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# Non-Technical Summary Railway Corridor VIII - Eastern section

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Macedonian Railways:  
**Feasibility Study for Corridor VIII  
Eastern section and ESIA**

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Republic of Macedonia  
MINISTRY OF TRANSPORT AND COMMUNICATIONS



European Bank  
for Reconstruction and Development

# **Environmental and Social Impact Assessment**

## **Railway Corridor VIII - Eastern section**

### **NON-TECHNICAL SUMMARY**

**Prepared for: Macedonian Ministry for Transport and Communication**

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*February 2012*

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# 1 INTRODUCTION

The Macedonian Ministry of Transport and Communication (MoTC) intends to improve the Country's transport capacities by rehabilitating and constructing the Eastern Section of the Railway Corridor VIII between Kumanovo and Deve Bair, at the border with Bulgaria. Corridor VIII is an important multi-modal transport network comprising sea and river ports, airports, roads and railways running east-west; starting in the southern Italian ports of Bari and Brindisi before crossing through Albania, Macedonia and Bulgaria to the Black Sea ports of Varna and Burgas. Two parts of the Railway Corridor VIII through Macedonia need to be completed comprising the Western Section towards the Albanian border and the Eastern Section towards the Bulgarian border, which forms this Project. The Public Enterprise Macedonian Railways – Infrastructure (PERI) will operate the railway.

The Railway Corridor VIII - Eastern Section Project comprises 88.1 km of railway running across the North-Eastern region of Macedonia. The Project has been divided into the following 3 sections (**Error! Reference source not found.**):

- **Section 1: Kumanovo to Beljakovce (30.8 km):** the railway previously operated along this section until 1994 and rehabilitation of this section will be undertaken as part of this Project;
- **Section 2: Beljakovce to Kriva Palanka (33.9 km):** railway construction works in this section were previously undertaken and need completing along with construction of missing railway line and structures; and
- **Section 3: Kriva Palanka to Deve Bair, at the Bulgarian Border (23.4 km):** no previous railway development has been undertaken within this section (except for border tunnel works between 1940 and 1945) therefore construction of the railway line and structures is required along the entire route.

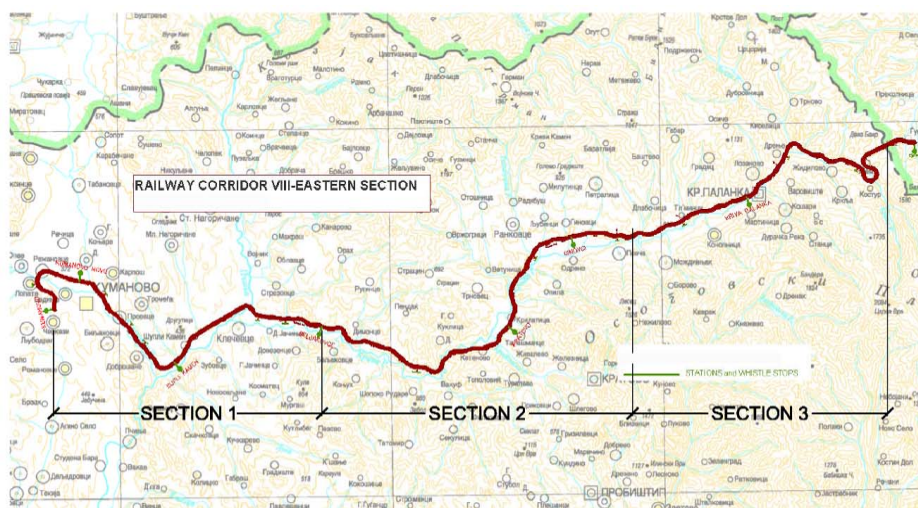


Figure 1-1 Sections of Project “Railway Corridor VIII – Eastern Section”

With funds from the European Bank for Reconstruction and Development (EBRD) the MoTC initialized the Railway Corridor VIII – Eastern Section Project with the preparation of the Feasibility Study and an associated Environmental and Social Impact Assessment (ESIA). The purpose of the ESIA is to identify and assess the potential positive and negative impacts that may arise from the Project on the physical and natural environment, socio-economic wellbeing and conditions of the population. The ESIA has been prepared in line with the national Macedonian Environmental Impact Assessment (EIA) requirements, relevant EU standards and with reference to EBRD and the European Investment Bank (EIB) requirements and other international applicable standards. This Non-Technical Summary (NTS) summarises the findings of the ESIA. Full project preparation documents, including the ESIA, are available on the MoTC website (<http://mtc.gov.mk>).

Given land acquisition is required for the Project and some has already occurred a Resettlement Compensation Framework (RCF) has been prepared under which entitlements for resettlement and livelihood restoration are defined. It has been determined that a Resettlement Action Plan (RAP) will be prepared for each section of the Project.

## 2 BACKGROUND

### 2.1 CORRIDOR VIII

Corridor VIII is a multi-modal transport system along the East-West axis comprising sea and river ports, airports, multi-modal ports, roads and railways, including a total extension of approximately 1270 km of railways and 960 km of roads. The main alignment of Corridor VIII runs from the southern Italian ports of Bari and Brindisi to the Albanian ports of Durres and Vlora, then through the cities of Tirana, Skopje, Sofia, Plovdiv, to the Bulgarian ports of Burgas and Varna (Black Sea). Corridor VIII will therefore connect the Italian Adriatic Transport Corridor, the Adriatic branch of Motorway of the Sea and the Mediterranean Transport Area to the Black Sea Pan-European Transport Areas; see *Figure 0-2*.

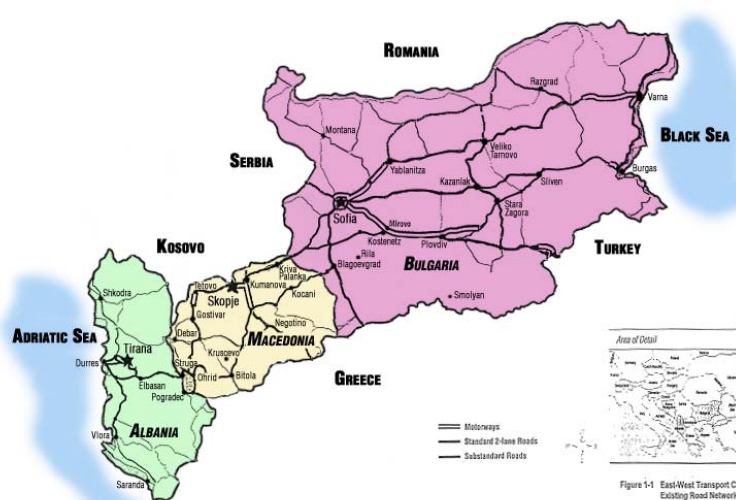


Figure 0-2 Route of Corridor VIII

Corridor VIII will bring economic development benefits to the sub-regions and municipalities along its route and provide better connection to ports on both the Adriatic and Black Seas, allowing better access to raw materials and markets. The Corridor will be part of a network of Pan-European Corridors (shown in *Figure 0-3*), connecting with Corridor X in Skopje, Corridor IV in Sofia and Corridor X in Gorna Oriahovica.



Figure 0-3 Pan European Corridors in the Region

With regards to Railway Corridor VIII, its construction is at various stages of development in the various countries, as shown in *Figure 0-4*:

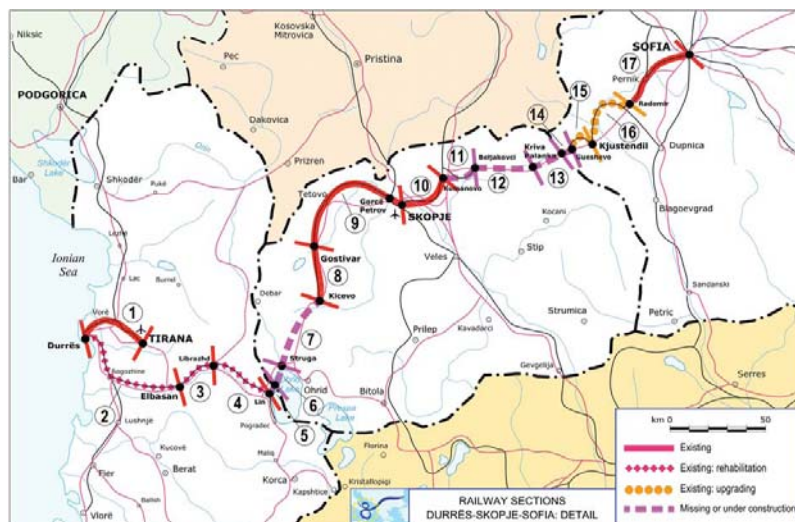


Figure 0-4 Status of Railway Corridor VIII

The Republic of Macedonia, within the National Strategy of Transport 2007-2017 ([http://mtc.gov.mk/new\\_site/en/storija.asp?id=1782](http://mtc.gov.mk/new_site/en/storija.asp?id=1782)) confirmed Corridor VIII as a high government priority for the Country.

## 2.2 RATIONALE FOR THE PROJECT

The rationale for the Project is to complete the railway link between Macedonia and Bulgaria, as part of the commitment of the Republic of Macedonia in the development of the Pan European Corridor VIII. It is anticipated that the Project will significantly influence socio-economic growth of the North-Eastern Region of Macedonia, Macedonia, and South Eastern Europe, bringing sustainable benefits to the population, businesses and the economies of these areas.

Specific objectives of the Project include:

- Reducing travel time between Skopje and Sofia by rail by approximately 1 hour against current road travel time;
- Reducing regional travel time between Kumanovo and Kriva Palanka by rail to approximately 35 minutes against current travel time of approximately 50 minutes by road;
- Shorten the Macedonia to Black Sea railway link by approximately 200 km;
- Shorten the Macedonia to Istanbul railway link by approximately 150 km; and
- Increasing freight capacity by being able to accommodate up to 10 daily freight trains per direction which is equivalent to 400 road trucks.

The expected benefits of the Project include:

- Provision of part of the transnational route connecting the Mediterranean/Adriatic Transport Area with the Black Sea Transport Area;
- Facilitation and boosting of trade exchanges between Bulgaria, Macedonia and Albania;
- Connection to the TRACECA Corridor<sup>1</sup>;
- Better connection of the regional catchment area of Corridor VIII to the main Southern Italian ports and this area;
- Provision of a direct railway route between Macedonia and Bulgaria; avoiding the need for transiting through Serbia and facilitating trade with Bulgaria;

<sup>1</sup> TRACECA is the acronym for Transport Corridor Europe-Caucasus-Asia



- Creation of an alternative railway access for Macedonia to ports in Bulgaria and Albania; and providing an alternative route for travel between Macedonia and Thessalonica;
- Improving accessibility of the North-Eastern Region to other Macedonian regions for both freight and passengers; and
- Improvement of passenger services by rail along the project section and to/from destinations such as Skopje, other regions in Macedonia and Bulgaria.

