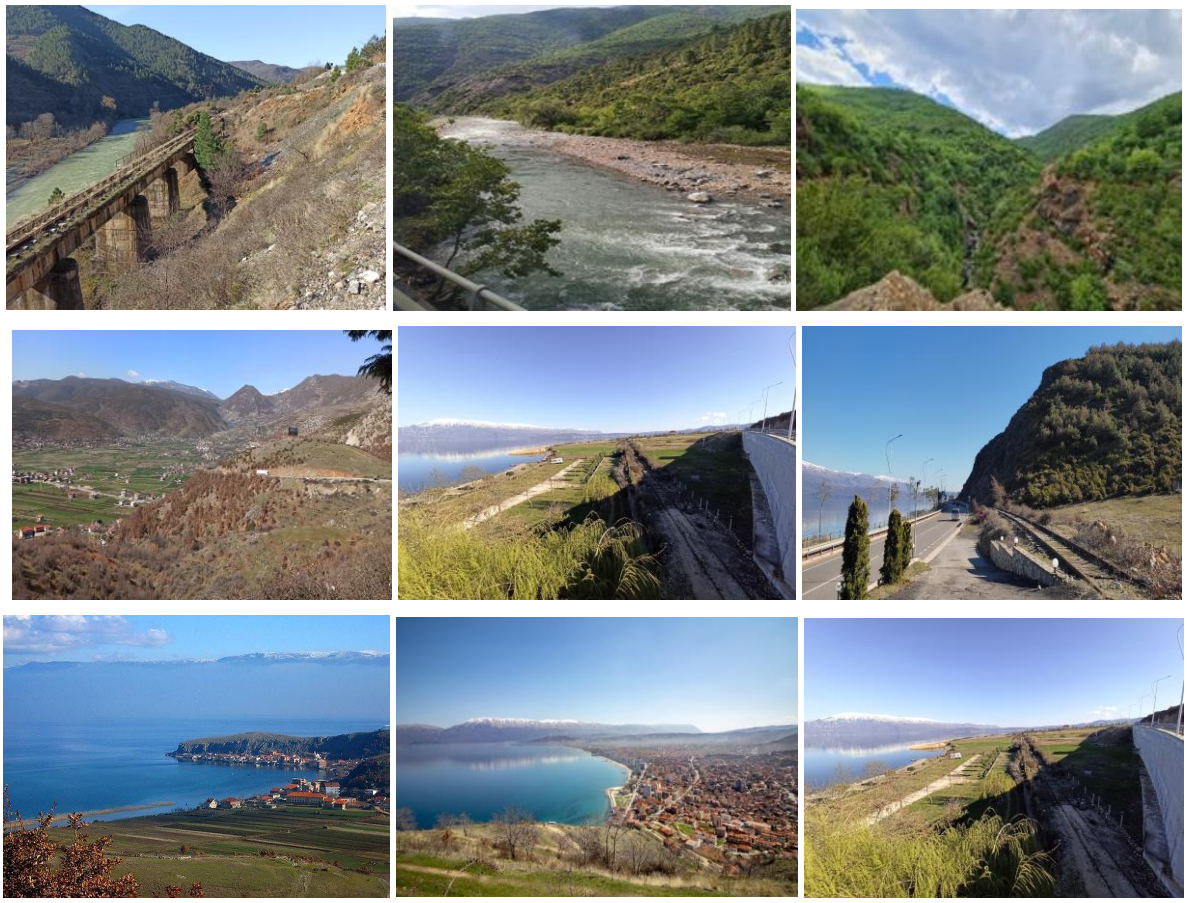


Figure 4-1: Picture showing the beauty of the landscape and nature while passing the railway line

IMPACTS AND MITIGATION

During preconstruction and construction stages, the landscape and visual amenity can be affected by the following:

- Demolition of stations, bridges, culverts: The demolition works will temporarily affect the visual amenity. As a mitigation measure, it is suggested to remove the ruins of these objects as soon as possible. The station sites should be fenced. As a result, the impact of demolition works on visual amenity can be evaluated as temporary and mitigable, and therefore there are not expected residual effects.
- Construction of the stations' bridges, culverts, retaining walls, and underpasses to replace the demolished ones.
- The reconstruction of the existing stations' bridges, culverts, retaining walls, and underpasses affects the landscape during the whole construction phase. The mitigation measures include the fencing, wherever possible, of the working area around the stations and bridges. During the construction works within the urban areas, the transport vehicles should circulate inappropriate hours of the day, etc.
- The expected adverse effects on visual amenities will be temporary and will last only during the construction stage.

Mitigation measures:

- Generally, mitigation is appropriate where facilities are most visible and present a change to the

existing visual environment but are not outweighed by safety considerations.

- Mitigating impacts to the visual environment generally involves screening a facility or structure or blending its design with the surrounding environment.
- The project has the potential to alter the aesthetics of certain properties and districts where new stations, parking lots, or crossings are proposed.
- The proposed visual mitigation measures include siting and designing facilities to minimize changes to the visual landscape and minimizing vegetation removal along the right-of-way.

4.6 Road safety

The road infrastructure that can influence the project design and vice-versa can be influenced by the project implementation is studied in detail by the Consultant as part of the service roads, level crossings, and underpasses and overpasses. Whereas the drainage system is taken into consideration in the hydraulic study of the project.

Impacts and Mitigation

Impacts related to accidents and injuries, potential spills, traffic accidents, noise, and potential fire during construction were assessed in the technical annexes for those subjects. A summary of the impact results and the health implications are provided to have a summary of all health impacts in this section.

The sources of impacts:

- Construction site accidents and injury from unsafe conditions at road and construction sites. Inadequate H&S standards or implementation; open ditches; movement of heavy machinery; inadequate signage and unsecured sites (where community members could access).
- Health effects from potential spill from spill Traffic accident; corrosion or inadequate storage containers on transport vehicle.
- Traffic accidents from vehicle movements transporting personnel and heavy goods vehicles transporting materials.
- Community members, including children, elders, persons with disability, etc., that use the same roads for school, medical, or other services might be vulnerable.

