Update of the Feasibility Study. ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë - Pejë (SEETO Route 6 B), section from Kijevë – Klinë to Zahaq (30KM)

Environmental and Social Impact Assessment

(Draft)

Infrastructure Projects Facility for Western Balkans

IPA 2011-WBIF-IPF3

WB11-KOS-TRA-01

December 2016

IPF CONSORTIUM

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	21/12/2016	Ana Petrovska Aferdita Imeri Slavco Hristovski	Ralph Henderson	Gordon Lamond	Environmental and Social Impact Assessment Report December 2016

Contents

LIST OF TABLES

LIST OF FIGURES

List of Appendices:

Appendix 1: Reports on Measurements of Noise and Air Quality

Appendix 2: Biodiversity: List of Species

Synopsis

Project Title:	IPA 2011-WBIF-Infrastructure Projects Facility-Technical Assistance 3
Project Number:	EuropeAid/131160/C/SER/MULTI/3C
Contract Number:	2012/293-208 and 2013/331-494
Contracting Authority:	European Commission, DG NEAR
Beneficiary:	Ministry of Infrastructure, Kosovo*
Region:	South Eastern Europe (SEE)
Consultant:	Mott MacDonald Ltd. (UK) in Consortium with WYG International Ltd (UK), WS Atkins International Ltd. (UK)
Sub-Project Title:	Update of the Feasibility Study, ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë – Pejë (SEETO Route 6 B), section from Kijevë – Klinë to Zahaq (30km)
Sub-Project Number:	WB11-KOS-TRA-01
Contract Signed:	Admin Order No 87, 8th June 2015.
Mobilization Started:	8th June 2015
Project Duration:	12 months
Anticipated Completion:	June 2016
WBIF Team Leader:	Gordon Lamond
Sub-Project Director:	Ralph Henderson
Senior Project Manager:	Alan Spiers
Project Office:	Andreja Gropa St. No 7 10000 Prishtinë Kosovo *
Telephone:	+ 381 (0) 38 247 960

List of Abbreviations & Glossary of Terms used

Abbreviation	Meaning
AADT	Average Annual Daily Traffic
BD	Build Design
BOD	Biochemical Oxygen Demand
CA	Contracting Authority
CBA	Cost Benefit Analysis
CD	Concept Design
COD	Chemical Oxygen Demand
CoE BC	Council of Europe Bern Convention
CECP	Construction Environmental Control Plan
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
COP	Corporate Operational Plan
CR	Critically Endangered
CRC	Convention on the Rights of the Child
CTB	Cement Treatment Base
DD	Detailed Design
DMRB	Design Manual for Roads and Bridges
DTM	Digital Terrain Model
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECLO	European Commission Liaison Office
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ELV	Emission Limit Values
E&S	Environment and Social
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESPOO	Convention on Environmental Impact Assessment in a Transboundary Context
EU	European Union
EUNIS	European Nature Information System
FHWA	Federal Highway Administration's
FS	Feasibility study
fYROM	former Yugoslav Republic of Macedonia **
GDP	*Gross Domestic Product*
GPS	*Global Positioning System*
GIF	Good International Practice

Abbreviation	Meaning
GIS	Geographic Information System
HD	Habitat Directive
ICMM	Infrastructure/Independent Commission for Mines and Minerals
IFC	International Finance Cooperation
IFI	International Financing Institution
IHMK	Institute of Hydrometeorology of Kosovo
ILO	International Labour Organisation
IPF	Infrastructure Project Facility
IPPC	Integrated Pollution Prevention and Control
IUCN	International Union for Conservation of Nature
KEPA	Kosovo Environmental Protection Agency
KES	Kosovo Environmental Strategy
KOS	Kosovo *
LHS	Left hand Side
MD	Main Design
MEF	Ministry of Economy and Finance
MESP	Ministry of Environment and Spatial Planning
MoF	Ministry of Finance
MoI	Ministry of Infrastructure
MoU	Memorandum of Understanding
Mott MacDonald-IPF Consortium	The Consortium carrying out the present project
MTC	Ministry of Transport and Communications, Kosovo *
NEAP	National Environmental Action Plan
NGO	Non-governmental organization
NIPH	National Institute of Public Health
NPV	Net Present Value
NTS	Non-Technical Summary
OSCE	Organization for Security and Co-operation in Europe
PD	Pre-design
PR	Performance Requirements
RHS	Right Hand Side
SEA	Strategic Environmental Assessment
SEE	South-East Europe
SEETO	South-East Europe Transport Observatory
SEP	Stakeholder Engagement Plan
SME	Small and Medium Size Enterprise
SWQI	Surface Water Quality Index
TA	Technical Assistance
TEN-T	Trans-European Transport Networks

Abbreviation	Meaning
TENs	Trans-European Networks
TNS	Traffic Noise Screening
ToR	Terms of Reference
UDHR	Universal Declaration of Human Rights
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAT	Value Added Tax
VOC	Vehicle Operating Cost
VU	Vulnerable
WB	Western Balkan
WBIF	Western Balkans Investment framework
WSS	Water Supply Systems
WHO	World Health Organization

* The designation “Kosovo” is without prejudice to the positions expressed by the EU Member States on Kosovo’ s status and is in line with United Nations Security Council Resolution No. 1244/1999 and the International Court of Justice Opinion of 22 July 2010 on Kosovo’s declaration of independence.

** As of 2015 fifteen EU member states have recognised or in bilateral communication use its Constitutional name Republic of Macedonia.

1. INTRODUCTION

1.1. Environmental and Social Impact Assessment Report

The Environmental and Social Impact Assessment (ESIA) for the Project of interest – Construction of the motorway Kijevo – Klinë - Zahaq (hereinafter "The Project") has been structured to follow a commonly accepted impact assessment format and is reflective of the stages within the Kosovo* EIA procedure. The ESIA is organized into 12 chapters with the following content:

Chapter 1 Introduction: provides general information about the Project and history and justification for implementation.

Chapter 2 Legal & Policy Requirements: describes national and EU legislation and standards, multilateral agreements and conventions signed/ratified by Kosovo* and potential lenders` requirements relevant to the Project.

Chapter 3 Project Description & Consideration of Alternatives: describes the technical specification of the Project, alternatives considered and final route selection, as well as details, to the extent possible, on the scope and timeline of construction and operation activities.