## 2.3 HISTORY OF THE PROJECT

The plans for the construction and operation of a railway line between Kumanovo to Bulgaria started in the XIXth century (1873-1888). Since then the development of this railway line has been relatively continuous except for interruptions due to wars and the political situation. After World War II, Yugoslavian Railways completed the works of the railway line from Kumanovo to Beljakovce, which was operational from 1956 until 1994. Between 1994 to 2004 design and construction works were undertaken by the Government for the rehabilitation of the section between Kumanovo and Beljakovce (see *Figure 0-5*) and the construction of the missing section between Beljakovce and the border tunnel at Deve Bair. The alignment of the railway line remained nearly the same as it had been designed 50 years earlier. These works, however, stopped in 2004 due to lack of funds. By that time, several bridges and tunnels had been partly constructed between Beljakovce along with approximately 5.5 km of railway track west of the town of Kriva Palanka.



Figure 0-5 Part of Rehabilitated Section Kumanovo - Beljakovce

## 2.4 CONSIDERATION OF ALTERNATIVES

Two alternatives have been considered during the development of the Project, named the “Reference” alignment and the “Alternative” alignment (see *Figure 0-6*, *Figure 0-7* and *Figure 0-8*). The “Reference” alignment corresponds to the railway corridor formerly proposed by Public Enterprise Macedonian Railways – Infrastructure (PERI). The “Alternative” alignment more or less follows the route of the planned Corridor VIII Kumanovo to Deve Bair motorway. *Figure 0-6*, *Figure 0-7* and *Figure 0-8* show the alignments of both the railway alternatives as well as that of the planned motorway.

For practical purposes and taking into account the routes historical background, the development of Railway Corridor VIII - Eastern Section Project has been divided into three sections:

- **Section 1: Kumanovo to Beljakovce:** this section requires rehabilitation in both alternatives;
- **Section 2: Beljakovce to Kriva Palanka:** In the “Reference” alignment around one third of all construction works have been completed therefore rehabilitation and construction is required for this section. In the “Alternative” alignment, this section is to be newly constructed; and
- **Section 3: Kriva Palanka to Deve Bair at the Bulgarian Border:** this section is to be newly constructed in both alternatives.

Both the Reference and Alternative alignments start 400 m north of the existing station in Kumanovo. A comparison of the technical characteristics between the “Reference” and “Alternative” alignments is given in **Error! Reference source not found.** below.

	Reference Alignment			Alternative Alignment		
	Section1	Section 2	Section 3	Section1	Section 2	Section 3
	Existing line Kumanovo - Beljakovce	Line under construction Beljakovce – km 65.1	Feasibility study of PERI	Existing line Kumanovo – Klecevo upgraded to 160 km/h	Motorway corridor Klecevo – km 59.6	Motorway corridor Km 59.6 – Bulgarian border
Length	30.8 km	33.9 km	23.4 km	25.7 km	34.6 km	19.9 km
	88.1 km			80.2 km		
Design speed	100 km/h	100 km/h	100 km/h	100/160 km/h	160 km/h	160 km/h
Minimum curve radius	500 m	500 m	500 m	700 m / 1100 m	1100 m	1100 m
Maximum gradient	15 o/oo	15 o/oo	24 o/oo	15 o/oo	24 o/oo	24 o/oo
Number of stations and halts	3 stations	2 stations	2 stations	2 stations	3 stations	2 stations
	6 halts	3 halts	3 halts	6 halts	1 halt	3 halts
	7 stations, 12 halts			7 stations, 10 halts		
Length of viaducts	200 m	3931 m	4410 m	250 m	5637 m	3453 m
	8341 m			9341 m		
Length of tunnels		3390 m	9036 m		7150 m	8735 m
	12426 m			15885 m		
Motorway crossings	1		5	1	3	3
	6 crossings			7 crossings		

Table 2-1 Comparison of technical characteristics of the Reference and Alternative Alignments

Both alternatives would operate with a single track. The first section between Kumanovo to Beljakovce will be operated initially using diesel traction. Following completion of development of Section 2 and 3 the railway line will be electrified. The capacity of the railway line would be 64 trains per day for the Reference alignment and 73 for the Alternative alignment. The transit time from Skopje to Deve Bair for the Reference alignment would be approximately 60 minutes and for the Alternative alignment 40 minutes.

At the end of both alignments there is a border tunnel with a total length of 2,350 m, of which 1,150 m would be within the territory of Macedonia and 1,200 m within the territory of Bulgaria. The construction works for the tunnel started in the 1940's but ceased before 1945 and these works have never been completed. Section 3 of this Project would finish at the border within the territory of Macedonia.

In order to evaluate the two potential project alignments a multi-criteria analysis was applied for each section of the railway alignment to help identify the preferred option for each of the sections. The Alternative and Reference alignments were compared considering technical, traffic, environmental, social, economic and financial criteria. Specifically, the multi-criteria analysis showed that the Reference alignment was preferable from the point of view of environmental and social impacts for the first two first sections, from Kumanovo to Kriva Palanka, as a significant part of the construction work has previously been undertaken for this part of the railway line. The Alternative alignment for Section 3 is significantly shorter than for the Reference alignment and, thus the Alternative alignment from the environmental and social point of view is preferable. However, other criteria, such as the engineering risk, the indicative construction costs, the operational expenses and the public preference, led to the recommendation of the Reference alignment also for Section 3. Analysis of Preliminary Social Impact of Alternatives and Summary of multi-criteria analysis of alternatives are presented in Chapter 3 Project Description & Consideration of Alternatives.

The Government of the Republic of Macedonia, with decision number 51-3556/1 of 19.07.2011 followed the recommendation arising from the multi-criteria analysis, officially selecting the Reference alignment, which has been assessed within the ESIA.