4.7 Traffic, noise and vibration

Pogradec:

- Exiting level of noise in Pogradec city measured in two stations within urban area show a surpassing of the standard for LAeq/Day and LAeq/Night. The most significant exceedance during the daytime occurs at the “Terminal Crossing” point, whereas during the night, it is observed at the “City Entrance” point, located approximately 3-3.8 km away from the project route.
- During operation phase of the railway, it is expected the level of the noise to be increased and a cumulative effect it is expected referring to the existing level of the noise. As close to the train station (Pogradec) even the speed of the train will be reduced, this cumulative effect it is expected to be not significant .Anyway noise measurements and modelling (recommended to be conducted during detail design phase) will show how much the effect of operation phase on noise level will be in order to avoid installing the barrier not necessary but only close to the houses that may be impacted . From Km 136- km 152 the footprint of the railway passes along a very

beautiful scenery for the passengers to be enjoyed, and installing noise barriers not necessary will bring more visual impact than benefit, that why reducing the speed of the train for this section will be considered as alternative to avoid installing barriers.

Librazhd

- There is not any data on the existing level of the noise along the railway line and near the train station for this segment. From Kmp 97 (entrance of the city) up to Kmp 100 the railway passes through the city but also even close to the station. So, it is expected the speed to be reduced and the cumulative noise level to be not significant. In rural areas, the acoustic environment is comparatively better. However, a notable concern arises from noise emissions by sawmills, posing potential impacts on the faunal regime and raising reproductive concerns, especially within bio corridors.
- Noise measurements and modelling (recommended to be conducted during detail design phase) will show how much the effect of operation phase on noise level will be in order to avoid installing the barrier not necessary but only close to the houses that may be impacted.

Prrenjas

- There is not any data on the existing level of the noise along the railway line and near the train station for this segment. From Kmp 124 (entrance of the city) up to Kmp 126 the railway passes along or close to the road but also even close to the station. So, it is expected the speed of train to be reduced and the cumulative noise level to be not significant. In rural areas, the acoustic environment is comparatively better. However, a notable concern arises from noise emissions by sawmills, posing potential impacts on the faunal regime and raising reproductive concerns, especially within bio corridors.
- Noise measurements and modelling (recommended to be conducted during detail design phase) will show how much the effect of operation phase on noise level will be in order to avoid installing the barrier not necessary but only close to the houses that may be impacted

Elbasan

- From Kmp 73 (entrance of the city) up to Kmp 80 the railway passes within urban area and near the center of city. So, it is expected the speed of train to be reduced and the cumulative noise level to be not significant compared with the existing level of the noise. The source of noise emission in the city of Elbasan primarily stemming from transportation, vehicle speed, aging vehicles, and key traffic axes and industry area. During early morning and afternoon hours, both the minimum and maximum noise levels at all points surpass the prescribed limits (exceed both EU and Albanian standards for both day and night periods). The most problematic stations are located near intersections and construction sites.
- Noise measurements and modelling (recommended to be conducted during detail design phase) will show how much the effect of operation phase on noise level will be in order to installing the barrier close to the impacted houses.

IMPACTS AND MITIGATION

The railway line will impact the urban and rural area as Rrogozhinë, Peqin, Papër, Elbasan, Labinot Fushë, Xibrake, Mirake, Librazhd, Xhyrë, Qukës, Perrenjas (Loti1) and RRajcë, Urake, Piskupat, Hdenisht, Memlisht (Pogradec Loti 2) well as along the protected area (Kuturman -Qafa e Bushit Lot 1) and Lake of Ohri (Loti 2).

Noise and vibrations will be generated mainly from the demolition of existing buildings and structures as stations, bridges, culverts, etc., and construction activities, transport vehicles, which are going to be generally

heavy trucks and various machinery like excavators, diggers, scrapers, cranes, etc.

Noise and vibration emissions are likely to occur during construction, operation and decommissioning phases.

Potential receptors in the study area consist mainly of the residential population living near the proposed footprint of the railway especially residents close to train stations (urban area).

- Noise and vibration emissions due to earthworks and any potential rehabilitation of access roads in the area nearby.
- Noise and vibration emissions from vehicle movement, transportation activities and working machineries involved in Project construction (i.e., excavators, bulldozers, trucks, roller, etc.).
- Increased traffic causes noise and vibration impacts as well. Project related traffic is limited to daytime.
- Noise emissions from the use of equipment during work activities (e.g., generators).

The Noise Level Guidelines (IFC, WHO) refer to noise originating from facilities as well as stationary noise sources and are commonly applied as design standards for industrial and infrastructure facilities. The Albanian Government also provides similar guidelines and standards to ensure industrial activities are compatible with a clean and safe environment.

The suggested mitigations measures Construction phase include:

- Equipment maintenance, and noise/ vibration emissions and monitoring during construction will be managed through the development of a robust Construction Environmental Management Plan (CEMP) and CTMP (Contract traffic management plan)
- Development of the OHSMP (Workplace Health & Safety Plan for protection of workers and equipment with adequate PPE).
- Avoid construction camps as far away as possible from inhabited areas, and areas of high fauna values.
- Avoid the construction activities during the reproduction periods of the fauna, especially across the forested and shrubby areas along the railway line (refer to the biodiversity impact assessment).
- Avoid simultaneous work activities that generate high levels of noise/ vibration emissions especially near the sensitive receptors.
- Prior notification of local residents in case of important work activities that generate noise and/or vibrations.
- Monitoring of the level of vibration at the sensitive receptors in sensitive areas as (archaeological site, houses etc) potentially impacted during construction or operation activities
- Apply the best standards and practices in case of use of blasting for demolishing the existing structures.
- Limit the working hours of machinery that generate high noise /or and vibration.
- Conduct regularly the technical control of construction engines and transport vehicles.
- Respect the official standards on noise and vibrations as provided for in the Albanian Law 9774/2007; “On evaluation and administration of noises in the environment”.
- Monitor the noises and vibrations from project activities as provided by the MoE Ordinance 1037/1, dated 12.04.2011 “On the assessment and management of environmental noise”.