Chapter 4 Scoping Assessment: defines the scoping method and ESIA scope, the opinion of the Regulator and stakeholders.

Chapter 5 Baseline Environmental & Social Conditions: describes baseline environmental and social conditions, focusing on sensitive resources / receptors.

Chapter 6 Potential Environmental & Social Impacts: describes the potential environmental and social impacts resulting from the Project activities before mitigation.

Chapter 7 Data Gaps and Update of the ESIA: it summarises key data gaps and highlights the next steps of updating the ESIA upon the further design development stages (Preliminary and Detailed Design). It also sets the framework for the design change management.

Chapter 8 Environmental & Social Mitigation Measures and Residual Environmental & Social Effects: presents the environmental and social mitigation measures proposed, the potential residual environmental and social effects after mitigation and their likely significance.

Chapter 9 Environmental & Social Management & Monitoring: presents the proposed environmental and social management and monitoring program designed to evaluate the implementation and performance of the mitigation measures and the overall environmental and social performance of the Project.

Chapter 10 Non-Technical Summary (NTS): presents the Non-Technical Summary of the ESIA of the proposed Project.

Chapter 11 References: presents a list of the references used during the preparation of the ESIA Study.

1.2. This Assignment

The full title of the assignment is: “Update of the Feasibility Study, ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë – Pejë (SEETO Route 6 B), section from Kijevë – Klinë to Zahaq (31km)”. It is financed within the framework of WBIF and implemented under IPF3 TA contracted by the Mott Macdonald IPF Consortium. The IFIs are EIB and EBRD, with EIB being the lead in the grant and implementation process.

1.2.1. Project Beneficiary and ESIA Team

The Project Beneficiary is the Ministry of Infrastructure (MoI), Kosovo*. The Ministry of Infrastructure is responsible for the transport infrastructure including roads. The Ministry's functions are managed through eight departments; the Department of Road Infrastructure represents the Beneficiary with relation to this Project.

Within the scope of this Assignment, a team of relevant specialists was assigned under the IPF3 TA to develop the ESIA (Table 1).

Table 1 ESIA Team

Name	Subject Matter
Ana Petrovska	ESIA Specialist
Aferdita Imeri	Social Expert
Slavco Hristovski	Biodiversity Expert
Sebiha Ahmeti Ramaxhiku	National ESIA Specialist

The field measurements of noise and air quality have been performed by “Farmahem Environmental Laboratory”[1]. The preliminary Social Survey has been executed by the “Business Support Centre”[2].

1.3. Background

The section of national Road N9 Kijevë – Klinë to Zahaq is currently a single carriageway paved road consisting of two 3.7m wide lanes, generally without additional edge strips.

[1] http://www.farmahem.com.mk/tabs/view/19bccb9bfa79aa09e94436821a41c677

[2] http://www.bsckosovo.org/

The Project analysed in this ESIA encompasses an offline dual lane motorway, section Kijevë – Klinë to Zahaq (31 Km). It is developed at a **Conceptual Design** stage. Update of the ESIA will be necessary in order to reflect any changes occurring at the Preliminary and Detailed Design stages.

1.3.1. Project History

Feasibility Study (COWI, 2006)

In 2006, the preparation of a feasibility study and environmental assessment of the two Routes (6 and 7) was commissioned by the Ministry of Transport and Communications in Kosovo* (MTC). The study focused on short-term investments; longer term Alignment`s alternatives were also proposed in order to respond to the growing traffic.

Detailed Design (2010, IDEAL Project Prishtinë)

In 2009-2010, the detailed design of Road M9, section **Klinë -Pejë** was undertaken by a national consultant ("N.SH.3D-Project"), on behalf of the MTC. The design presents a 2x2 lane motorway profile, which is mostly following the existing Alignment, with some deviations to avoid sensitive areas.

Detailed Design (2014, SOE 3D Project, Prishtinë)

In 2013-2014 the detailed design of Road M9, section **Kijevë-Dollc**, was undertaken. The design presents a 2x2 lane motorway profile; the Alignment is split into an offline option starting at Kijevë (6.5 Km) and a rminder of 7 km to the endof the section, following the existing road N9.

Pre-Feasibility Study (2016, IPF TA)

The Pre-Feasibility Study was developed within the scope of the IPF TA. It analysed, among others, the comparative advantages and disadvantages of four alternative Alignments, including those defined by the Detailed Designs in 2010 and 2014 respectively. Criteria used for the comparison of the alternatives included Engineering, economic, environmental and social considerations. The Northern (offline) alternative was proposed and subsequently approved by the Project Beneficiary. More details of the analyses of alternatives are provided in section 3.1.3 below.

Conceptual Design of the Northern Alternative (2016, IPF TA)

Based on the outcomes of the Pre-Feasibility Study, the selected Northern Alignment was refined and a Conceptual Design was completed. The present Alignment is described in Section 3.1.1 below.

The Project analysed in the present ESIA is a conceptualised design solution which will have to be upgraded to a Preliminary and Detailed Design. As the Alignment and other motorway elements will be subject to change along the next stages of the design process, the ESIA will have to be updated.

The likely scope of ESIA update is elaborated in section 1.3.3 below. Details on the design change management are elaborated in Chapter 9.

1.3.2. Purpose of this ESIA

This ESIA provides an assessment of the possible positive and negative impacts that the proposed Project may have on the environment and communities, together consisting of the environmental, biodiversity, cultural heritage, and socio-economic aspects. The purpose of the ESIA is to ensure that stakeholders are fully informed and decision makers consider the resulting environmental and social impacts, both negative and positive, when deciding whether to proceed with the project.

This **ESIA** is accompanied by a **Land Acquisition and Resettlement Framework** (LARF) **Non Technical Summary** (NTS), **Stakeholder Engagement Plan** (SEP) and **Environmental and Social Action Plan** (ESAP) which form disclosure package for purposes of public consultation.

1.3.3. LARF Principles

The LARF sets out the land acquisition and resettlement principles as follows: avoiding or minimising land acquisition and resettlement; providing fair compensation to Affected Parties (AP), paying special attention to women and vulnerable groups; ensuring pre-project living standards and consulting with them on compensation options; making sure that compensation will be fully provided before ground leveling and demolition.