Figure 0-6 Layout of Reference Alignment and Alternative Alignment for Section 1



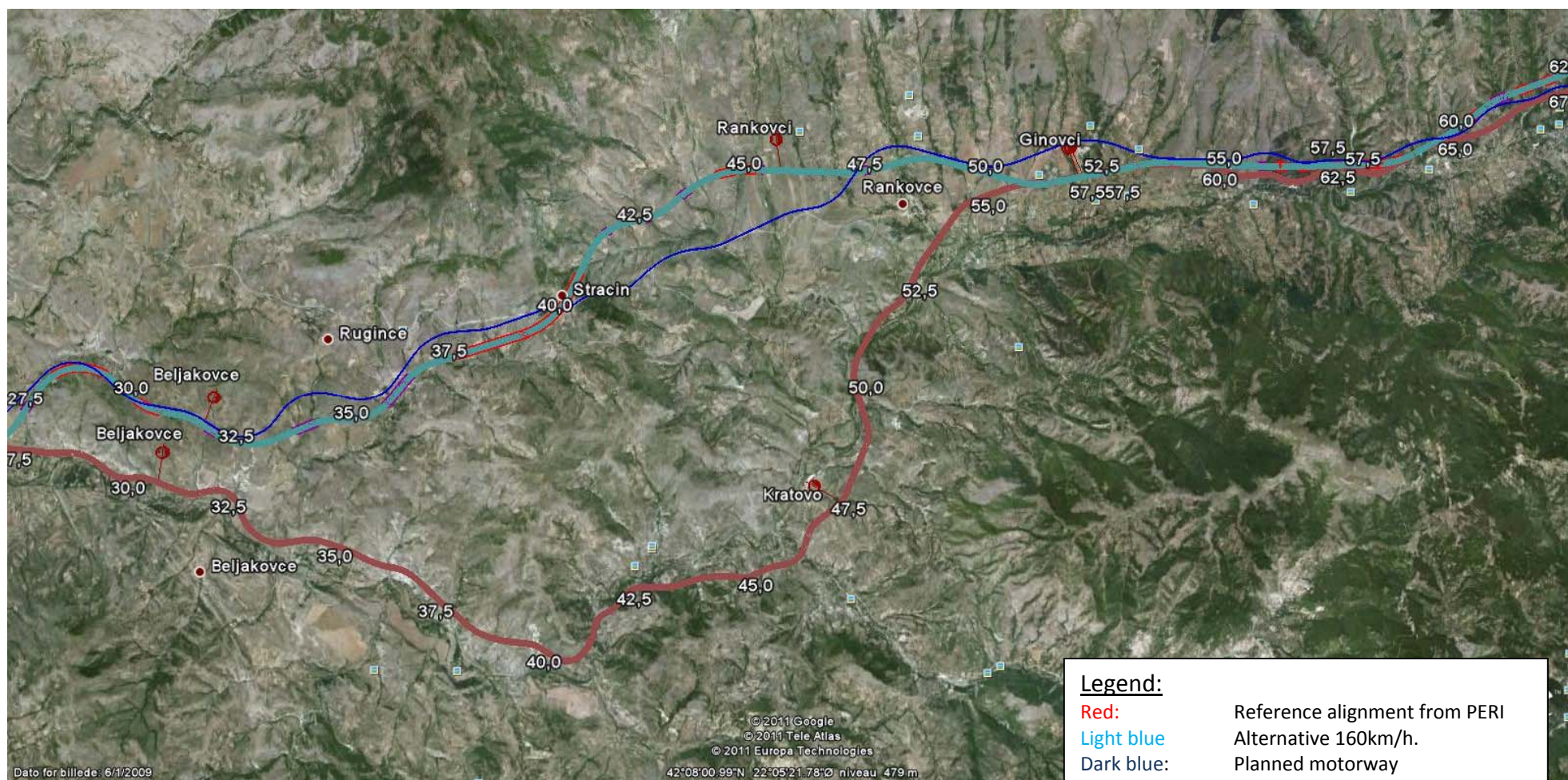


Figure 0-7 Layout of Reference Alignment and Alternative Alignment for Section 2



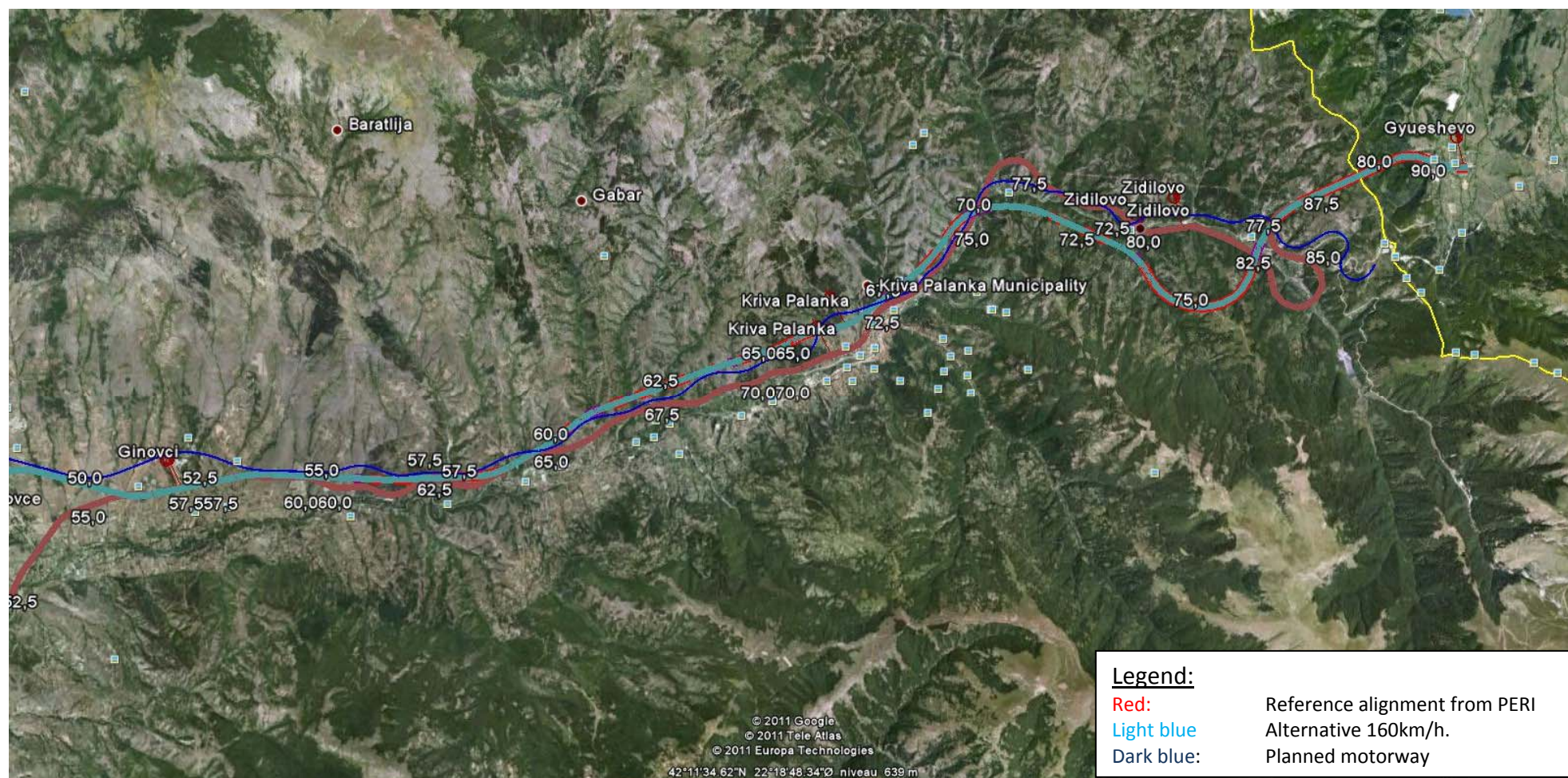


Figure 0-8 Layout of Reference Alignment and Alternative Alignment for Section 3



### 3 SUMMARY OF LEGAL AND POLICY FRAMEWORK

#### 3.1 NATIONAL ENVIRONMENTAL AND SOCIAL LEGISLATION

The environmental legal framework within Macedonia contains overarching laws covering such areas as Environmental Protection, Water, Waste, Nature Protection, Noise Protection, Air Quality and Cultural Heritage, which transpose the main obligations of the environmental EU Directives. The key legislation for protection of the environment, where the EIA procedure has been prescribed, is the Law on Environment (Official Gazette (O.G.) Nos. 53/05, 81/05, 24/07, 159/08, 83/2009, 124/2010 and 51/2011). The requirements of the EU EIA Directive 85/337/EEC (amended by Directive 97/11/EC) have been transposed within the Law on Environment.

With regards to social aspects, there are national laws covering Health Protection, Occupational Health & Safety, Labour Relations, Working Conditions, Employment, Wages, Social Protection, Child Protection and Equal Opportunities. Macedonia has ratified many International Labour Organisation Conventions and a number of international environmental and social treaties and conventions, including:

- Aarhus Convention: Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters: UNECE (Aarhus, Denmark 1998);
- Espoo Convention: EIA in a Transboundary Context: UNECE: (Espoo, Finland 1991);
- Convention on Biological Diversity (United Nations, 1992);
- Bonn Convention: Conservation of Migratory Species of Wild Animals: (Bonn, 1979);
- Bern Convention: Conservation of European Wildlife and Natural Habitats: (Bern, 1972); and
- UNESCO World Heritage Convention (November 1972).

#### 3.2 NATURE PROTECTION

##### 3.2.1 NATURE PROTECTION LEGAL FRAMEWORK

The legal basis for nature protection in the Republic of Macedonia is contained within the Constitution, the Law on Nature Protection (O.G. Nos. 67/04, 14/06 and 84/07), the Law on Environment<sup>2</sup>, international agreements signed or ratified by the Country and laws regulating the use of certain natural resources. The majority of the obligations within EU legislation on nature conservation has been transposed into the Law on Nature Protection, which also contains obligations from relevant ratified international agreements. Full implementation of the Law is still to be achieved with the adoption of several by-laws.

The Law on Nature Protection regulates the protection of nature through protection of biological and landscape diversity and protection of natural heritage within and outside protected areas. The development of the national ecological network in the Republic of Macedonia, as part of the Pan-European Ecological Network (PEEN) is an obligation of the Country as one of the signatory countries of the Pan-European Biological and Landscape Diversity Strategy (PEBLDS, 1996). The goal of this Strategy and PEEN is to enable efficient implementation of the United Nations Convention on Biological Diversity at a European level. In addition to Law in Nature Protection, the establishment of the national ecological network has been prescribed in several national strategic documents, such as the Spatial Plan (2004), the National Biodiversity Strategy and Action Plan (2004) and the Second National Environmental Action Plan (2006).

With regards to the transposition of the two directives that comprise the cornerstones of EU nature protection policy, the Habitats Directive (92/43/EEC) and the Wild Birds Directive (79/409/EEC), there are still requirements pending full transposition. In this regard Macedonian legislation has not yet fully

<sup>2</sup> The Law on Environment (Official Gazette No. 53/05, 81/05, 24/07, 159/08) is the framework law which is the pillar of environmental and nature protection in FYR Macedonia. Specific environmental aspects tackled by this Law are regulated by several separate laws (Law on Nature Protection, Law on Ambient Air Quality, Law on Waters, etc.)

incorporated the obligations arising from of Article 6 of the Habitats Directive regarding the assessment of plans and projects significantly affecting Natura 2000 sites. Nor do similar requirements exist for the Emerald network sites (*see below*) or ecological corridors. The Law on Nature Conservation does though state in Article 53(4) that *'The ecological network, by its characteristics, principles, measures and scope of protection shall be fully compatible with the Coherent European Ecological Network "NATURA 2000"'*. Therefore following discussions with the Ministry of Environment & Physical Planning (MOEPP) in order to fulfill requirements of Article 53(4) an appropriate assessment under Article 6 of the Habitats Directive should be undertaken if appropriate. In order to promote the system of protected areas, the Republic of Macedonia accepted the approach of ecological networks. In 2002, the development of the **EMERALD network** was initiated comprising of areas of special interest for conservation (ASCI).

### 3.2.2 EBRD & EIB BIODIVERSITY PROTECTION & CONSERVATION POLICY

The protection and conservation of biodiversity in the context of projects in which they invest is widely recognized in EBRD's and EIB's environmental and social sustainability policies. Both EBRD and EIB support a precautionary approach to the conservation and sustainable use of biodiversity through the implementation of applicable international laws and conventions and relevant EU Directives. Detailed guidelines addressing this approach which this Project must meet the requirements of are provided in:

- Performance Requirement 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources: EBRD Environmental and Social Policy (2008); and
- Part C6 and Annex 7 of EIB's Environmental and Social Practices Handbook.

### 3.3 ESIA & PERMITTING REQUIREMENTS

The EIA procedure is regulated by the Law on Environment. The Project comprises of the construction and rehabilitation of a railway line which falls under Annex I of the Decree on Determining Projects for which the EIA procedure should be carried out (O.G. No. 74/05) under sub-category 7(a): Construction of lines for long-distance railway traffic and of airports with a basic runway length of 2,100 m or more. For all projects under this category, the full EIA procedure should be carried out. The Ministry of Environment and Physical Planning (MoEPP) issued the EIA Scoping Decision 17<sup>th</sup> June 2011. The Project is also a Category I Construction Project according the Law on Construction (O.G. No. 130/2009<sup>3</sup>). The national responsible body for issuing the construction permit for this category of projects is the Ministry of Transport and Communication (MoTC).

According to the EBRD Environmental and Social Policy (2008)<sup>4</sup> the Project falls under Appendix 1: Category A projects, sub-category 7: Construction of motorways, express roads and lines for long-distance railway traffic. For all Category A Projects EBRD require an ESIA to be prepared.

### 3.4 LAND ACQUISITION LEGAL FRAMEWORK

Land tenure and property rights are regulated by the Law on Property Cadastre (O.G. Nos. 40/08, 158/10, 51/11); the Law on Survey and Land Cadastre (O.G. Nos. 34/72, 13/78); and the Law on Ownership and Other Material Rights (O.G. Nos. 18/01). Expropriation of property and real estate (immovable properties) which will result from implementation of the projects that are for public interest is regulated by the Law on Expropriation (O.G. Nos. 33/95, 20/98, 40/99, 31/03, 46/05, 10/08, 106/08 & 76/10). Construction of railway lines falls under the expropriation law as being projects of public interest. The legal justification of why the project is believed to be of public interest is submitted together with the request for expropriation by the expropriation beneficiary to the offices for legal and property affairs. The Law on Expropriation recognizes affected people who have formal legal rights; those without legal title are not entitled to compensation under this law. According to the Law on Expropriation, the expropriation value of properties

<sup>3</sup> <http://www.slvesnik.com.mk/Issues/FBF336E3D52F564EB336352005348491.pdf>

<sup>4</sup> <http://www.ebrd.com/pages/research/publications/policies/environmental.shtml>

subject to compensation cannot be lower than the market value of the affected properties and it is assessed against recent market transactions in neighbouring areas. According to the law, compensation can be provided by replacement of property or in cash. Macedonian law allows compensation of lost profit/income for affected businesses, if incurred as a result of expropriation. Furthermore, the Law on Safety of Railway Systems (O.G. No. 48/2010) includes requirements that mean that houses should be at least 11 m from the edge of new railway lines<sup>5</sup>.