The mitigation measures taken into consideration in the Project design include:

- The consultant on detail design phase shall consider the appropriate ground conditions, including the materials that provide for the base of the railway, to reduce the vibration disturbance.
- The Project’s detail design shall determinate the exact location where the noise barriers shall be installed based on noise modeling study; The Consultant shall recommend the appropriate type of noise barrier for each segment, in function of the local features.

- High noise barriers impact the landscape; therefore, the detailed design phase must select appropriate barriers based on natural features and specific conditions.
- Wherever possible, installation of transparent barriers along service roads is preferable to opaque ones, as they help car drivers' visibility and allow for landscape visibility.
- Whether possible, the installation of transparent barriers across natural landscape, valley, agricultural area is preferable, to not affect the landscape.
- The Consultant (on detail design phase) shall take into consideration the location of the sensitive sites/objects/facilities, including cultural heritage and historical/religious sites/objects, and educational and health facilities.

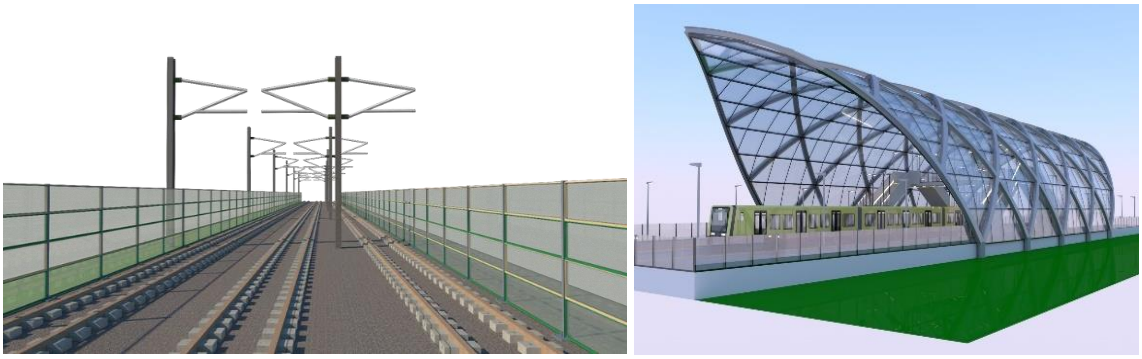


***Figure 4-2:** Transparent noise barrier recommended*

4.8 Waste management

The baseline has identified some problems related to wastes that might affect the adverse impacts of the project.

The identified problems in Pogradec:

- Lack of a well-organized system for reduction, collection, and transportation of solid waste. Services are mainly directed towards urban areas, leading to the creation of illegal open landfills in rural areas, pollution hotspots, and territorial space pollution.
- Irregular practices related to waste separation at the source or intermediate waste treatment, mainly in the form of sporadic pilot projects considered unstable. Consequently, the levels of recovery of recyclable waste at the source are extremely low, with only 10% of urban recyclable waste generated, without any composting process.
- Substandard management of hazardous waste due to inappropriate separation levels and lack of processing tools. As a result, a significant portion of hazardous waste is exported to other countries through licensing agreements with private companies

The identified problems in Rrogozhinë:

- The absence of composting facilities for organic waste, a lack of transfer stations for sorting and reduction, and the detrimental disposal of waste in drainage channels, adversely affecting both the landscape and water quality.

The identified problems in Librazhd:

- The core issue lies in undifferentiated waste accumulation in poorly maintained bins, where it can linger for an extended period, negatively impacting air quality. The way waste is transported, stored, and mechanically covered without any treatment further exacerbates the problem. Additionally, the disposal of waste in administrative units tends to be largely spontaneous.

The identified problems in Elbasan:

- In Elbasan, various businesses are active in the field of construction, agri-food, and processing industry, etc. It is estimated that Elbasan Municipality produces a total of about 117 tons of waste per day, of which it has been previously estimated that 14% of them are industrial waste. So, it can be concluded that Elbasan produces about 5,986 tons of industrial waste per year.
- It should be noted that some of these activities produce hazardous waste and as such are subject to the treatment of these wastes through Law 10463 dt. 22.09.2011, which specifies that these wastes must be rigorously monitored, recorded and transported as described in the law.
- Industrial Zone grapples with substantial environmental challenges arising from identified points characterized by heavy metal pollution, dust emissions, and illicit waste disposal practices.
- The Elbasan landfill is located at a distance of 2.5 km from the project's footprint. The waste disposal site is located 75 m away from the banks of the Shkumbin River in the southern part of the city of Elbasan, where there was a daily flow of 105 tons/day and serves a population of 128,418 inhabitants. This landfill is not as per standards required for waste disposal (beyond any permitted standards);

IMPACTS AND MITIGATION

- *Solid waste:* Temporary impacts on the aesthetics, biodiversity, water resources, soil quality, traffic and tourism.
- *Hazardous waste:* Temporary impacts on the terrestrial and aquatic biodiversity, ground and surface waters, soil quality, and the health of workers and local population.
- Potential impacts may result in case of improper management of these wastes (natural excavated soils) by the Contractor. This includes disposal of excess/surplus material in areas not approved by government institutions/authorities and in non-compliance with the existing national legislation.
- The disposal of excess/surplus material in the vicinity of water bodies/water resources (such as drainage and irrigation channels) would represent risk of contamination of these waters and damage to water ecology due to the increased organic matter and turbidity in water, in particular during rainfall periods.
- Oher impacts may arise as a result of poor management of hazardous wastes or materials and/or accidental spills of fuel, lubricating oils, etc., in natural excavated soil. In case of contact of a hazardous substance with natural soil it should be handled and managed as a hazardous waste.
- Due to deviations, it is expected to be generated topsoil (natural soil) that shall be stored in a temporary disposal area to be reused in the rehabilitation process and/or reused for the rehabilitation process in the end of construction works.
- Several impacts may arise as a result of improper urban waste management. Potentially it may be soil and surface water contamination in the event of illegal dumping of waste inside and/or outside the project area. These potential impacts besides contamination of environmental

elements, also pose a hazard to the generation of unpleasant odors (such as organic wastes).