1.3.4. Next Steps

Upon the progress of the design process (at the Preliminary and Detailed Design stage respectively), the following ESIA sections will be updated:

- Update of the **Project Description** (Alignment, construction works and support facilities, timelines etc.);
- Baseline (field measurements) for **air quality**; identification of sensitive receptors, assessment of impacts and setting mitigation measures;
- Baseline (field measurements) for **traffic noise**; identification of sensitive receptors, assessment of impacts and setting mitigation measures; detailed designs of the noise barriers will form part of the Project Detailed Design;
- Baseline for **groundwater quality** (identification and sampling of drinking water from wells used for water supply in villages located on the south from the alignment); assessment of impacts and design of mitigation measures to inform the design of the run-off drainage and treatment as well as information on groundwater quality[3] and settlements potentially affected by impacts of discharging run-off from the motorway surface;

[3] Groundwater quality information will be retrieved from the hydro-geological survey to be completed during the Preliminary Design stage.

- Identification of the locations of **quarries and borrow pits**; update of impacts and mitigation measures;
- Identification of the locations of **excess material disposal sites** – sensitive locations pointed out by this ESIA will be avoided; update of impacts and mitigation measures to inform the the design – access, slope, compaction rate and drainage of the excess material disposal sites);
- Baseline, assessment of impacts and mitigation measures for **Land Use** and **Land Take**
- Update of the baseline socio-economic surveys to identify vulnerable groups that may be impacted by the Projects, changes to access, road safety, people potentially losing land, property, business premises or income due to the project.

In conjunction with the relevant expropriation studies, the **LARF will be updated** during the **Preliminary Design** and a **Resettlement Action Plan** (RAP) will be developed at the Detailed Design stage.

The evaluation of the Design and at the end of construction (preferably before the Project is open to traffic) will be performed in the **Road Safety Audit**. The aim of the Road Safety Audit is to identify potential road safety problems that may affect any users of the motorway and to suggest measures to eliminate or mitigate those problems. The Road Safety Audit process includes the collision monitoring to identify any road safety problems that may occur after commissioning of the motorway.

Prior to the construction, the **Design and Build Contractor** will develop a **Construction Environmental Management Plan** (CEMP), to ensure that the impacts identified during this and the updated ESIA will be properly managed and that activities will comply with all applicable environmental rules and regulations.

1.3.5. Kosovo Road Network and Project Location

The road network in Kosovo* is classified into Magistral (National) and regional roads, under the administration of the Ministry of Infrastructure (MoI), and the local roads, including urban and rural roads, under administration of the municipalities. The total length of the road network is 8,522 km. Most of the roads in Kosovo* were constructed or reconstructed in the 1960s.

MoI is responsible for 1,921 km of the road network (Table 2 and Figure 1):

Table 2*: Road Network – MOI Responsibility (km)*

MoI Roads	Paved	Unpaved	Total
Motorway	78	0	78
National	599	4	603
Regional	1,173	107	1,280
Total	1,810	111	1,921

Source: MoI (estimated)

The Project is located on the north from the existing road N9 starting at Kijevë (located 38 Km west of Prishtinë) and finishing at the village of Zahaq (7 Km east of the town of Pejë); its total length is 31 Km. It forms part of the east-west route between Prishtine and the border with Montenegro. The larger towns along the corridor are Pristinë and Pejë.

Figure 1 Kosovo Road Network and Project Location

1.3.6. Project Justification

The Project is conceived to induce significant improvements in the following areas:

- Integrating the Kosovo* roads to the Core Transport Network and in the South-East Europe Transport Observatory (SEETO)
- Meeting goals of the Kosovo* Transport Policy and Spatial Plan
- Accommodating the increasing traffic growth and minimising congestion
- Improving local environmental and social conditions
- Accelerating economic development
- Improving traffic safety
- Improving mobility of citizens

1.3.7. Integration to the SEETO

Kosovo* participates in the development of the Core Transport Network and in the South-East Europe Transport Observatory (SEETO). In order to stimulate the development of transport infrastructure in South East Europe, the Memorandum of Understanding for the development of the Core Regional Transport Network (MoU) was signed on 11th June 2004. Both infrastructure and related services, including administrative and regulatory procedures, are within the scope of the MoU; the cooperation under the SEETO should contribute to better interoperability with the Trans-European Transport Network (TEN-T) by integrating the SEETO Comprehensive Network. The SEETO Core Road Network consists of eight corridors and seven Routes (Figure 2).

Figure 2: SEETO Road Network and Location of the Project

The SEE Core Road Network consists of three Corridors (with 8 Corridor branches) and seven Routes (with 9 route branches). The total length of the network is 5,975 Km (3,019 Km of Corridors and 2,956 km of Routes).

Within Kosovo*, there are no main Corridors, however there are some 250 km of Routes 6 and 7. These routes are important both at the national and regional level (Figure 3).

Figure 3 Routes 6 and 7

These routes constitute the main links to the neighbouring capital cities and to the regional transport network in South East Europe. At the same time, they connect some of the main cities and economic centres within Kosovo*

Route 6 connects Ribarevina (Montenegro) to Skopje (fyr of Macedonia) through Zubin Potok, Mitrovica, Pristina, Ferizaj and Hani i Elezit (Kosovo). At Ribarevina, Route 6 connects to Route 4 connecting the Port of Bar (Montenegro), Belgrade (Serbia) and Vatin (Romanian border).

The Project would integrate into the SEETO Comprehensive Network and ultimately improve the interoperability with the Trans-European Transport Network (TEN-T).

1.3.8. Kosovo* Transport Policy and Spatial Plan

Kosovo* Transport Policy

Transport policies in Kosovo are aligned with the European Community efforts in achieving the Lisbon agenda by encouraging trade and sustainable growth as well as social cohesion. Kosovo Government embarks on harmonizing the legislation, standards and technical specifications in the transport sector with those of the EU.

Efforts in developing transport policies in Kosovo* started in 2003 when the Ministry of Transport and Communications adopted the Program for Development of Transport Policy in Kosovo*". In 2005 the Draft Kosovo* Transport Policy and Plan was developed. Also in 2005 a first Kosovo* Policy Paper for Multi Modal Transport was prepared for the Government of Kosovo*, while in 2009 the National Background Report on Transport for Kosovo* was developed, along with the Multi-Modal Transport Strategy and Action Plan; the Multi-Modal Strategy and Action Plan was then updated in 2012.