Along the Project alignment, land has been acquired for the first 65 km of the railway corridor, starting in Kumanovo and ending in the first settlement, Mozdivnjak, in the Kriva Palanka Municipality. Land of a varying width of 10-20 m on both sides of the line was expropriated during the period 1994-2004. Land owners have been compensated mainly by building new houses away from the proposed railway line.

The Project will be undertaken in line with EBRD's Environmental and Social Policy (2008) which contains Performance Requirement (PR) 5 that covers Involuntary Resettlement and Economic Displacement. According to this PR, not only those who have legal title are entitled for compensation, but also those who do not have legal rights that are directly affected by the Project.

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<sup>5</sup> The least width of the railway area is 1 metre on both sides of the earthworks of the railway line.



## 4 STAKEHOLDER ENGAGEMENT & CONSULTATION

The Project will be prepared in line with both the national and EBRD Environmental and Social Policy (2008) requirements for stakeholder engagement and public consultation. Therefore the draft ESIA study will be disclosed to the public for 120 days, during which time the comments period will last, ensuring that all stakeholders have an opportunity to express their views. Upon completion of the disclosure and comment period, the ESIA study will be updated to reflect the comments made by stakeholders, including explanations on how comments were taken into account in the updated study. The final decision on whether or not to grant consent for the Project will be made by the MoEPP and publicly disclosed. The decision will be published in at least one daily newspaper available throughout the territory of the Republic of Macedonia, and on the web site and the notice board of the MoEPP.

The stakeholder engagement process started at the earliest stage of project planning and will continue throughout the entire life of the Project. A Stakeholder Engagement Plan (SEP)<sup>6</sup> has been prepared and is contained within the ESIA. The SEP identifies the key project stakeholders and will be updated accordingly during the development of the Project. Stakeholder engagement regarding the Project is an on-going process involving the public disclosure of appropriate information so as to enable meaningful consultation with stakeholders and potentially affected parties, and includes procedures contained within the SEP so people can make comments or complaints.

During the development of the ESIA affected stakeholders were carefully identified as well as those interested in the Project, and their concerns, expectations and preferences were taken into consideration. Attention was given to the identification of vulnerable stakeholders whose lives and well-being may be affected by the Project. Additionally, close interaction with the local communities was maintained in order to identify opportunities for improving social performance of the Project.

For each of the stakeholder groups specific communication tools have been identified in order to ensure easy, transparent, direct, open and interactive communication with all stakeholders and to get as earlier as possible their feedback during the different phases of project implementation. Public information, participation and consultation will be undertaken during all stages of project implementation and the engagement of stakeholders has been divided into the 5 main phases below. The full list of stakeholders to be consulted can be found in Annex 1 of the SEP<sup>7</sup>.

- Phase 1: Pre-ESIA Consultations
- Phase 2: ESIA Study Consultations
- Phase 3: ESIA Disclosure
- Phase 4: Detailed Design and Construction
- Phase 5: Operation

Disclosure of relevant project information during Phase 1 and Phase 2 was through disclosure of the SEP and Project Leaflet on the following web pages: <http://www.mtc.gov.mk> (Ministry of Transport and Communication), <http://www.moepp.gov.mk> (Ministry of Environment and Physical Planning) and <http://www.mz.com.mk> (PERI). Key information about the Project has been disclosed through the Project Leaflet which was distributed in Municipalities Information Centres, as well as through the Macedonian government web sites mentioned above and the municipal web pages<sup>8 9</sup>.

<sup>6</sup> The SEP can be viewed on the following web pages: <http://www.mtc.gov.mk> (Ministry of Transport and Communication), <http://www.moepp.gov.mk> (Ministry of Environment and Physical Planning) and <http://www.mz.com.mk> (PERI)

<sup>7</sup> <http://www.moepp.gov.mk/WBStorage/Files/Study%20for%20corridor%20VIII%20-%20Eastern%20section%20-%20List%20of%20stakeholders.pdf> .

<sup>8</sup> <http://www.northeastregion.gov.mk>; <http://www.kumanovo.ca>; <http://www.opstinakratovo.gov.mk>; <http://www.rankovce.gov.mk>; <http://www.krivapalanka.gov.mk>; <http://www.opstinastaronagoricane.gov.mk>

Public Enterprise Macedonian Railways – Infrastructure (PERI), who will operate the railway, will continue to involve stakeholders and will maintain good communication practices during the lifetime of the Project. According to this approach, the aims of information disclosure and Project communications will be:

- Providing local communities with a schedule and information on activities that will be arranged, together with mechanisms for their feedback;
- To improve knowledge of what the Project involves, the stages of the Project and its expected performance;
- Ensuring best practice in terms of environmental protection and health and safety for workers and contractors; and
- To make available to the public a grievance procedure.

PERI are implementing a Grievance Mechanism to ensure that it is responsive to any concerns and complaints particularly from affected stakeholders and communities (more details are contained within the Stakeholder Engagement Plan).

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<sup>9</sup> Telephone information lines have been established and details can be found under the following link: <http://www.moepp.gov.mk/WBStorage/Files/Study%20for%20corridor%20VIII%20-%20Eastern%20section%20-%20Contact%20points.pdf>

## 5 PROJECT DESCRIPTION

The proposed works per section are summarized below:

### Section 1: Kumanovo to Beljakovce

- The rails of the existing track will be completely renewed, the track will be re-ballasted and realigned;
- At Supli Kamen station, the track will be dismantled and replaced;
- The existing bottleneck at the northern end of Kumanovo station will be removed;
- The existing reinforced concrete bridges along this section will be refurbished;
- The existing road overpasses along this section will be equipped with electric shock protection and earth conductors;
- A slab track steel bridge at Lopate will be replaced by a new bridge;
- The damaged railway bridge over the Pcinja River will be replaced by a new bridge located upstream;
- The existing 17 level crossings in this section will be replaced by 8 over/underpasses; and
- There is no excavation work needed for Section 1 and therefore no surplus soil and rock is expected. The mixed construction waste that will be generated will be re-used.

### Section 2: Beljakovce to Kriva Palanka

- The construction and completion of earthworks and drainage;
- The completion of 25 bridges and the construction of 11 new bridges, including a long span bridge in front of the planned Vakuf Dam;
- The completion of 10 tunnels and construction of 4 new tunnels;
- The installation of 33.3 km of main track, 7.05 km of station tracks and 28 set of points;
- The construction of a substation near Beljakovce; and
- In Section 2 there will be a balance of the excavated and re-used soil and rocks and therefore no need is anticipated for disposal of any surplus inert material (waste).

### Section 3: Kriva Palanka to Deve Bair, at the Bulgarian border

- The execution of earthworks and drainage;
- The construction of 47 bridges and 22 tunnels, including reconstruction of the 1,150m border tunnel within the Macedonian territory;
- The execution of 23.5 km main track, 4.3 km station tracks and 14 set of points;
- The construction of a substation West of Kriva Palanka; and
- For Section 3 whilst excavated soil and rocks will be re-used as a construction material as far as possible, it is estimated that there will be a surplus of soil and rock which will need to be disposed of in specially designed inert landfills. There will also be waste generated from the demolition of houses and buildings. The total number of planned inert landfills for Section 3 is 35. For any new landfills which will be established for the Project that have not been fully assessed additional ESIA's and/or consents will be prepared when details are available, if required.

The Project is to be delivered in two main phases of investment:

**Stage 1:** Rehabilitation of Section 1 (Kumanovo - Beljakovce) to operate diesel trains, with signalling and telecommunication equipment and without electrification. The envisaged construction period for Stage 1 is from 2013 to the end of 2014. The operation period is expected to be from the end of 2014 to 2018 for diesel traction, local passenger services, and no freight services.

**Stage 2:** Rehabilitation and construction of Sections 2 and 3 (Beljakovce to Deve Bair) and the electrification of the whole eastern section Kumanovo - Deve Bair (including Section 1). The envisaged construction period is from 2015 to 2018 with the commencement of railway operations by the end of 2018.



## 6 ASSESSMENT METHODOLOGY

### 6.1 ESIA METHODOLOGY

In order to assess the impacts, a baseline study was performed to describe the relevant environmental and social issues that are present in the area of the Project that could be potentially affected either during construction or operation. A scoping assessment was undertaken to identify potential environmental and social impacts. The scoping assessment considered the results of the Stakeholder Scoping Meetings and the scoping opinion and guidance provided by the MoEPP.

The assessment of the impacts has concentrated on identifying the likely significant residual effects of the Project. For this, impacts were first assessed without taking into account of mitigation measures, with the significance of the impacts being a function of several criteria including:

- The value of the resource or the sensitivity of the receiving environment/community/receptor;
- The magnitude of the impact;
- The type of the impact (direct/indirect/cumulative) and whether adverse or beneficial;
- The reversibility of the impact and the geographic extent of the impact;
- The time when the impact occurs and duration of the impact (short term/medium term/long-term); and
- Likelihood of the impact occurring.

Mitigation measures were then developed for each adversely affected environmental or social aspect identified, and an evaluation of the likely effectiveness of the measures to prevent, mitigate or compensate the adverse impacts undertaken. Finally, based on the significance of the effect (without mitigation) and the assessment of the probability of success of the proposed mitigation, the significance of the residual effect (with mitigation) was determined.

The ESIA has been prepared in line with relevant national, EU and international ESIA legal and policy requirements, although additional studies are required in relation to the preparation of necessary assessments under the requirements of Article 6 of the Habitats Directive (92/43/EEC), as indicated below.

### 6.2 ASSESSMENT OF EFFECTS ON EMERALD & NATURA 2000 SITES

Section 3 of the Project intersects the Emerald Network Sites (Pchinja-German and Osogovo) which are adjacent to the Bulgarian Natura 2000 sites (Osogovo SPA & Osogovska Planina SAC). The border tunnel at the end of Section 3 is approximately 1.7 km from these Natura 2000 sites. The assessment of the potential impacts and likely significance on these protected and designated sites, included an initial screening, based on the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC). The initial screening assessment was prepared using a modified screening matrix (see Section 6.2 ESIA) of the *European Communities (2002) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. During the next stage of project preparation in consultation with the national authority responsible for Nature conservation a full Screening Matrix will be completed and based on this an Appropriate Assessment undertaken. Based on the results of the current modified screening matrix it is likely that an Appropriate Assessment will be required. Section 3 works are part of Stage 2 and which are not proposed to commence until 2015, therefore all necessary assessments in line with Article 6 of the Habitats Directive will be undertaken before works are commenced in Section 3.