- Improper waste management would result in an unsafe environment for the workforce and the local community in the area, which as a result may pose risks for human health-related issues.
- The effects of hazardous waste are immediate and can cause massive contamination, especially if they get in contact with agricultural lands or even worse in contact with water bodies, which due to free flow may have a direct impact on biodiversity (flora and fauna) and indirect pollution of other habitats in the downstream (water bodies or ground surface).
- Direct discharge into the environment would lead to direct impacts on agricultural lands, contamination of groundwater resources and contamination of surface waters.
- Potential impact from Wastewater: Temporary impacts on the terrestrial and aquatic biodiversity, ground and surface waters, soil quality, and the health of workers and local population.

Management and Mitigation

- Consultant has recommended mitigation measures to be implemented to prevent, mitigate the impact as much as possible based on the best available procedures and standards to be meet required.
- EIB ESS1, ESS8, ESS 9 /EBRD PR3 requires the strategy concerning the waste generated during preconstruction and construction activities to include Avoid or minimize the waste generation; Reuse, recycle or recover or reuse waste as a source of energy; and Treat and dispose of waste in an environmentally sound manner. The EIB aligns with European Union environmental directives and guidelines, which often include specific regulations and standards for waste management practices, waste treatment technologies, recycling targets, and landfill regulations. EIB also considers Good International Industry Practices related to waste management when assessing projects, ensuring that projects adhere to recognized standards and best practices in waste management.
- Segregation, reuse and, where feasible, recycling of wastes by registered operator; construction contractor must follow the 3R policy to manage the solid wastes.
- The disposal and recycling of waste shall be made in close collaboration with the local government authorities (i.e., municipalities) and licensed waste recycling companies.

4.9 Water resources

Mainly all the Railway route is located in Shkumbini River Basin. And only a small part of Railway passes along Ohri Lake.

The territory that includes the Rrogozhinë-Elbasan-Pogradec railway according to geographical division of Albania is part of the West Central Plain of Albania and more specifically Elbasan field. The Elbasan field is situated in the middle part of Shkumbini River.

For the most part, the region that the railway goes through is made of fields and hills (it also goes through valleys of the hilly region which go up to 500-600m above sea level) between Krraba hills in the north and Sulova hills in the south direction. Elbasan field extended up to Labinot-Fush area. The total length of Elbasan field from Paper up to Labinot-Fush area is 20 km, meanwhile the width goes up to 5 - 7 km.

Along the railway Rrogozhinë-Durrës, there are about 474 intersections from small streams or canals and 23 intersections when the biggest rivers are Shkumbini (Murash), Rapuni, Bushtrica and Lingajca.

There are around 77 intersections where railway crosses streams with a catchment area greater than 1 km2. These streams due to their mountainous nature during the rainfall storms bring very rapidly the flows causing like this the flash flood which can be dangerous to hydraulic structures. These streams bring alluvions also thy cause erosion.

Along the railway alignment there are irrigation or drainage channels which intersect the railway or go parallel with it.

According to the Water Framework Directive's limit value for nitrite content, the waters of the Shkumbin are classified as moderate quality.

Pollution in Lake waters: The presence of nutrients (phosphorus and nitrogen) in stream waters, particularly following pollution from the nearby fish breeding facility near Volorek and untreated domestic wastewater (still outside the treatment collection system), promotes the proliferation of algae and aquatic plants. This, in turn, accelerates the process of eutrophication in the lake. During summer, these algae and aquatic plants contribute to the deterioration of water quality in terms of turbidity, colour, taste, and odour. Additionally, their continuous growth affects the dissolved oxygen content in the water. Moreover, dead algae accumulate at the lake bottom, leading to the expansion of the sediment layer.

Impacts and Mitigations

Construction activities could affect natural irrigation and drainage patterns in the project footprint area. Excavation works for the foundations opening, hard structures, levelling and reshaping of slopes and deepening of drainage channels in the project sites could modify, deteriorate, damage and/or cause blockages in the irrigation and drainage system. The potential impacts on the groundwater associated with different preconstruction and construction activities as demolition of existing structures, bridges and culverts, construction of substructure, service roads, stations, drainage system, protection works against erosion, fencing, underpasses).

- Removing the existing waste /debris, minerals.
- Demolishing of existing structure close to water bodies.
- Earthworks in the project area may increase the erosion, especially during rainfall events, which may increase the suspended sediment concentrations and pollute water resources.
- Disruption of the irrigation and drainage channels due to earthworks.
- Degradation of surface water as a result of accidental leaks/spills or siltation due to earthworks.
- Liquid effluents will also arise from washing of equipment.
- Not good waste storage management, material storage may lead to impact surface water from run-off.

Mitigation

Implementation of good construction practice for the reduction of potential impacts of discharges into the soil and the water bodies, during the demolition of the existing bridges and culverts and construction of the proposed railway line components is required. They include mitigation measures related to the protection from erosion and sedimentation, from wastewater, and solid and hazardous waste, including:

- The irrigation and drainage pattern/network close to project site shall not be altered but kept disciplined and functional to the maximum extent possible with the natural/ existing water

flowing, channel depth and slope inclination to prevent blockages and/or flooding in surrounding lands.