The Kosovo* Government aims to create links to the European transport network and, in line with this, to provide a priority road network linking the transport gateways to the areas of potential economic growth. **The implementation of the Project is contributing to achieving the goals of the Transport Policy.**

Kosovo* Spatial Plan

The Spatial Plan of Kosovo* 2005 - 2015 aims to link Kosovo* to the main road corridors of the region and the rest of Europe and strengthen internal urban and regional roads to create access for all. The Spatial Plan states that these objectives will require new ring roads around the large cities and expansion and improvement of the main road axes. The prioritised actions include construction of motorways along the Route 6 and in Route 7. **Thus, the Project is fully aligned with the development concepts and priority actions in the transport sector of the Spatial Plan.**

1.3.9. Traffic growth and Congestion

The existing road, due to increasing traffic volumes, has already reached its capacity leading to congestion, especially at junctions with roads leading to urban centers (i.e. Gjakove and Mitrovica, Figure 4).

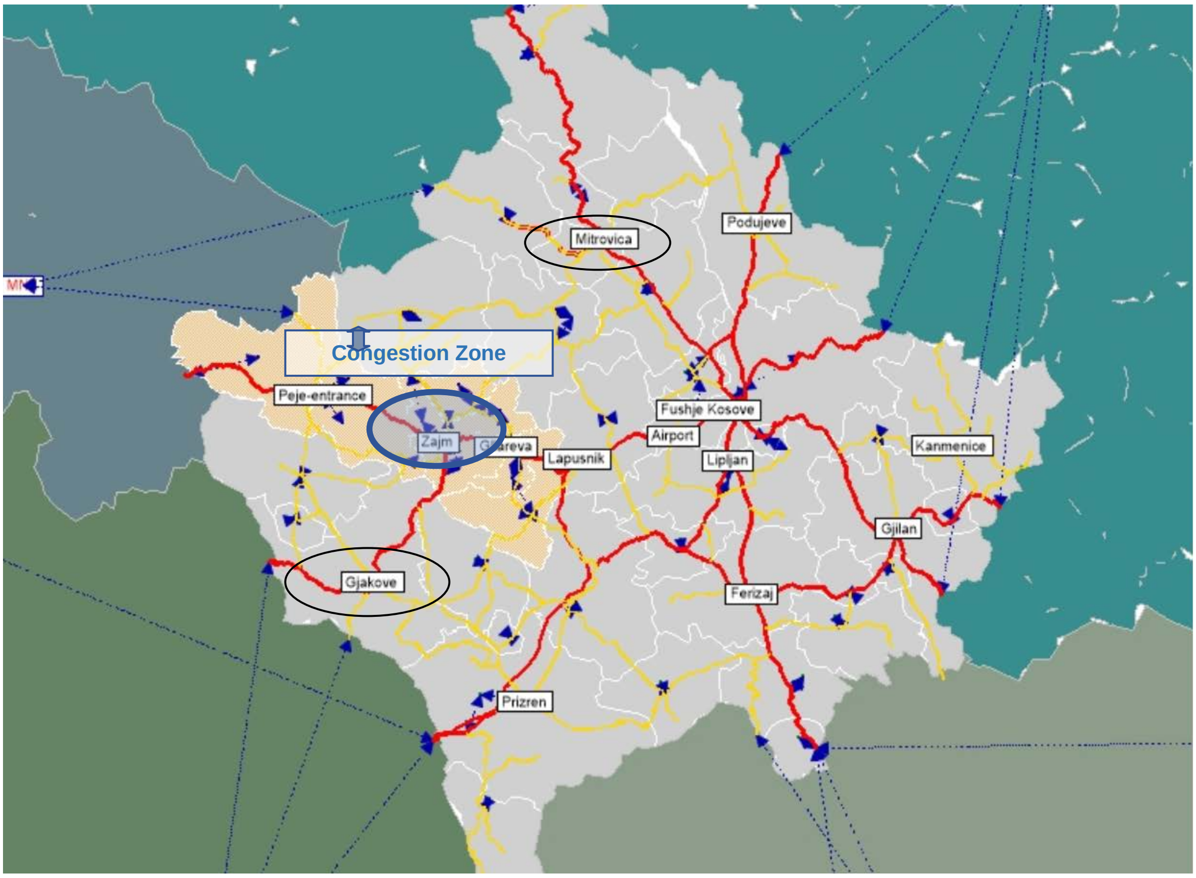


Figure 4 Congestion Zone Along the Existing Road N9

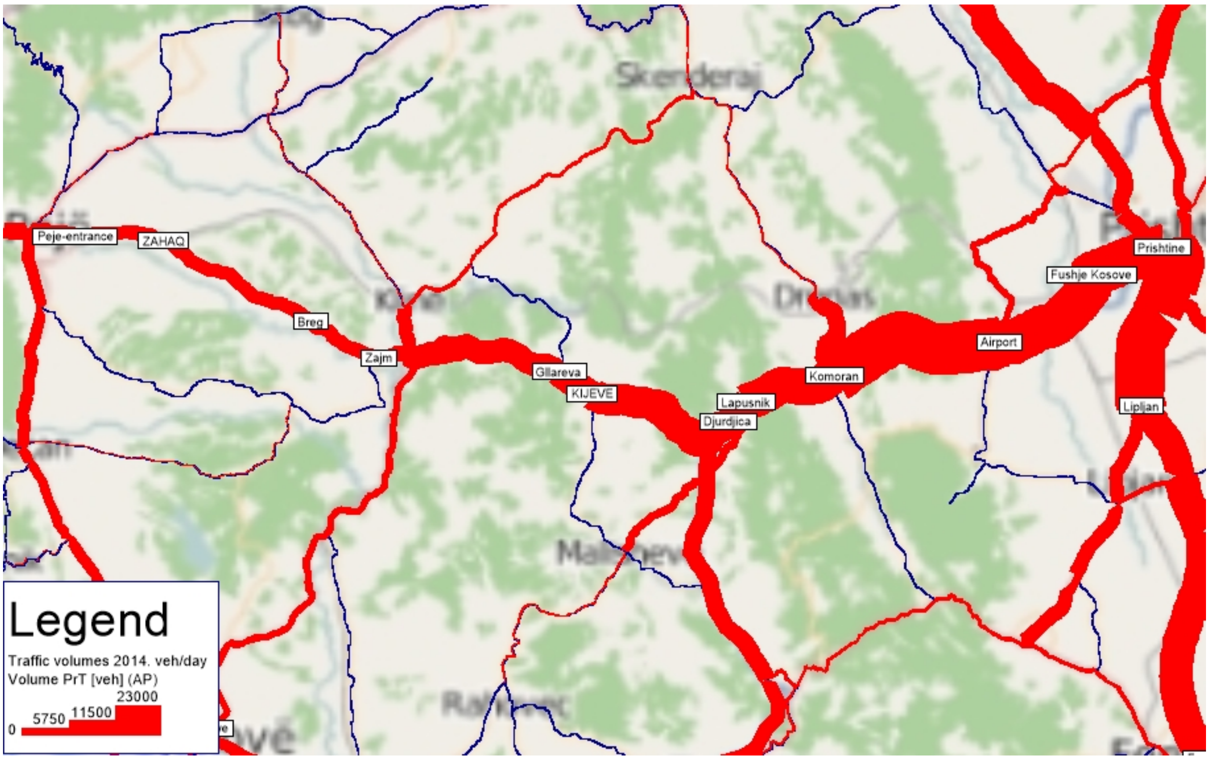


Figure 5 Traffic Flows Along the Existing Road

This congestion zone is further illustrated by the traffic flows along the existing road N9 (Figure 5).

The Project will enable for accommodating the increasing traffic growth and reducing the congestion along the existing road N9.

1.3.10. Improving local environmental and social conditions

There are 20 settlements located within the adjacent corridor of the existing road (15,992 residents) of which the villages Zajm; Grabanice, Low Peterc, Upper Peterc, Jablanica, Klinqina, Leshan, Gllavicice, Ramuna and Zahaq are the most affected by excessive noise and emission of pollutants from vehicles. In the Figure 6 below the settlements crossed by the existing road can be seen.

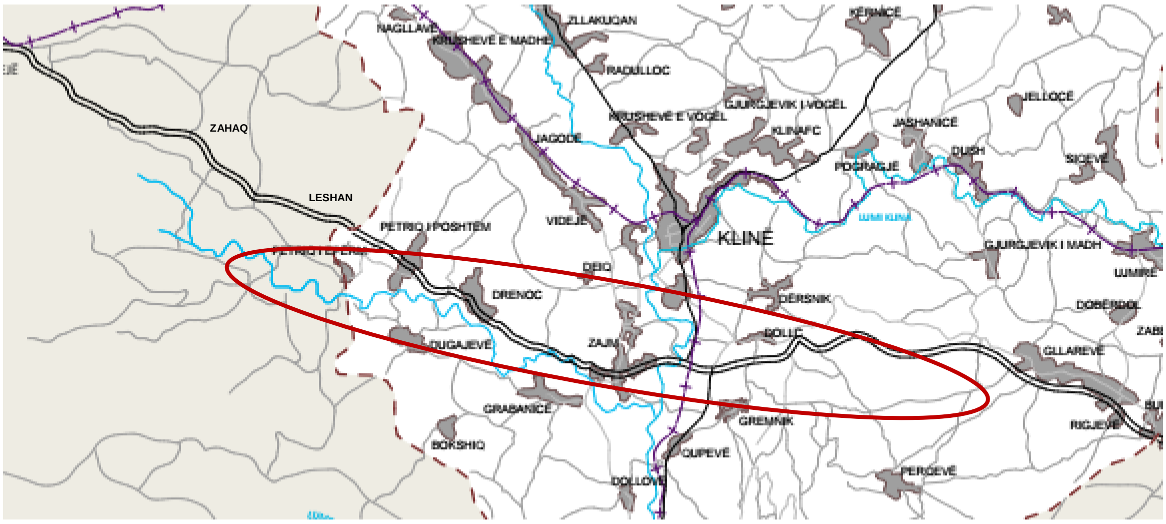


Figure 6 Settlements Crossed by the Existing Road, Section Kijeve-Zahaq