## 7 SUMMARY OF BASELINE ENVIRONMENTAL & SOCIAL CONDITIONS

Railway Corridor VIII - Eastern Section will cross the municipalities of Kumanovo, Kratovo, Kumanovo, and Kriva Palanka, and pass nearby the municipalities of Lipkovo and Staro Nagoricane; see figure below. The larger towns along the corridor are Kumanovo and Kriva Palanka. The line starts on a relatively flat plateau at Kumanovo and gradually climbs to higher altitudes, mainly following upstream the courses of the Pcinja and Kriva rivers, to reach the mountainous area along the Bulgarian border. The area of the corridor has been inhabited permanently for several thousand years, and, apart from the urbanised areas of Kumanovo and Kriva Palanka, it is generally populated with dispersed village settlements typical of the North-Eastern Region.

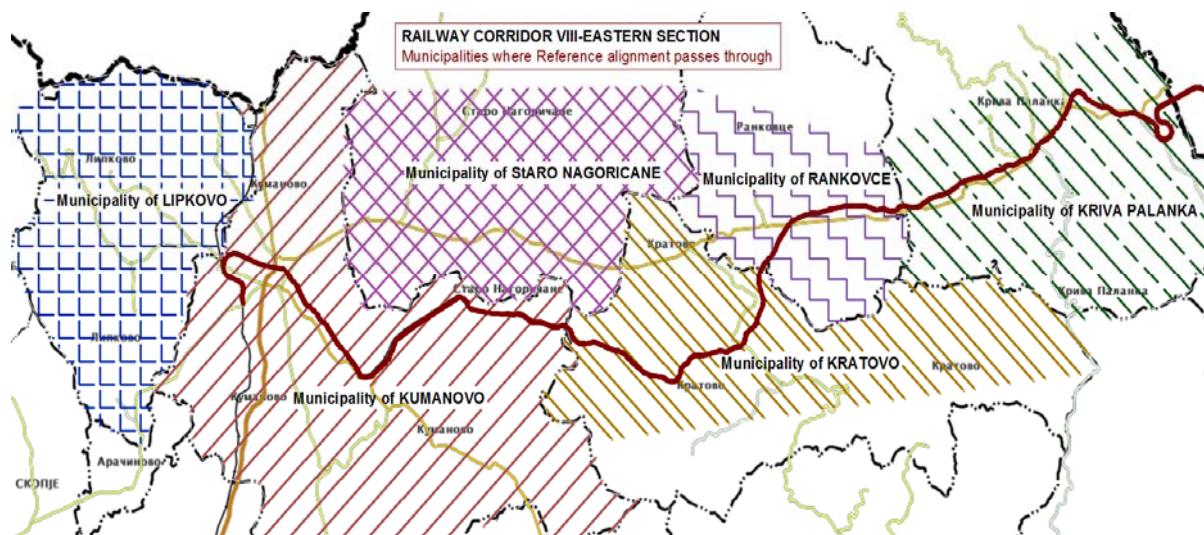


Figure 0-9 Municipalities along Corridor VIII -Eastern Section Project

### 7.1 ENVIRONMENTAL BASELINE

The climate in the North-Eastern Region ranges from predominantly moderate-continental to mountainous, with the temperature varying with the altitude. There are three main types of soil encountered along the alignment; rendzina soils or carbonate virgin soils on lime rocks in the higher altitudes; diluvial and coluvial soils on the hillsides; and alluvial soils or gleys in the marshlands and along the riverbeds.

The railway corridor runs along a series of river valleys, those of the Kumanovska and Pcinja rivers in Section 1, the Pcinja and Kriva rivers in Section 2, and the Kriva river in Section 3. The hydrology of the area is well developed and the Kriva river valley is a key element of the landscape, this river receives water from the watersheds of the Osogovo Mountains and Mount German. The water quality is generally good, except in the vicinity of the wastewater outfalls associated with the main population centres.

The stretch of the Kriva river between the confluences with the Pcinja and Kumanovska river is prone to flooding. This flooding area includes the stretches of the Pcinja and Kumanovska rivers upstream of Kriva river. Flooding episodes occur normally in spring during rapid snow melt and intense rainfall. There is no regulation of the flows in the Kriva river or management of the river banks at the confluences of the Pcinja and Kumanovska rivers, and therefore no ability to mitigate or manage flood events in this area.

In the railway corridor, there are two main alluvial aquifers related to the Pcinja and Kriva rivers. The drinking water supply for the main urban areas along the route is taken from the Lipkovo and Glaznja lakes, local springs, and groundwater abstractions, and in more rural areas from individual water pumps, individual wells, village taps, etc. None of the rivers interacting with the railway alignment is directly used for potable water.

Preliminary measurements of a noise along the railway alignment concluded that ambient noise levels are generally in compliance with national/EU standards. However there were noise level exceedances measured in the city of Kriva Palanka, and the village of Zidilovo due to traffic.

With regards to air quality, Kumanovo has one of the 15 monitoring stations which make up the National Air Quality Monitoring System (MoEPP). The air quality in the North-Eastern Region is monitored by a fixed monitoring station and a high volume sampler, measuring ozone, suspended particles, carbon monoxide and sulphur dioxide. Except for the city of Kumanovo, where exceeding limit values for ozone and suspended particles have been reported, there are no air quality data for other settlements along the railway line.

There are a limited number of municipal landfills along the route. In Section 1 there is only one Municipal landfill and one existing borrow pit close to Supli Kamen, which can be used if required by the Project. In Section 2 there are two municipal landfills, in Kratovo and Rankovce and one existing borrow pit. Along Section 3 there is one municipal landfill in Kriva Palanka.

The railway will run through a low hilly urban area from Kumanovo, to the village of Dobroshane a stretch which is generally urban and densely populated. The route will then pass into open valley areas along the Pcinja and Kriva rivers. The land towards the Kriva river is generally low and flat with some gentle slopes down to the river and sparsely populated being dominated by dry grassland. From the village of Rudare to Rankovce there is a hilly narrow valley area with steep hill slopes, and is sparsely populated, with degraded to very degraded oak forests and dry grasslands. Moving along the route to the villages of Psacha and Petralica it runs across flat to gently sloped terrain with a densely populated agricultural area, as well as a number of abandoned fields. From the village of Psacha through to the town of Kriva Palanka and onto the Bulgarian border the terrain is generally hilly and mountainous with forested areas with steep slopes along the Kriva river and is very sparsely populated.

There are natural habitats along the route including areas of forests and shrub lands, grasslands, rocky sites and water habitats. The corridor also contains areas of manmade habitat including tree plantations, agricultural land, meadows, artificial ponds and urban areas.

With regards to sensitive animals that may be present along the railway corridor, there are large mammals like the bear and the wolf, and also smaller ones, like wildcat and marbled polecat. These species would be more likely to be present in Sections 2 and 3 of the corridor, where the richest and less disturbed habitats are present. As for the bat species, their shelters can be found in various habitats, including tunnels, natural or artificial caves, rock crevices, tree holes, roofs of houses, etc.

For birds, several nests of imperial eagle, falcon peregrine, black stork or long legged buzzard are recorded to exist in the proximity of the railway corridor. Moreover, most of the first half of the railway corridor runs within the IBA River Pcinja-River Petrosnica-River Kriva, and the other half between two Emerald sites, Pchinja-German and Osogovo, and within Osogovo, at the end of the corridor.

There are two Emerald sites in the North- Eastern region of Macedonia and both are intersected by the Section 3 of the Project, near the Bulgarian Border. These are:

- **Pchinja-German** (Code MK0000029): occupying the northern mountains Kozjak, German and Bilina Planina on the border with Serbia. Surface area: 63,490 ha.
- **Osogovo** (Code MK0000026): overlaps with Osogovo Mountains range. Surface area: 56,630 ha.

Both sites were designated as Type C<sup>10</sup>, areas important for birds, other species and/or habitats. These sites are still not officially approved by the Council of Europe.

<sup>10</sup> In order to provide compatibility of the Emerald Network with Natura 2000, Emerald sites are categorized into three different types: Type A (Areas important for the protection of birds, which are in accordance with the Special Protection Areas (SPAs) of Natura 2000), Type B (Areas important for other species and/or habitats, which are in accordance with the Special Areas for Conservation (SACs) of Natura 2000), Type C: Areas important for birds, other species and/or habitats.

In Bulgaria there are the following two **Natura 2000** sites (see *Error! Reference source not found.*), a Special Protection Area (SPA) and Special Area for Conservation (SAC) that overlap for the most of their area and which are contiguous with the Macedonian Osogovo Emerald site :

- **Osogovo**, with Code BG0002079 (Birds Directive Site, SPA) (Surface area: 24,125 ha)
- **Osogovska Planina**, with Code BG0001011 (Habitat Directive Site, SAC) (Surface area: 34,513 ha)

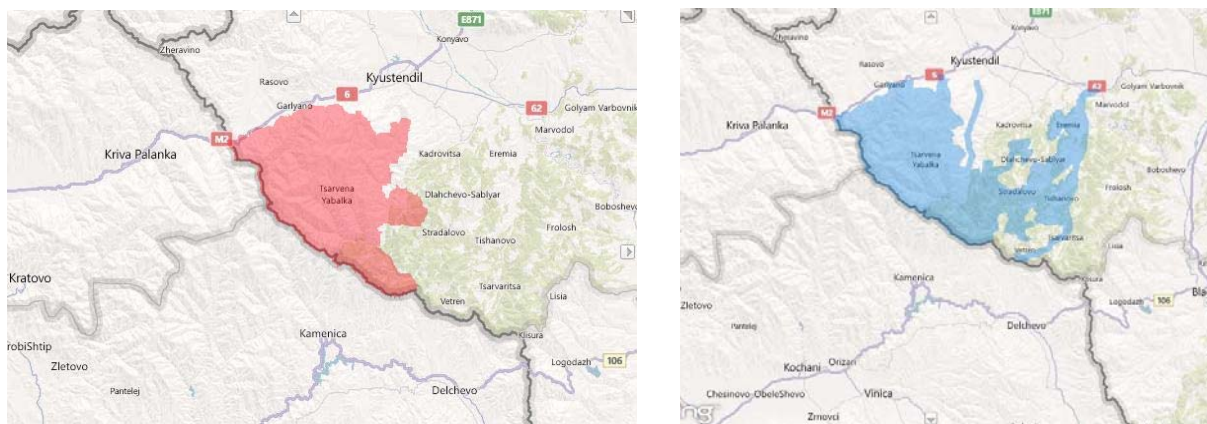


Figure 0-10 Osogovo Birds Directive (SPA) & Osogovska Planina Habitat Directive (SAC) Sites in Bulgaria

There are several other protected and designated areas along or in the vicinity of the railway corridor, including the protected area Monument of Nature Kuklica, the proposed protected areas Bislimska Klisura, Gorge on Pcinja river, Kiselicka river, and Osogovo Mountains, the Osogovo-Bilina Planina and Osogovo-German bio-corridors, Pcinja river - Staro Nagoricane village, Zubovce village, Kriva river – Beljakovce village, and Vetunica river Areas for the Management of Species and the Important Plant Area (IPA) Okonovo.