- Regular maintenance of all machinery to prevent engine oil and fuel leaks.
- Provision of equipment for the evacuation of leakages.
- Keep vehicles and machinery as far as practicable from watercourse bodies.
- Work camps to be located at the appropriate distance from surface waters.
- Is recommended work camps to be established within the existing Railway Stations, where there is free space to be updated as camp sites and has still available the needed infrastructure (electricity, water supply & sewerage) to avoid disturbing inhabited areas, water resources, and areas of high biodiversity values. The existing location of the train Stations are distanced of potential areas affected by flooding.
- Avoid the pollution of water bodies from waste generated from constructions works and human activity of the workers involved in the project.
- Project has taken into consideration rehabilitation of existing local roads' network to avoid opening of any new access road. Despite of other benefits, this also contributes on avoiding of erosion and run-off sediments to water bodies (Shkumbini river, Ohri Lake and their main streams contributors).
- Stockpiling out of the construction sites will be prohibited and areas close to water bodies will be avoided.
- Wherever possible, minimize work on soft ground in wet weather.
- Avoid wastewater discharge directly to surface waters (rivers and stream) or ground waters (permeable cover layers).
- Avoid wastewater discharge on the ground within the rivers and streambeds during the construction of bridges and culverts.
- During construction activity, the appointed Contractor shall develop an Irrigation and Drainage Preservation Procedure within the CEMP (Contract Environmental Management Plan). Procedure should clearly define mitigation and management measures for temporal diversion of the channels when necessary or when construction works are being implemented and especially for works performed in water bodies (bridges, culverts);
- During construction activity, the appointed Contractor Develop an Erosion and Sediment Control Procedure within the CEMP to define measures that prevent and/or reduce impacts and control the risk of erosion and sedimentation impacts on existing water bodies in the project area. This measure could include potential silt fencing in specific working locations, changes or improvements in the project design, erosion protection interventions, reshaping of slopes, hydro-seeding or planting of vegetation, etc.
- Operation phase: implementing and monitoring very good system of signalization.

5 Summary of Social Benefits Potential Adverse Impacts, Mitigation and Management Measures

5.1 Community investments to be made by the Project

The community will benefit from the construction of the project infrastructure including side roads, improvement of drainage system, underpasses and overpasses to ensure the safety of community, the noise barriers in the sensitive areas, the fencing of the entire corridor of the railway line.

The project itself will enhance the living conditions of the communities affected directly or indirectly by the project development. The main aspects of ESIA in this aspect are:

- Local Context: Key findings from the ESIA process, including the assessment of local communication and decision-making processes, key challenges and opportunities posed by the local context.
- Engagement and Planning: The stakeholder engagement process should develop a preliminary ranking of local priorities regarding investment needs and requests. These investments also serve as compensation for local impacts.

5.2 Contractor management, including the siting and management of worker camps

During the site preparation period: The workforce required for site security, manual labour, civil works, transportation of goods and other similar services will most likely be drawn from the local labour pool.

During the construction: All Contractors as described in Contractor Management Plan will follow all Health and Safety measures and implement a confidential grievance mechanism for making anonymous reports of incidents of sexual harassment in the workplace.

The contractor will develop a Waste Management Plan (WMP) in compliance with Albanian legislation, IFI Requirements and GIIP (Good international industry practice) that will include arrangements for the disposal of hazardous and non-hazardous waste through licensed waste disposal subcontractors/ companies.

The contractor should have documented agreements with utility companies and local authorities before construction.

The EPC Contractor shall continuously monitor and keep records of all construction activities occurring along the project and prepare regular reports on the performance of HSES components. The ESMS that will be developed for the project will define the monitoring and reporting requirements.

Decommissioning and Closure:

- Demolition works: The contractor will be required to clear from the site all debris, material remnants, and any other related wastes generated from the construction activities.
- Site restoration: Once all the wastes resulting from demolition and dismantling works are removed from the site, the site will be restored through replenishment of the topsoil, and landscaping according to the approved architectural drawings.

5.3 Cultural heritage

Within the whole project area, there are several known and recorded historical and cultural heritage

sites or monuments. Since in this phase of the project, the Consultant has identified all the known cultural heritage sites/objects within the Project area referring existing documents / web/ relevant sources. Detail investigation on cultural heritage will be developed during detail design phase to identify all archaeological sites/monuments possibly impacted by the project footprint.

According to EIB ESS 10/EBRD PR8 (Cultural Heritage), "the client will carry out meaningful consultation and information provision in respect of the project with all key stakeholders with the view of:

- identifying cultural heritage likely to be affected.
- understanding the significance of cultural heritage to stakeholders & local communities.
- assessing the impacts and risks.
- applying mitigation hierarchy.
- identifying opportunities for potential community benefit.

According to Law 17/2018 "On the cultural heritage and Museums", before starting the construction works, the develop shall obtain relevant approval from the Institutions (Archaeological Survey Agency (ASA).

Damage to cultural heritage from earthworks for the construction of the railway line, stations, service roads, and level crossings; circulation of heavy trucks over the known and not yet discovered cultural objects/sites, etc. The adverse impact on these objects/sites would be high, irreversible, permanent, and of regional to national importance.

The wide Project's area includes a high number of historical and archaeological sites. However, the number of cultural monuments and sites close to the railway line is very restrained. The closest cultural heritage objects/sites to the railway line are as follows:

- Peqin Castle 300 m away from the RL axis.
- Vidhi Tabakut 270 m away from the RL axis (Peqin).
- Elbasan archaeological site about 800 m away from the RL.
- Mengli Castle 250 m away from the RL.
- Haxhi Beqari Bridge 67 m away from RL.
- The ruins of the ancient bridge 118 m from the RL
- The bridge of Kamara, 300 m away from the RL.

IMPACTS AND MITIGATION

It is not expected any negative impact on cultural heritage during the operation phase. It is expected that during operation phase to have positive impacts due to increasing possibilities of the people to visit the cultural heritage sites/ monuments as:

- Archaeological heritage area: 8,500-year-old Palafitti, Buceze village in Lin (Pogradec, Lot2).
- There are several cultural monuments/bridges/ near the RL footprint (as Haxhi Beqari bridge in Miraka) but not only.
- Important historical areas: the area of Domosdova (Librazhd) Lot 1.

Suggested mitigation measures:

- Identify in detail, by an overview of the existing cultural heritage and archaeological sites near the railway line potentially being impacted from the project, during detail phase or before starting construction activity by involving specialised cultural heritage, archaeological expert.
- Archaeological survey is also requesting even as per EBRD PR 8 standards, and the Albanian Law 17/2018 require the application of the "chance find procedure".
- All contractual personnel will be trained to stop all activities if any valuable historical or pre-historical items are found. If this happens, construction will not begin again until authorized by the competent public institution for the protection of cultural heritage.

5.4 Disruption and public health and safety during construction

Project activities, equipment and infrastructure related to the rehabilitation of the railway line may increase the potential for exposure of project-affected community, workers and project users to health, safety and security risks including those associated with mobilization, construction, commissioning, operation, maintenance, and the transport of goods and services.