Source: Municipal Development Plan for Klinë

The populated areas extend outside the boundaries shown in the map; the property of householders failing to obtain a construction permit is considered “informal”, and these aren`t included in the Municipal Development Plan. In reality, however, residential and non-Residential Properties are located along the entire section Kijev-Zahaq.

Figure 7 Residential Properties exposed to excessive noise and harmful emissions from the vehicles

Figure 8 Residential Properties exposed to excessive noise and harmful emissions from the vehicles

The ambient air quality was tested during the Pre-Feasibility Study stage in order to determine the influence of road traffic on the concentrations of particulate matter (PM_{10}), sulfur dioxide (SO_2), nitrogen oxide (NO_x) and carbon monoxide (CO) along the existing road N9. Measurement results were compared against the limit values set in the Directive 2008/50/EC on the ambient air quality. Sampling results are presented in the table below.

Table 3: Ambient Air Quality Sampling Results for the Existing Route

PM 10	Measurement point 1	Measurement Point 2	Measurement Point 3
Minimum concentration	0.001mg/m3 (1µg/m^3)	0.001mg/m^3 (1µg/m^3)	0.001mg/m^3 (1µg/m^3)
Maximum concentration	0.38mg/m3 (380µg/m^3)	0.126mg/m^3 (126µg/m^3)	0.116mg/m^3 (116µg/m^3)
Average concentration	0.02mg/m3 (20µg/m^3)	0.021mg/m^3 (21µg/m^3)	0.031mg/m^3 (31µg/m^3)
24 limit value			50µg/m^3
SO_2 average concentration	35µg/m^3	300µg/m^3	179µg/m^3
One-hour limit value (SO_2)			350µg/m^3
NO_x average concentration	35µg/m^3	52µg/m^3	38.5µg/m^3
One-hour limit value (NO_x)			200µg/m^3
CO average concentration	5mg/m^3	6.8mg/m^3	6.2mg/m^3
8 hours' limit value (CO)			10/m^3

The average concentrations of the measured parameters were within the prescribed limit values, however, **the maximum concentrations exceeded the 24-hour limit for PM_{10} at all sampling points**.

The noise level was also tested during the Pre-Feasibility Study stage. **Measured noise levels exceeded the limit values at all measurement points** (Table 4).