There are also recorded within the corridor amphibians, reptiles and insects along with aquatic species within the rivers including fish such as river trout. Among mammal species associated to the aquatic environments, otters are also known to be present within the area.

With respect to archaeological sites, during the works for the construction of Section 2 in 1995, five sites were identified and investigated that were in the close vicinity of the railway alignment, including Gradishte, Savin Rid, Gradishte, Mal Kamlesh and Crkvishte st. Marijana. Once these original archaeological investigations were concluded, the archaeological sites were preserved and the railway construction works continued with the authorization of the Republic Institute for Protection of Cultural Heritage. For Section 3, four sites have been identified, but they all are located more than 500 m away from the railway. Consultations with the Administration for Protection of Cultural Heritage of the Ministry of Culture, have confirmed there is no other known archaeological sites in the vicinity of the railway alignment in Section 3.

## 7.2 SOCIAL BASELINE

Excluding the towns of Kumanovo and Kriva Palanka which are urbanized, all other settlements (summarised below) along the railway alignment are rural in character

- Section 1: Proevce, Dobrochane, Supliji Kamen, Klecovce, Dovezence and Beljakovce;
- Section 2: Kratovo, Dimonce , Ketenovo, Krilatica, Pendak, Schopsko Rudare, Rankovce, Petralica, Ginovce, Ljubince and Opila, Rankovce; and
- Section 3: T'Iminci, Konopnica, Koshari, Varovischte, Gradec, Lozanovo, Kiselica, Drenje, Zidilovo, Krklja, Uzem and Kostur

Most of these settlements can be characterized as having a very low standard of living in terms of physical and social infrastructure, which results in outward migration, an ageing population, low education and unemployment of rural population. For some settlements lack of alternative (off-farm) employment/income generation opportunities leads to over-dependence on agriculture as sole source of



income, low wages and poverty. The North-Eastern Region has an extremely high proportion of children at risk of poverty, reaching over three fifths when measured in relation to household income.

The ethnic composition of the population in the North-Eastern Region shows greater variety than for the wider country, with 59.1% Macedonians, 31.1% Albanians, 6.1% Serbs and 2.9% of Roma origin. In Lipkovo, 97.4% of the population is Albanian. In Kratovo, Kriva Palanka and Rankovce over 95 % of the population is Macedonian.

Economic activity of the working-age population differs by gender, education level, age, ethnic origin and place of residence. The level of unemployment in North-Eastern Region is 43%. Due to very high unemployment levels most of the citizens from this region, go to Kumanovo and Skopje to look for temporary work, some of them go abroad working mainly as construction workers. Inhabitants from rural settlements are mostly older, they are characterized with typical rural way of life

The North-Eastern Region comprises 146,346 hectares of agricultural land, of which 79,800 hectares comprise tilled soil. Forests cover 49,295 hectares. The natural resources available in this region include: minerals such as copper, lead, chromium, arsenic, antimony and zinc, and rocks such as bentonite clays, quartzites and opal breccia. The Kratovo-Zletovo volcanic area is part of to a hydro geothermal system<sup>11</sup> present in karst or fractured marble or other Precambrian to Palaeozoic age rocks ; although there have been few detailed investigations of this resource. There are also reported to be several smaller systems such as at Proevce in the south margin of Kumanovo valley, Sabota voda near Veles, and Rakles near Radovich, which are karstic semi-open hydro geothermal systems within Palaeozoic marbles. The Kumanovo Spa is located near to the established Railway corridor within Section 1, with no recorded impacts. In section 2 and 3, based on available information gathered for design by PERI, there are no known thermal resources that would be affected by railway line.

In Section 1, the characteristic land uses are urban settlements, rural settlements, and agriculture land uses including farming, orchards, vineyards, grasslands and meadows. In Section 2 the land use is mostly pasture and to a smaller degree orchards, viniculture and farming. In Section 3 there are many areas of agricultural land use and orchards. Near the border the land use is forestry, and historically mining.

Kumanovo is the biggest urban settlement and municipal center with a population of 70,872. The whole North-Eastern Region gravitates towards this city. The municipal area of Kumanovo is the largest municipality in Macedonia with 509.48 km<sup>2</sup> and 105,484 inhabitants. Within Kumanovo the settlement Pero Čičo, which forms part of Baneva trla, is closest to the railway alignment and has houses which are less than 10 m from the railway alignment. Other Municipalities include Kratovo, which comprises an area of 374.44 km<sup>2</sup> and 10,441 inhabitants, and Rankovce which comprises 239 km<sup>2</sup> with 4,144 inhabitants.

The Municipality of Kriva Palanka is 481 km<sup>2</sup> with 20,820 inhabitants. Kriva Palanka as a border town recognizes the value of transboundary cooperation. There are many ongoing projects for increasing the transboundary business and economic cooperation between Kriva Palanka and Kustendil, the bordering town in Bulgaria.

<sup>11</sup> Ref: "Inferred section of the main (low-temperature) geothermal systems in the Republic of Macedonia" – Proceeding World Geothermal Congress 2000, Kyushu-Tohoku, Japan

## 8 ENVIRONMENTAL & SOCIAL BENEFITS & ADVERSE IMPACTS & MITIGATION

### 8.1 SUMMARY OF ENVIRONMENTAL & SOCIAL IMPACTS & MITIGATION

The potential environmental and social-economic impacts of the rehabilitation, construction and operation of the railway between Kumanovo to Deve Bair have been assessed within the ESIA. The decommissioning of the railway line has not been considered due to limited information at this stage being available with regards to the ceasing of operation of the railway and given the intention to continue to operate the railway indefinitely. In the event that the railway line ceases operation and needs to be decommissioned, relevant approvals will be sought and, if required, an ESIA produced for this.

The environmental and social impacts identified and assessed during the construction and operational phases are summarized in the table overleaf along with a summary of the key mitigation measures.

With mitigation the majority of the environmental impacts arising from the construction of the railway are not anticipated to be of a significant nature except for the removal of top soil and localized effects on noise levels. The operation of the railway may result in effects of a potentially significant nature on biodiversity due to the risks the railway may present to animals and from it bisecting sensitive habitats, including the Macedonian protected Emerald sites in the Osogovo area which contiguous with the European protected Natura 2000 sites in Bulgaria.

The Project will require temporary land take during construction which will give rise to the temporary loss of some land. After construction this land will be reinstated, where possible, to its original condition. Permanent loss of land and property will occur in Section 3, as land is acquired for the railway alignment. Two communities, which include potentially vulnerable groups of residents, will be subject to direct effects, the first group is the local community of “Pero Cico” in Kumanovo where the railway alignment will be 7-8 m from 20 families. Vulnerable residents could also be affected in Section 3 where it is estimated that 25 families will lose their homes.

With the application of the mitigation measures during the operational phase, the majority of residual negative social effects are anticipated to not be of a significant nature, except for community disturbance and safety risks arising from the railway. PERI will need to carefully manage and monitor any issues related to community safety and on the safety of workers from the operation of a railway. Noise and vibration disturbance from the operation of the railway may affect the quality of life of communities who live along the route.

The Project is expected to have a positive, long-term and significant residual effect on the local, national and regional economies and improve access locally and across the region. The construction of the railway should stimulate economic growth at a local level and create local employment opportunities. Business opportunities may also potentially increase significantly for local contractors and especially subcontractors during construction works. Significant economic, employment and educational benefits are anticipated to arise as a result of the operation of the railway at a local, North-Eastern regional and national level and also on a south eastern European regional level potentially as part of the overall benefits the development of Corridor VIII will bring. These economic benefits should provide improvements in the quality of life of some communities along the route.

Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
<b>CONSTRUCTION PHASE</b>			
<b>Environment:</b>			
Cultural Heritage	Destruction of archaeological sites during earth movements.	Archaeological monitoring will be undertaken for earthworks in previously undisturbed ground. Training of construction works prior to undertaking earthworks operations. Archaeological chance find procedure.	Slight Negative
Soils	Impacts on soil quality and soil erosion.	<b>Sediment and Erosion Control Plan, Waste Management Plan</b> , hazardous materials management and spill prevention measures.	Slight Negative
	Destruction of top soil.	<b>Soil Management Plan</b> shall be prepared for the controlled removal of top soil, appropriate storage and reuse.	Moderate Negative
Surface Water	Impacts on surface water.	Works near watercourses will be carefully managed and no occupation of the stream bed or the banks will be allowed unless no reasonable alternative available. Bridges will be designed and constructed so to limit effects. River & Stream Crossing Plans will be prepared for the management of works at any crossings. Retention/filtering of railway drainage, including sediment and pollution control facilities in areas which include sensitive habitats. Wastewater treatment systems, facilities and management for domestic wastewater generated in the construction camps and sites.	Slight Negative
Ground Water	Impact on ground water quality.	Intercepted groundwater will be sealed as soon as possible.	Slight Negative
	Alteration of ground water flow patterns.	Hazardous materials management and spill prevention measures to avoid groundwater contamination.	Neutral
Air	Impacts on air quality during construction.	<b>Dust Management Plan</b> : measures to avoid/minimize dust emissions, including use of hoardings; wetting down/spraying of construction areas, accesses, materials stockpiles and during loading/unloading activities; covering of vehicles carrying dusty materials; wheel washing/spraying of vehicles; and management of spoil, etc.  Measures will be taken to minimize construction emissions of combustion gases, including use of emissions compliant vehicles/machinery; maintaining vehicles/machinery etc. <b>Construction Traffic Management Plan</b> will be prepared and to optimize vehicle movements and plan vehicle movements to avoid peak times and heavily trafficked routes.  Measures will be taken to avoid asbestos emissions during demolition of buildings and works of this nature would follow asbestos operational control procedures and require necessary risk assessments.	Slight Negative
Noise & Vibration	Impacts on noise levels from construction vehicles and machinery.	Noise screens/barriers for noisy works at night and those longer than one day in the same location/area. Noisy works/operations (e.g. blasting; pile driving; demolition etc.) will be carefully managed and noise minimized at source as far as possible. Construction equipment will where possible comply with relevant noise emission standards. All equipment will be fitted with appropriate noise reduction devices. Regular maintenance of vehicles and machinery. Restricted working hours for construction works 07.00 -19.00 h.  <b>Construction Traffic Management Plan</b> will establish speed limits for construction vehicles and organize traffic to avoid as much as possible populated areas. Local residents will be kept informed of planned works. Noisy equipment will be located as far as possible from residential or other sensitive receptors.	Moderate Negative

Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
		Monitoring of vibration impacts will be undertaken and any material damage proved to have been caused to local houses, buildings and other infrastructure (including access roads) by the works will be compensated for and subject to repair on a timely basis. Earthmoving equipment will be located as far away as possible from vibration-sensitive receptors. Vibration inducing operations will be scheduled so as not to give rise to cumulative significant vibration effects.	
Landscape	Temporary change of landscape.	Screening of construction sites, camps and areas.	Slight Negative
Habitats	Loss of habitats. Temporary severance of bio-corridors (from railway & inert waste landfills (Section 3).	A <b>Biodiversity Management Plan (BMP)</b> will be prepared and implemented for Section 3 (and covering Section 2 if determined to be required) to ensure the integrity and conservation objectives of the Emerald Sites in Macedonia and the Natura 2000 sites on the Bulgarian side, and that works in these areas or close to them are carefully managed. The BMP shall include the necessary assessments need to fully comply with Article 6 of the Habitats Directive.	Slight Negative
Fauna	Decrease in animal populations due to habitat fragmentation effects, collisions and destruction of nests, burrows, and other animal sheltering/breeding structures	<p>The BMP will be prepared and finalized in advance of and prior to any works in Section 2 and 3. The necessary assessments to meet the provisions of Article 6 of the Habitats Directive will be completed in consultation with national nature conservation authority and other relevant stakeholders. The BMP will be publicly disclosed.</p> <p>Works will be scheduled to avoid the breeding season and to avoid effects on sensitive species and habitats.</p> <p>Limiting the vegetation clearance. Haulage roads and other construction areas/facilities will avoid areas of sensitive species, habitat and vegetation. Training of construction workers with regards to the protection of animals, habitats and vegetation etc. Any animal collisions will be recorded in a logbook. Hunting by workers will be prohibited.</p> <p>For Sections 1 and 2 already established haulage roads, worker camps etc. from the previous works shall be reused as far as possible. Any new camps will not be constructed in protected/sensitive areas and any auxiliary facilities as far as possible would not be located in areas containing sensitive habitats/vegetation. Any such facilities to be located within sensitive area would need to be fully justified. In the vicinity of sensitive habitats construction sites will be clearly delineated so as to avoid damage in non-working areas and appropriate protection measures implemented. Restoration and reinstatement of temporary affected areas to a state as close to the original conditions as possible and using native plant species from the surrounding areas.</p> <p>Prior to the works a fauna survey of the area and its surroundings shall be carried out by a qualified biodiversity expert. If active breeding sites of sensitive species are found, they will be transported to another appropriate location away from the railway area or other precautionary measures will be taken. For certain sensitive species, such as a female bear with cubs, if detected in the vicinity of the works, the works shall stop until the female and her offspring have left the area.</p>	Slight Negative
Social			



Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
Land & Property	Temporary land loss and effect on livelihoods. Loss of gardens and community land and effects on agricultural production (from temporary land loss).	<b>Detailed survey &amp; Census</b> of land take in Section 3, taking into consideration those without legal rights over properties and belongings. <b>Resettlement Action Plans</b> will be prepared for each section. Affected people will be duly compensated in accordance with the Resettlement Compensation Framework. Additional assistance will be provided to the people who will be resettled. Temporary land loss owners will be compensated according to the Resettlement Compensation Framework. Temporary land take from sensitive land uses will be avoided as far as possible. Temporarily affected land will be reinstated/restored to its pre-construction condition. Appropriate mitigation measures will be identified and implemented for any additional temporary land take. When available and preferred by owners other land (state owned) will be utilized for continuation of agricultural production.	Neutral/Slight Negative
	Loss of housing (including physical displacement (Section 3)).		Moderate Negative
	Permanent land loss (Section 3).		
Community Health & Safety	Impacts from influx of temporary workers.	<b>Health &amp; Safety Plan</b> and an <b>Emergency Preparedness and Response Plan</b> will be developed prior to construction works starting. <b>Traffic Management Plan</b> for safe access to construction sites and to minimise impacts on the existing roads. Information about the project activities will be announced through the local radio/TV. PERI and the Contractor/s will inform residents of activities quarterly. Separate study on pedestrian/vehicle crossings will be undertaken and any additional measures implemented. Community health and safety educational programme will be developed. Workers will receive training and guidance in how to avoid conflicts with the local community members and sign a labour code of conduct. Any material damage made by workers will be subject to fair compensation. Security arrangements for contractor facilities will be carefully designed and managed. Worker camps will be located outside the communities. Local Workforce Recruitment Plan to assure employment of as much as possible local.	Neutral/Slight Negative
	Impacts from increased community exposure to disease.		Moderate Negative
	Impacts from increased traffic and heavy vehicles on local roads during construction.		Slight Negative
	Safety issues associated to the entrance of non-authorized people.		Neutral
Community Tensions	Effects from the influx of workforce.		Neutral/Slight Negative
	Community reactions due to disturbance arising from the construction works.		Moderate Negative
Access & Severance	Impacts on access and severance effects.	<b>Traffic Management Plan</b> to include: Identification of all public roads and paths that will be affected and proposal for the travel routes during the construction period; Minimization of the traffic disturbance; Signing of the construction areas/diversions etc; and Public notification of any traffic-related issues (e.g. road closures).	Neutral/Slight Negative
Disruption of Utilities	Effects of utility cuts on local businesses and communities.	Underground cadastre from relevant service providers will be obtained. Consultation with local citizens regarding possible illegal connections. Managing consumption of water and electricity in order to decrease pressure on the utilities in the area.	Neutral
Economy	Stimulation of economic growth at local level.	Inform people in a timely manner about the possible impacts and opportunities on economic activity in surrounding areas and expected timings of impacts, which will enable them to plan and prepare.	Large Positive
Employment	Creation of local employment.	<b>Local Recruitment Plan:</b> employment of local workforce and engagement of women to be preferred where appropriate.	Large Positive
Education &	Capacity building through training	Supervisors and managers will be responsible for utilising available resources to train, qualify, and develop their employees including the local workforce.	Moderate Positive

Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
Training			
Vulnerable Groups	Section 1 “Pero Cico”: loss of space in front of their houses. Section 3: loss of land and properties.	Safe access solution for the “Pero Cico” community will be provided (i.e. an over pass) together with a new play area and place for storing plastic bottles in the vicinity of the settlement with access road. Illiteracy of some of the affected people will be taken into consideration with regard to the method of Project communications. Necessary strengthening due to vibration effects on structures in close proximity to the route. Anti-noise walls/barriers/house insulation/Triple glazing. Compensation in accordance with the Resettlement Compensation Framework. Mitigation will be reviewed in light of findings from the Census in the next stage of project preparation should any vulnerable people be identified in Section 3.	Moderate Negative
Workforce	Accidents. Impacts on Workforce.	<b>Human Resources Policies</b> in line with national legal framework and EBRD Environmental & Social Policy (2008) and will include Employer safeguards against discrimination. Workers camps will be constructed outside existing communities and developed and monitored in line with EBRD & IFC guidance on Worker Accommodation. <b>Social Facilities and Services Plan</b> for workers will be prepared to regulate matters such as Housing Standards, workers facilities and services, fire safety, security, grievance mechanisms etc. <b>Emergency Preparedness Plan</b> , will be developed prior to construction works starting for the management of cases of incidents during the transportation of raw materials/hazardous substances; <b>Occupational Health and Safety Plans</b> will be prepared in order to protect the safety, health and welfare of people engaged in work or employment. The goal of all occupational safety and health programs is to foster a safe work environment.	Slight Negative
Quality of Life	Dust/Noise/Vibration.	(See above)	Moderate Negative
	Safety.	<b>Traffic Management Plan</b> to be developed and implemented.	
OPERATIONAL PHASE (Stage 1) Operation of Section 1 Kumanovo to Beljakovce Only with Diesel Traction			
Environment			
Air	Impacts on air quality due to emissions of combustion gases of diesel trains.	Regular maintenance of diesel locomotives to keep them in optimal working conditions.  Use of the cleanest fuels (e.g. on-road grade diesel) within technically feasible possibilities.	Slight Negative
Noise & Vibration	Impacts on noise levels due to train operation (diesel traction).	During operation of diesel trains on Section 1 noise abatement measures will be installed at affected communities along the route (e.g. Chereskoselo, Lopate, Rezanovce, Sredorek, Pero Cico, Proevce, Kumanovo spa, ShupliKamen, and Dovezance).  <b>Detailed Railway Noise and Vibration Study</b> will be completed during the design stage to refine and optimize noise abatement measures.	Slight Negative
	Annoyance to residents and damage to buildings due to vibration from trains.		
OPERATIONAL PHASE (Stages 2/3) Operation of completed Railway Corridor VIII – Eastern Section Project Section 1, 2 and 3 Kumanovo to Bulgarian border (Deve Bair) using Electric Traction			
Environment			
Soils	Impacts of soil quality and soil	<b>Chemical Accident and Spill Management Program</b> (including <b>Emergency Response Plan</b> )to prevent/ mitigate	Slight Negative

Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
	erosion	negative impacts to soil, surface water and groundwater. Regular control and maintenance of drainage structures and retention.	
Surface Water	Impact on water quality. Wastewater. Alteration of flow patterns and sediment deposition.	Domestic wastewater will be treated according to the relevant national legislation and EU standards. Untreated wastewater will not be allowed to be discharged into natural water courses. Treatment of cleaning water from the washing of the trains (unless discharged under permit to a municipal collection system).	Slight Negative
Groundwater	Impacts on groundwater quality.		Slight Negative
Air	Impacts on air quality.	<i>(The railway will be operated under electric traction and no major air emissions are expected in this stage.)</i>	Neutral
Noise & Vibration	Impacts on noise levels (electrical traction). Annoyance to residents and damage to buildings due to vibration from train traffic.	In addition to the noise abatement measures installed in Section 1, abatement measures will be need installed in: Krilatica/Ketenovo, Odreno, Petralica and T'liminci in Section 2, and KrivaPalanka and Zidilovo in Section 3. <b>Detailed Railway Noise and Vibration Study</b> will be completed during the next phase of project preparation.	Slight Negative
Landscape	Alteration of landscape by the presence of the railway.	Landscape planting. Sympathetic design of the railway into the landscape (e.g. shaping of the terrain; careful design of viaducts, bridges and tunnel portals, use of construction materials that blend well with those of the surrounding landscape; designing the landfills so the final contours are integrated with surrounding landscape; vegetating the sealed landfills; reinstatement of any borrow pits and use of local architecture features.	Moderate Negative
Habitat	Habitat fragmentation.	A <b>Biodiversity Management Plan</b> (BMP) will be prepared and implemented in relation to managing the potential effects on Sensitive Habitats, Fauna & Flora. Any mitigation measures contained within the BMP will be implemented.	Moderate Negative
Flora	Impacts on flora due to the use of herbicides and unwanted growth of invasive plants from outside the area.	Wildlife crossings to increase the permeability of the railway line including: <ul style="list-style-type: none"> <li>• Drainage pipes to facilitate the passage of small animals;</li> <li>• Fenced areas will be vegetated with native plant species that are attractive to local fauna and planted to lead the animals towards the wildlife crossings;</li> </ul>	Slight Negative
Fauna	Decrease in animal populations due to collisions with passing trains and electrocution with electrified components of the railway.	<ul style="list-style-type: none"> <li>• Specific wildlife overpasses for the passage of large animals in the sensitive areas (i.e. Osogovo-German and the Osogovo-BilinaPlanina bio-corridors); and</li> <li>• Detailed study for Section 3 for stretches where there are more than 500 m without tunnels or bridges, to determine if additional wildlife crossings are required. The findings of this study will inform the BMP.</li> </ul> Implementation of an integrated vegetation control and management program. Regular removal of any food and organic waste from the railway. Immediate removal of visible animal carcasses. Fences will be installed in areas of tunnels or bridges in forested areas and in non-populated open terrains to deter animals from crossing the railway and lead them towards adequate railway crossing sites. Escape devices will be provided to allow animals, which accidentally enter in the railway corridor, leaving the area. Overhead power lines and catenary shall be made more visible to birdlife and measures implemented to reduce risks to birdlife from overhead power lines and catenary.	Moderate Negative
Protected & Designated	Loss of conservation value of the sites	A <b>Biodiversity Management Plan</b> (BMP) will be prepared and implemented in relation to managing the potential effects on Sensitive Habitats, Fauna & Flora Mitigation measures identified within the BMP for flora, fauna and habitats, as well as those identified for soils, water	Slight Negative

Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
Sites		and groundwater, and landscape will be implemented to ensure the integrity and conservation objectives are protected of all the protected and designated areas in the railway corridor area, including Emerald sites and Natura 2000 sites.	
Cultural Heritage	Plundering of archaeological sites.	In the event of the discovery of archaeological sites, the relevant authorities will be informed and they will take responsibility for directing the investigation and protection of any such sites.	Slight Negative
<b>Social</b>			
Land & Property	Effects on livelihoods. Effects on residents from loss of gardens & community land & on agricultural production.	<b>Public Information notices</b> - communities along the railway will be informed about operation of railway and that there should be no crossing of the railway other than at the designated crossing points, and that unauthorised activities should not be undertaken within the railway corridor. <b>Public awareness initiatives</b> - for increasing the public awareness of the railway (through school visits, safety centres, diversionary activities and communications). Making information on the railway publicly accessible. Safety barriers and signage to prevent access to the railway corridor. Grade separated railway crossings (i.e. over and underpasses) and level crossings will be replaced with over and underpasses. Adequate warning devices to warn pedestrians that a train is approaching <b>Community health and safety educational programme</b> Information on safety performance (relating to both accident investigations and overall statistics) will be made publicly available.	Neutral/Slight Negative
Community Health & Safety	Impacts from better access to the larger towns and health services		Large Positive
	Safety issues from crossing of railway track.		Slight Negative
Community Tensions	Community reactions due to disturbance arising from operation of railway.		Moderate Negative
Access & Severance	Impacts on access and severance effects.		Moderate Negative
Disruption to Utilities	Effects of diversions of utilities on local businesses and communities	Adequate strengthening of the local electrical grid to support the electrification of railway and avoid any reduction in the availability of the communities/businesses to electricity in the area.	Neutral
Economy	Effects on local, North-Eastern Macedonian, National and European Regional economy.		Large Positive
Employment	Creation of employment at local, regional, national and trans-boundary and global level & Improvement in access to employment opportunities across the region.		Large Positive
Education & Training	Education and training benefits from employment opportunities and from improved access to education and employment opportunities (e.g. increasing participation in skills and training amongst priority groups including those receiving social benefit and lone parents, and vulnerable groups increasing the percentage of secondary educated students who will continue with faculty education; Encouraging females to choose untypical profiles etc.		Large Positive
Vulnerable Groups	Effects on vulnerable people during operations	Operator of the Railway PERI will continue to inform general public and vulnerable groups residing along the track in order to increase their safety awareness	Moderate Negative



Topic	Summary of Impacts/Benefits	Summary of Key Mitigation/Management Measures	Significance of Residual Impact
Workforce	Railway workers' safety during operation of railway.	Update Operational <b>Emergency Preparedness Plan</b> and <b>Safety Program</b> . Provision of adequate training, equipment, and safety conditions, as well as taking other steps which are necessary for railroad workers to do their jobs safely. Operations to include the segregation of stabling, marshalling and maintenance areas from running lines. Railway workers will have rest periods at regular intervals in line with international standards and good practice.	Slight Negative
Quality of Life	Noise	Measures to reduce the noise level from railway traffic including maintenance of rails, railroad switchgear and other material; sharpening of rail and the wheels; and noise reducing material on the wheels and the rails. All residences that will be exposed to a noise level which is greater than the maximum permitted levels will be offered noise protection measures. Anti noise walls/barriers, house insulation and triple glazing in the windows will be implemented for houses affected by noise caused by the railway.	Moderate Negative
	Vibration	There are only limited possibilities for reducing the vibrations, which are caused by railways. The vibrations from the trains can to some extent be reduced by ensuring continuously maintenance of wheels, track bed and rails.	
	Safety	(Measures related with Community Health& Safety and safety issues associated with crossing of rail track).	
	Electromagnetic fields	Only possible measure to reduce the risk from electromagnetic field is to ensure that newly constructed railway is at a distance of 10 meters away from residences.	Slight Negative

Table 8-1 Summary of receptors, impacts/benefits, mitigation/enhancement measures and residual values

## 9 CUMULATIVE & TRANSBOUNDARY IMPACTS

The cumulative and transboundary impacts of the railway project with the following other present and reasonably foreseen projects have been assessed within the ESIA:

- Existing KrivaPalanka, Kratovo, Kumanovo and Skopje natural gas pipeline and connecting pipelines;
- Planned construction of the Vakuf water reservoir in Kratovo Municipality;
- Planned construction of the new motorway/highway Kumanovo - Bulgarian border.

With regards to environmental impacts, the significance of the cumulative residual effects were found to be slight in all cases except for landscape, habitats and protected and designated areas. It was determined that the project that mainly contributed to the cumulative effects would be the Vakuf water reservoir.

As for the transboundary effects, the effect on protected and designated sites was found to have some significance (slight) due to the presence of Natura 2000 sites across the border in Bulgaria (Osogovo SPA and Osogovska Planina SAC), which are a continuation of Macedonian Emerald sites (Pchinja-German and Osogovo). Mitigation measures to minimize the impacts on flora, fauna and habitats will also protect the conservation values of these sites.

The Border tunnel at the end of Section 3 has a total length of 2,350 m. The Macedonian part of this tunnel will be 1,150 m long, and the reconstructed of this 1,150 m section forms part of this project. The remaining 1,200 m of the tunnel will be the responsibility of Bulgaria, and does not form part of this project. Given the practicalities of reconstructing this tunnel, the detailed design of this border tunnel will be prepared in coordination with the Bulgarian railway authorities during the design phase. The effects of the 1,150 m of the border tunnel in Macedonia have been considered as part of the assessment of the effects of all the tunnels and other railway structures which are present in Section 3. Following ESPOO Convention requirements, a notification letter was provided to the Bulgarian side to inform them about the railway project, including the reconstruction of the Macedonian part of the border tunnel between Macedonia and Bulgaria. This first notification letter was sent in August 2011 in English, and a request was received for to be translated into Bulgarian. A second submission of the Notification letter in Bulgarian was made on 17 January 2012. No response has been received to date. The Bulgarian authorities should reply on which level of involvement in the project they are interested in, including the discussion around the potential transboundary impacts on their Natura 2000 sites

Positive cumulative economic and employment effects of a significant nature are anticipated from the projects. The Motorway project will potentially have positive cumulative impacts to education and training. Vakuf reservoir and the motorway will result in negative impacts on land and property. All three projects along with railway will potential give rise to both positive and negative effects on the Quality of life of communities living along the route.

Positive transboundary effects are anticipated on the economies of the regions and on employment, and education and training.

## 10 ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING

An Environmental and Social Management and Monitoring Plan (ESMMP) for Railway Corridor VIII – Eastern Section Project has been prepared (*see Chapter 8*). The ESMMP describes the environmental and social mitigation and monitoring measures, the criteria for their successful implementation and the organizational measures to be implemented during the pre-construction, construction and operation of the Project. The ESMMP involves a long term and phased process which will need to be regularly reviewed and updated as the Project evolves to reflect any changes in the Project implementation and organization as well as in regulatory requirements.

The ESMMP details environmental and social measures for the construction and operation of the railway, including the requirement to establish and implement an Environmental and Social Management System and monitoring plan along with a number of specific Environmental and Social Management Plans, including a Dust Management Plan, Biodiversity Management Plan and Traffic Management Plan.

For each identified impact a monitoring protocol will be established that will define the objective of the monitoring, the description and timing of monitoring activities, the indicator to measure the effectiveness of the measure, and any thresholds to be taken into account. Monitoring reports will be required from the Contractor/Operator during the construction and operational phases. These will be submitted to the relevant inspection authority. The monitoring plan is integrated within the ESMMP.

The goal of the ESMMP is to ensure that all necessary mitigation measures are carried out to counter any adverse environmental impacts, and that enhancement measures are used where feasible and practical. The ESMMP will allow for redesigning mitigation measures if from the monitoring it is observed that the mitigation measures are not working.



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Further information on the Project can be found at:

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