IMPACTS AND MITIGATIONS

Impacts on surrounding communities will mainly have to do with the risk of accidents with vehicles and people due to transport and traffic along the road. The potential impacts on community health, safety and security deriving from the above actions are associated with the following impact factors:

- Emission of dust and particulate matter;
- Emission of noise and vibrations;
- Increased risk of traffic hazards and incidents associated with the transport of materials using local roads;
- Closure of existing unauthorized level crossing and the need to walk/drive a longer distance to pass on the other side of the railway line;
- Influx of workers and increased incidence of communicable diseases;
- Risks associated with the presence of personnel on-site (within the project area) and at offsite operations and activities (within the community);
- Risk of unauthorized access to the site.

Specific mitigation measures will be implemented also, in this case, to reduce risks to the extent possible. For the mitigation of impacts on the community health, safety and security component all measures indicated for the air quality, noise and vibration and transportation, traffic, and security components have to be applied. Potential impacts on workers' health and security can be managed through specific Management Plans, to reduce risks to the extent possible. Safety and security measures will have to be applied by all workers, both Contractors and Subcontractors.

In line with the European guidelines and Health and Safety suggestions, the Project will follow the national Albanian safety procedures, The safety measures will be acknowledged by staff and any visitors prior to entering the working site and interacting with local communities.

5.5 Employment and contracting

The potential impacts on employment deriving from the above actions are associated with the demand for the workforce. The project aims to rely on local contractors that will employ workers

mainly from local communities. There are no predictions at this moment of the number of employees needed during the construction period. At a local level, employment opportunities will mainly be for semi-skilled and unskilled workers, but the real percentage will be confirmed when subcontractors are contracted. In line with Project standards and best international practice, the Project shall develop an Employment Policy to prioritize local skills and when not available, national or foreign ones. However, it is expected that there will be some opportunities for on-the-job training and learning for the workforce in this project. Any works and service contracts that will be awarded to local companies will contribute to the capacity enhancement and reputational benefits from working for this international project to the highest safety and performance standards.

Construction activities may create employment-related expectations among the local population, which are unrealistic. If this is not managed appropriately, it could lead to worsened relationships between the Project and the local population once these expectations do not materialise. In addition, the following enhancement measures will be implemented to increase Project benefits on the economy and employment component:

- Contractors will be contractually required to maximise the use of the local workforce in the Project;
- Prioritize employment of members of vulnerable groups and individuals;
- In order to increase the project's Local Contents, the Company will aim to procure goods, services and materials from local businesses to the extent possible;
- Ensure priority of women-owned businesses during the procurement process;
- The Project will provide information on procurement, tendering, and contracting processes with a transparent and clear approach, to ensure that equal access to opportunities is guaranteed;
- Ensure the Project's "Code of Conduct" is enforced also in the supply chain, so all contractors, subcontractors and suppliers shall comply with it.
- Local authorities and local communities will be informed and consulted on impacts due to project activities and planned mitigation measures during the pre-construction meetings and throughout the Project life cycle as planned in the Stakeholder Engagement Plan.

In order to increase women's employment opportunities, the following measures should be taken by the Project:

- Provide equal training for men and women;
- Provide on-the-job training during the implementation phase, also through Contractor/s and Sub-Contractors;
- Establish training and re-training programs that specifically target women, to increase their opportunities;
- Define the number of persons to be interviewed for a new position which needs to be women;
- Clearly indicate that the position opportunity is for both men and women;
- Provide a women-friendly working environment.

5.6 Impacts on existing infrastructure and public services

Impacts related to accidents and injuries, potential spills, traffic accidents, noise, and potential fire during construction were assessed in the technical annexes for those subjects. A summary of the

impact results and the health implications are provided to have a summary of all health impacts in this section.

Construction site accidents and injury from unsafe conditions at road and construction sites. Inadequate H&S standards or implementation; open ditches; movement of heavy machinery; inadequate signage and unsecured sites (where community members could access).

Health effects from potential spill from spill Traffic accident; corrosion or inadequate storage containers on transport vehicle.

Traffic accidents from vehicle movements transporting personnel and heavy goods vehicles transporting materials.

Potential fire: None (the social receptors are more than 1 km from the site).

Mitigation Strategy and Measures

In order to reduce project risk from the key potential unplanned events, the standard mitigation hierarchy should be applied. Unlike impacts from planned activities, mitigation of unplanned events should consider both prevent preventative actions (that reduce the likelihood of the cause of the potential impact) and post-event mitigation that reduces the magnitude of the consequence.

These measures will include, where possible/appropriate:

- reducing Project traffic volume;
- routing traffic to avoid sensitive receptors;
- routing traffic to avoid traffic accident 'hot spots,' as identified by the transportation database maintained by the Albanian Institute of Transport;
- restriction of movements during times where there is more likely to be conflict with other users (e.g., beginning and end of school day or prayer time);
- speed restrictions near sensitive receptors and accident 'hot spots';
- installation of safe crossing areas;
- driver awareness activities about sensitive areas and accident 'hot spots'; and
- awareness raising activities in schools and other sensitive areas.
- Roads will be left clear of obstacles during road construction activities, Road construction equipment will be secured at night in a locked storage area to prevent community members from accessing this equipment;
- In the event of a traffic accident between a Project vehicle (including contractor vehicles) and a community member(s), the Project will contact local emergency services to provide medical support to affected community members. Following any such accidents and of 'near misses', the Project will conduct a root cause analysis to identify causes and corrective actions that can be implemented.
- The Project will also include 24 hours site security to restrict access to community members. Security will serve to prevent theft and damage of equipment on-site and to avoid potential injury to community members;
- Use signage to clearly marked construction sites;
- Boundaries and barricades to keep people out of dangerous areas;

- Community Safety Awareness Raising - Training/education/awareness to community members well in advance of construction and on an on-going basis to inform local communities about Project construction and the risks of entering construction sites and acceptable alternatives.