Table 4: *Noise Level Measurements for the Existing Route*

Parameter	Measurement Point 1	Measurement Point 2	Measurement Point 3	Limit Value
Measurement Period Day (h)	**13:00-14:00**	**14:30-15:30**	**17:00-18:00**	
Traffic Flow (cars/hour)	848	1132	804	
Average Speed (km/h)	80	50	50	
Wind Speed (m/sec)	0.4	0.1	0.1	
L_{Aeq} dB(A)	**75.8**	**72.7**	**72.7**	**55**
Measurement Period Evening (h)	19:00-20:00	20:10-21:10	21:35-22:35	
Traffic Flow (cars/hour)	626	370	218	
Average Speed (km/h)	80	50	50	
Wind Speed (m/sec)	1	0.5	0.1	
L_{Aeq} dB (A)	**73.3**	**68.7**	**67.8**	**50**
Measurement Period Night (h)	02:00-03:00	21:08-00:08	00:30-01:30	
Traffic Flow (cars/hour)	27	108	43	
Average Speed (km/h)	80	50	50	
Wind Speed (m/sec)	2.1	2	0.2	
L_{Aeq} dB (A)	**61.3**	**64.9**	**61.8**	**45**
L_{den}	**75.3**	**73.7**	**72.4**	

By the implementation of the planned Project, the high speed traffic will be carried outside densely populated areas, the current congestion along the existing road will be minnised and hence the local environmental conditions will improve.

1.3.11. Improving traffic safety

The existing road crosses populated areas and even runs through the center of many villages with unrestricted access from adjacent Residential and non-Residential Properties). There is no physical separation between the road itself and pedestrians' areas, entrances in non-Residential Properties (commercial buildings, parking lots) etc. (Figure 9).

A poor separation of the different traffic forms is found in settlements as well as on the main roads outside settlements. There are no means of speed restriction, except for sign-posting, and few or no facilities exist for pedestrians along the roads or at the crossroads. This situation increases the likelihood of accidents.

Figure 9 Unrestricted Access to Properties

There isn`t any reference to the road accidents for the N9 route – the available information is for Kosovo* only, for the period 2010, 2013 and 2014. According to the available data, the likelihood of car accidents increases in summer, when tens of thousands of emigrants from Kosovo to Western Europe return to their homeland.

Numbers for 2010 are: every day there were 49.4 accidents, 21 injured persons and 0.5 persons lose life or one person was killed on the road every second day. In 2010 there were 8 deaths per 100,000 inhabitants, which is slightly higher compared to 7 deaths per 100,000 inhabitants in the EU. However, the number of fatalities per 10,000 vehicles in Kosovo is much higher, compared to other countries: Kosovo 8.7, Austria 1.2, UK 1.0 and USA 1.7.

The most recent "Report on the Number of Road Traffic Accidents for the Period January – December 2014"[4] shows some reduction in the numbers of accidents in 2014 compared to the previous year (Table 5).

Table 5: Accidents on Roads in Kosovo, Comparison 2013-2014

Accidents	2013	2014
Total accidents	19,953	16,301
With injuries	4,960	4,876
With material damage	13,878	10,333

It is observed, however, that the number of fatal accidents in 2014 increased for almost 7% compared to 2013 (Table 4).

[4] Source: Ministry of Infrastructure

Table 6: Fatal Accidents on Roads in Kosovo, Comparison 2013-2014

Accidents	2013	2014
Fatal accidents	104	111
Deceased persons	119	127
Injured persons	9,817	9,713

Audit Report Traffic Police Operations and Road Traffic Safety[5] (March 2015) provides the number of registered traffic accidents in the Pejë district in 2012 and 2013 (Table 7).

Table 7: Number of Registered Traffic Accidents in the District of Pejë , 2012 and 2013

Year	Traffic Accidents near Pejë
2012	2,957
2013	2,574

The share of accidents near Pejë in the total number of accidents in Kosovo* in 2013 is almost 13%.

The planned Project will improve the road safety as it avoids settlements; in addition, it will be designed according to best practices for motorways, whereas access will be limited to vehicles entering/exiting via specially designed grade separated junctions.

1.3.11.1. Improving mobility of citizens

Internal migration in Kosovo* is mainly shaped by rural-urban migration whereas the urban centers provides the employment opportunities, greater market for various rural products, better health and education services etc.

The existing route section connects a number of villages with the towns of Prishtine and Pejë. Traffic congestions mentioned elsewhere cause limitations to daily migrations; also it increases the travel time to the border with Montenegro.

The Kosovo Agency of Statistics published report on migrations in 2014[6] in which the internal migration is quantified and expressed in total numbers of population`s migration, percentage of migration compared to the resident population in the municipality and the participation of each municipality in the total national migration in the country (Table 8).

Table 8 Migration in the Municipalities Located Along the Planned Road Section

Municipality	Migrating Population	Migration compared to population of municipality (%)	Total share in the national migrations (%)
Klinë	5,949	15.45	3.03

[5] Published by the Office of the Auditor General of Kosovo

[6] https://ask.rks-gov.net/ENG/publikimet/doc.../1179-kosovan-migration

Municipality	Migrating Population	Migration compared to population of municipality (%)	Total share in the national migrations (%)
Pejë	7,144	7.41	3.64

It can be seen that high percent of the residents of the municipality of Klinë (15.45) migrate to the urban centers.

Ensuring better mobility for settlements located along the existing and planned Project, as well as for travellers, is therefore another reason for undertaking the Project.

1.3.11.1. Accelerating economic development

The economic growth in Kosovo* growth since independence was largely attributable to public investments in infrastructure, donor assistance, and remittances. Kosovo's current growth model is unsustainable over the longer term as the productive base has remained narrow. With per capita GDP estimates of close to €3,000, Kosovo is one of the poorest countries in Europe. Using the domestic poverty line of €1.72 per day (2011 data) as defined by the Kosovo Agency of Statistics, 29.7 percent of its population of 1.8 million are considered poor. Widespread unemployment and a lack of quality jobs have contributed to poverty and income insecurity. With an estimated unemployment rate of above 30.0 percent in 2013 and an employment rate of only 28.4 percent (figure 5), Kosovo has one of the weakest employment records in Europe[7]. Growing private sector activities and productivity-increasing investments will (have to) become increasingly more critical as engines to growth and, in turn, improve job and income perspectives.

The research has shown (J. Stiglitz, 2000), that an emerging market`s economic growth is positively impacted by the implementation of quality infrastructure programmes and that income inequality declines with higher infrastructure quantity and quality. Transport infrastructure in particular is linked with improvements in an emerging market`s economy through reduced transportation costs and increased accessibility. These two factors not only impact directly on productivity and growth but also indirectly by enabling higher levels of private investment.

The development of the Project will play an essential role in improving employment opportunities, stimulating better access to markets (e.g. marketing agricultural products), as well as providing access to health, education and agricultural inputs and extension services to the population affected by the Project.

[7] http://www.worldbank.org/content/dam/Worldbank/document/eca/Kosovo-Snapshot.pdf

2. LEGAL AND POLICY REQUIREMENTS FOR THE ESIA

2.1.1. Project Category

According to the Law on Environmental Impact Assessment*[8], which transposes the requirements of the EU EIA Directive (85/337/EEC amended[9]), the potential environmental impacts of a Project shall be evaluated by an Environmental Impact Assessment (EIA) process and documented in an Environmental Impact Statement (EIA Study). In Annex 1 of the Law – Section 6 (Transport Infrastructure), *"Construction of a new road of two or more lanes, or reAlignment and/or widening of an existing road to provide two or more lanes, where such new road, or reAlignment and/or widened section would be five (5) km or more in continuous length*" is subject to EIA.

According to the EBRD categorization of projects (Environmental and Social Policy, 2014[10]), the Project falls within Appendix 2: Category A projects, sub-category 6: *"Construction of motorways, express roads and lines for long-distance motorway traffic; airports with a basic runway length of 2,100 metres or more; new roads of four or more lanes, or reAlignment and/or widening of existing roads to provide four or more lanes, where such new roads, or realigned and/or widened sections of road would be 10 km or more in a continuous length".*

According to the Environmental and Social Handbook of the EIB, Projects requiring a full ESIA are "all projects listed in Annex I of the EIA Directive 2011/92/EU".

As part of their decision-making process, EBRD and EIB require an evaluation of the proposed Project through an Environmental and Social Impact Assessment (ESIA) that meets national legislation, lender performance requirements as well as other applicable international laws, conventions and guidelines.

2.1.2. National Legislation of Relevance for the ESIA

In responding to environmental issues, the Ministry of Environment and Spatial Planning (MESP) updated the Kosovo Environmental Strategy (KES) and the National Environment Action Plan (NEAP) for 2011–15 working with ministries, nongovernmental organizations, and other stakeholders. The environmental priorities for the period 2011-2015 are identified as completing environmental legislation in harmony with the EU "*acquis*"; gradually fulfilling EU standards and efficiently carrying out and incorporating environmental legislation and methodologies in all sectors; and setting up and expanding institutions for the implementation of environmental policies (including capacity building).

[8] http://www.kuvendikosoves.org/common/docs/ligjet/2010-214-ang.pdf

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

[10] http://www.ebrd.com/what-we-do/strategies-and-policies/approval-of-new-governance-policies.html#a1

The environmental legal framework within Kosovo* 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. In addition, the Law on Integrated Prevention and Pollution Control (IPPC) is fully aligned with the Council Directive 96/61/EC concerning integrated pollution prevention and control ("IPPC Directive").

The key legislation for protection of the environment, where the EIA procedure has been prescribed, is the Law on Environmental Impact Assessment (No. 03/L-214). The requirements of the EU EIA Directive 85/337/EEC (as amended by Directive 2014/52/EU) have been transposed within the Law on Environmental Impact Assessment.

With regards to social aspects, there are national laws covering Health Protection, Occupational Health & Safety, Labour Relations, Occupational Safety, Employment, Social Protection, Land Acquisition, Cadastre etc.

Kosovo* has not been recognised by treaty depositaries as a state that can ratify treaties and international conventions. However, most of the International Conventions with regard to the Environment, Public Participation and Labour issues have been translated in the Kosovo* national legislation.

- UNESCO World Heritage Convention (November 1972) is not adopted as the Kosovo is not member of UNESCO however the principles of the Convention are embedded on Kosovo Cultural Heritage Law (No: 02/L-88);
- Conventions of International Labour Organization (ILO) are present in Kosovo* legislation: efforts are directed to strengthening the capacity of employers' and workers' organizations in addressing economic and social issues, including the integration of Child Labour Convention (no:138 and 182) principles into the Kosovo Legislation.
- International Convention on Economics, Social and Cultural Rights (New York, 16 December 1966). Its principles and the rights deriving from the Universal Declaration of Human Rights (UDHR), Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and Convention on the Rights of the Child (CRC) are enshrined in the Constitution of Kosovo, article 22;

Stipulations in laws of relevance for this ESIA are summarized in Table 9 below.

Table 9 Summary of Legal Stipulations of Relevance for the ESIA

Law	Number	Relevance
Environmental Issues		
Law on Environmental Protection	03/L-025	Art. 9 - Makes a reference to the Environmental Impact Assessment (EIA) as a means for the protection of natural recourses; Art. 29 - EIA shall be an integral part of the technical documents; the Project execution cannot commence if

Law	Number	Relevance
		the EIA procedure is not properly implemented. Article 50 - Air quality monitoring is a legal obligation
Law on Environmental Impact Assessment	03/L-214	Art. 1 – Defines the scope of the law: procedures for the identification, assessment and reporting of the environmental impacts of certain proposed projects and associated administrative procedures, required for the decision-making process on ***issuing the Environmental Consent by the Ministry of Environment and Spatial Planning***. Art.10 - Defines the following EIA phases: (1) screening; (2) scoping; (3) review of EIA Report.
Law on Waters	04/L-147	Stipulates Good surface waters and Groundwater chemical status - the chemical status required to meet the environmental objectives for surface waters and does not exceed environmental quality standards. Art. 26 – Sets a requirement for any interventions aimed to improve, rehabilitate and maintain the water status to be aligned with plans for management of river basins. Art. 58 and 59 – Define the need for classification of surface and ground waters as per their chemical and ecological status.
Law on Nature Protection	03/L –233	Establishes a national ecological network of protected areas. Art. 33 and 34 – Regulates that an assessment of impacts deriving from plans / measures / interventions on conservation goals and integrity of the ecological network is obligatory
Law on Waste	04/L-060	Art 40 – Regulates the managing of construction & demolition waste: operators managing this waste stream shall hold special license; the management procedures, including the location of storage, are defined by the municipalities.
Administrative Instruction on hazardous waste management	06/2008	Art. 12 - sets the responsibilities of any holder of hazardous waste, including waste originating from road construction; Art. 14 – defines that only authorised company can collect and transport hazardous waste; Art. 19 – collected and transported hazardous waste can be kept up to 30 days at Collection Centres, which must meet the environmental criteria; Art. 31 – defines the preparation of hazardous waste for exporting, in the absence of any facility for treatment in Kosovo*.
Law on Hydro-meteorological activity-	02/L-79	Article 5 – Defines the monitoring network and processes and activities that need to take place to characterise and monitor the quality of the environment.
Law on Noise Protection	02/L-102	Art. 1 – Sets obligation for developing measures to