5.7 Labour issues and standards

Regarding the labour issues and standards, the project will follow the measures required by EIB ESS2/EBRD PR 2 and will be implemented during the pre-construction and construction phase:

- Respect and protect the fundamental principles and rights of workers;
- Promote a decent work agenda, including fair treatment, non-discrimination and equal opportunities for workers;
- Establish, maintain and improve a sound worker-management relationship;
- Promote compliance with any collective agreements to which the client is a party, national labour and employment laws;
- Protect and promote the safety and health of workers, especially by promoting safe and healthy working conditions;
- Prevent the use of forced labour and child labour (as defined by the ILO) as it relates to project activities.

To ensure the above requirement, the project will develop the measures that will be applied to employees and to non-employee workers. The company will monitor the employee standards of its contractors throughout the lifetime of the Project through regular labour and OHS audits.

In addition, the grievance mechanism will be implemented and open to employees and non-employee workers and ensure that all workers directly and indirectly employed are informed on how to submit grievances

5.8 Land acquisition and resettlement (cross-reference any resettlement report that is being developed)

PR5 EBRD, and EIB's Standard 6 Involuntary Resettlement, address impacts of Project-related land acquisition, including restrictions on land use and access to assets and natural resources, which may cause physical displacement (relocation, loss of land or shelter), and/ or economic displacement (loss of land, assets or restrictions on land use, assets and natural resources leading to loss of income sources or other means of livelihood).

Resettlement is considered involuntary when affected persons or affected communities do not have the right to refuse land acquisition or restrictions on land use, other assets and natural resources, even if compulsory acquisition is used only as a last resort after a negotiated process.

Mitigation Measures

- Land for rerouting in Papër will be expropriated based on the Albanian legislation and international standard, EIB STANDARD 6 — INVOLUNTARY RESETTLEMENT, and EBRD PR5.
- EBRD's Environmental and Social Policy, the involuntary resettlement issues are covered by PR5, the main points of which are the following:
    - Avoid or, when unavoidable, minimize, involuntary resettlement by exploring alternative project designs;

  - Mitigate adverse social and economic impacts from the land acquisition or restrictions on affected persons' use of and access to assets and land by (i) providing compensation for loss of assets at replacement cost; and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation and the informed participation of those affected;
  - Restore or, where possible, improve the livelihoods and standards of living of displaced persons to pre-displacement levels;
  - Improve living conditions among physically displaced persons through the provision of adequate housing, including the security of tenure at resettlement sites.
  - Damage compensation prices for various crops will be determined based on market prices, the references of the regional agricultural directorates, specifics of each area, and negotiations with owners.
- Project will implement a community Complaints Register.
- EIB STANDARD 6 — INVOLUNTARY RESETTLEMENT Promoter's responsibility include:
  - Avoid or, when unavoidable, minimise involuntary resettlement by exploring alternative projects, project designs and locations;
  - Avoid any forced evictions;
  - Improve displaced persons' livelihoods or living standards, or at least restore them to pre-project levels;
  - Improve living conditions among displaced poor and other vulnerable groups to at least minimum living standards by promoting adequate housing and security of tenure;
  - Provide timely compensation for loss of assets at the full replacement cost;
  - Ensure the appropriate disclosure of information, consultation and informed participation;
  - Provide access to grievance mechanisms;
  - Consider enabling displaced persons to benefit directly from the project.

Site Abandonment

- All equipment and structures will be removed.
- Site reclamation includes backfilling drainage ditches and holes to ensure the site is level and safe for future operations, ensuring no wastes remain on site, and spreading salvaged subsoil and topsoil back over the site, which will be seeded with a suitable seed mix.

5.9 Livelihoods impacts

The assessment of potential impacts on people and communities considered how the Project could affect workers, communities, land use patterns and livelihood sources during construction and operation. Based on the information gathered during social field surveys, 46% of respondents in the project area stated that their source of income is related to jobs in the private sector. The following income-generating sources are retirement payment (11%), owning their own business (10%) and public sector jobs.

The project area is dominated by urban development comprised of residential houses with gardens,

small local businesses, and some agricultural activities (trees) not significant for the incomes of local families.

IMPACTS AND MITIGATIONS

During the construction phase, some of the local land plots and residential properties may be difficult to access by the owners/users. This impact may occur only occasionally, under certain circumstances, but it will be managed to prevent impacts and preserve good community relations. The majority of the land is required for the upgrade of local road infrastructure while a number of residential properties will be affected by the railway new alignment from KP 36+200 to KP 36+550. Many of the residential properties will have their gardens affected only.

Fair compensation will be provided for the loss of residential structure for all owners, leasers and informal settlers. Land compensation will be provided for those equipped with land ownership titles. Compensation for the loss of auxiliary assets and livelihoods including crops and trees will be provided.

Businesses that will be affected by land acquisition will be compensated for loss of profits and employees leading to economic displacement. Adequate assessment and fair compensation will be provided.

In any case, the Land Acquisition and Restoration Framework (LARF) is being developed and the respective Resettlement Plan (RP) will also be designed to ensure all affected persons are compensated prior to the beginning of the construction phase. Compensation, as a mitigation tool, will be in line with national legislation and EBRD PR5 standards.

During the operation phase, there will be no need for additional land acquisition as all operation and maintenance activities will be carried out within the railway right of way (railway belt). However, an easement may be needed for access during the maintenance of the utility network. To date, there is not enough project information to understand such an impact. However, any compensation will be provided for land subject to the easement, based on the indications of LARF by the Albanian Railways Operator.

5.10 Local traffic and access impacts

The potential impacts on transportation and traffic deriving from the above actions are associated with the increase of traffic, increased risk of road accidents, potential delays for access to jobs, health care facilities, schools, etc. due to traffic congestions and closure of level crossings due to construction activities along the railway alignment, interruption/limitation of infrastructures/services, vibration and traffic increase in areas near the access roads, and deterioration of local roads due to increased project-induced traffic.

THE MITIGATION MEASURES

- The components of the railway project will be transported from Port of Durrës, situated 34 km from the construction site, by trucks through the National Highway then directed to the site through secondary roads.
- Widening of some segments of the road and upgrading and improvement of some sections of the road are required as per national requirements (Albanian Road Code law). This will lead to an impact on land take for the local property/land owners.
- Where roads are closed, local solutions (including diversions if necessary) are to be put in place. However, there will be no other new access roads required for the construction phase as the

project will use existing infrastructure.

Conclusions: At the end of construction activities, improvements to existing roads will leave a positive legacy on the local road conditions, resulting in benefits for the local communities. No project actions will generate impact factors on the transportation and traffic component during the operation phase, therefore the impact assessment is not performed in this phase. Improvements to the side roads performed during the construction phase can be considered a positive legacy on the local road conditions, resulting in benefits for the local communities. Additionally, the operation of the train service (including the provision of train stops/stations) will bring a positive impact on local road infrastructure by reducing traffic.

5.11 Occupational and public health and safety issues

Baseline information: Health and safety issues are connected with both workers employed in the construction of the railway, but also with the communities situated in the proximity of the railway line. The areas where the project crosses are well connected to the health services, although the quality of this service is better within the hospitals or in health centres in towns.

Impacts and Mitigation

Design and construction: The sources of impacts are connected with the operation of machinery, handling of concrete pieces and rails, and working in confined spaces for the workers. While for the communities is related to the increase in traffic, emission of dust, emission of noise and vibration and the influx of workers in the area.

During this phase, mitigation measures have been taken into consideration for avoiding and minimizing the above-indicated impacts as follows:

- Implement a Traffic Management Plan;
- Implement an Occupations Health and Safety Plan;
- Plan transportation routes in consultation with Municipalities, road departments and Police;
- Plan and implement awareness campaigns on risks related to the traffic increase, especially in the schools present in the area.

In the operation phase, the impacts are related to the railway accidents and incidents and the overall operation of the railway line, which are explained below.

In addition, during the operational phase, the electrification of trains will put more pressure on the electric power supply and diversions of utilities on local businesses and communities. In order to minimize negative impacts, the following measures will be taken before and during operation:

- Adequate electrification of the railway to be done in order to avoid a lack of electricity in the area.
- Adequate strengthening of the local electrical grid to support the electrification of the railway and avoid any reduction in the availability of the communities/businesses to electricity in the area.

Maintenance activities of the trains/track or electrification system may potentially result in impacts such as on the occupational health and safety of the workers that will perform regular maintenance of the railway and public safety during the maintenance.

Conclusion: The adverse impacts associated with occupational health and safety may be evaluated as low probability and significance and local extent if the related national standards and legislation and

the best international practices are applied.

Occupational Noise and Vibration will be managed through the development of a construction Occupational Health and Safety Management Plan (OHSMP), which will ensure compliance of the Project with national and international standards/ guidelines (e.g., IFC General EHS Guideline) in relation to OHS noise and vibration.

The magnitude of the noise impact from the outdoor equipment will depend on the machinery, mechanization vehicles, transportation vehicles and tools intended to be used during construction works, and their noise emission levels. However, due to the close vicinity to the residential receptors nearer to the railway alignment, the impact on noise from construction will be high.

5.12 Project-induced population influx

The project development area is planned in existing route of the railway line, which passes in urban and rural areas. It is not expected that the area to be more populated.

Conclusion: No increase in population due to the development of the project is foreseen.

5.13 Socio-economic impacts; including vulnerable groups (taking into account gender specificities and needs)

The project will implement mitigation measures that will minimize the negative effects related to socioeconomic issues:

- Compensation to land owners and land users is provided prior to the commencement of works;
- Maximize employment opportunities from the areas crossed by the project;
- Provide employment opportunities for women-headed households and vulnerable groups;
- Maintain open access and crossing points to sensitive receptors like schools and health care centres;

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

- Significant regional positive impact because of the rail network connection;
- Promotion of public transport, including the attraction of car users to public transport;
- Access of disabled persons to stations has been considered and new building stations and the ones to be reconstructed foresee access and parking spaces for the disabled;
- Contribution to urban restructuring, shortening travel distances and improving cities' sustainability;
- Linking by rail the main economic nodes of the country; etc.

Conclusion: the implementation of the project will have a positive impact on the overall socio-economic environment that will be improved at a local, national, and regional level.

6 Communications

6.1 Contact details

Contact information for this project is provided below:

Albanian Railways

Mr Eriton Hasaj, Social and Communication Manager

Mob: +355 672221452 E-mail: ankesa-projekte@hekurudha.al ; web site: www.hekurudha.al

6.2 Process for addressing any issues arising (Grievance Mechanism)

The responsibility for implementing a grievance mechanism in accordance with Albanian Law and EIB's ESS 2 will pass to the Albanian Railways (HSH) for the construction and operation phases of the Project. The HSH will implement a grievance mechanism during construction and operation of the railway to ensure that it is responsive to any concerns or complaints, particularly from affected stakeholders and communities.

Any comments or concerns can be brought to the attention of the HSH verbally or in writing (by post or e-mail) or by filling in a grievance form (example include www.hekurudha.al d in Appendix 1). The grievance form will be made available on the HSH website (https://hsh.com.al/) alongside a description of the grievance mechanism.

Moreover, an independent grievance procedure for the land acquisition issues will pass to the MIE. Completed grievance forms can then be submitted to the HSH/MIE representative whose contact details are provided in Section 9.

All grievances will be:

- Acknowledged within 5 days, and
- Responded to in no later than 30 days.

Grievance information will be recorded in a grievance log by the Project Manager.

Appendix 1 – Sample of Grievance Form

Reference No:		**Date:**	
Full Name			
Contact Information **Please mark how you wish to be contacted (mail, telephone, e-mail).**	☐ **By Post: Please provide mailing address:** _____ _____ _____ ☐ **By Telephone:** _____ ☐ **By E-mail** _____		
Description of Incident or Grievance:	What happened? Where did it happen? Who did it happen to? What is the result of the problem?		
Date of Incident/Grievance	☐ **One-time incident/grievance (date_____)** ☐ **Happened more than once (how many times?_____)** ☐ **On-going (currently experiencing problem)**		
What would you like to see happen to resolve the problem?			
Signature: _____			
Albanian Railways **E-mail: ankesa-projekte@hekurudha.al ; web site: www.hekurudha.al**			