Law	Number	Relevance
		reduce noise emitted by the major sources, in particular road and rail traffic aircraft, outdoor and industrial equipment, mobile machinery and other sources of environmental noise pollution and annoyance
Administrative Instruction on permitted noise emission values and sources of pollution	08/2009	Sets limit values for noise levels per different land use categories
Law on Air Protection	03/L-160	Article 23 - Monitoring of air quality
Law on Integrated Prevention and Pollution Control	03/L-043	The purpose of the IPPC Law is integrated prevention pollution control arising from industrial activities laid down in Annex 1, i.e. preventing or reducing wastes and emissions to the air, water and land. The IPPC Permit is issued by the MESP. Annex I – Installations for which an IPPC permit is required - Mining activities: Underground extraction of mineral resources with an extraction capacity exceeding one hundred thousand (100,000) tonnes per year; Open-cast extraction of mineral resources on a site exceeding twenty-five (25) hectares;
Administrative Instruction on the Allowed Norms of Discharges in Air from Mobile Sources	03/2011	Art. 7 - The monitoring of vehicles` emissions in urban areas or outside of them will be carried out by MESP in cooperation with other specialized relevant Institutions in line with the the Law on Road Transport of Kosovo. Art. 20 - MESP in coordination with the MI, MH and their relevant structures will publish the information on the level of pollution of air from traffic vehicles based on the Kosovo Environmental Monitoring Program.
Social Issues		
Law on Roads	2003/13	In art. 26 the Right-Of-Way (the term used in the law is "reserve road") of motorways is defined, prohibiting certain activities within the strips` width as follows: • No mines, reservoirs, industrial plants, tanks and reservoirs, septic tanks etc. shall be installed within **60 meters** on either side of the Motorway • No residential houses, non-residential buildings, overhead power lines, telecommunication lines etc. shall be installed within **20 meters** on either side of the Motorway
Law on Road Traffic Safety	2007/02-L70	Regulates the rules and behaviour of participants in the traffic, signalisation, drivers` licensing, vehicles` public safety and maintenance etc.
Law on Cultural Heritage	2006/52	Art. 1 –Regulates the scope of Cultural Heritage regarding preservation, protection, public access, communication and provision of necessary resources in order that the heritage is enjoyed by current generations and forwarded to future generations.

Law	Number	Relevance
		Art. 4 – Protected Cultural Heritage may be expropriated in accordance with relevant legislation.
Law on Labour	2010/03-L-212	Art. 1 - Regulates the rights and obligations deriving from employment. Art. 4 - Provisions of the Collective Contract, Employer's Internal Act and Labour Contract shall be in compliance with the provisions of this Law. Art. 5 - Discrimination is prohibited in employment and occupation in respect of recruitment, training, promotion of employment, terms and conditions of employment, disciplinary measures, cancellation of the contract of employment or other matters arising out of the employment relationship and regulated by Law and other Laws into force.
Law on Occupational Safety	2003/19	The objective of the Law on Occupational Safety, Health and the Working Environment is to prevent occupational injuries and diseases at the workplace and to protect the working environment.
Safety and health at work	2012/04-L-161	Art. 1 - Sets measures for improving occupational the safety and health of employees. Art. 2 - General principles for prevention of occupational hazards, elimination of hazardous and accidents factors, information, consultation, balanced participation in improving the occupational safety and health, treatment of employees, their representatives and general guidelines for implementing such principles. Art. 4 - Government of the Republic of Kosovo establishes the National Council on Safety and Health at Work, which proposes, recommends and develops policies regarding the improvement of occupational safety and health and continuously monitors employees' occupational safety and health.
The Law on Expropriation of Immovable Property	2010/03-L-139	Art. 3 - Law regulates the formal expropriation and acquisition of immovable property by a Public Authorities. Art. 4 - The Expropriation is related to the implementation of project of public interest. The Government shall have the authority to expropriate property for any legitimate public interest, including construction of national or inter-municipal roads and toll roads. Property expropriated by the Government shall, upon completion of the expropriation process, become the property of the Republic of Kosovo.
Law on Cadastre	2011/04-L-013	Art. 1 - The Law regulates the Cadastre of immovable property, national and cadastral surveys, geodesic and cadastral works as well as acquisition, registration, record keeping, maintenance and use of cadastral data. Art. 4 - Immovable property – specific part of the land surface, which has boundaries (land, natural objects

Law	Number	Relevance
		affixed to the land, business buildings, residential buildings etc.).
Law on Property and other Real Rights	03/L-154	The Law governs the creation, content, transfer, protection, and termination of real rights. It also regulates ownership and, as limited real rights, possession, real security rights and real rights of use.

2.1.3. ESIA Procedure and Permitting

ESIA Procedure

The Environmental Impact Assessment procedure has been referenced into the Law on Environment Protection (Chapter II, Articles 9, Chapter IV, Article 29 and Chapter VI, Article 57) and prescribed on the Law on Environmental Impact Assessment (No. 03/L-214). The public disclosure is regulated with the Administrative Instruction for information, public participation and interested parties (No: 09/2011).

In compliance with Article 7 of the Law No.03/L-214 “on Environmental Impact Assessment” an environmental consent shall be required for every public or private project listed in Annex I or Annex II of this Law, which is likely to have significant effects on the environment by virtue, inter alia, of its nature, size or location. All projects which are listed in Annex I shall be obliged to implement an EIA, asking the corresponding authorization from the Ministry of Environment and Spatial Planning (MESP), while projects listed in Annex II shall be examined, case by case and in accordance with the criteria set out in Annex III, in order to determine whether they must require an EIA.

The procedures for the approval of an EIA are defined by Chapter III of the Law No.03/L-214 “On Environmental Impact Assessment”. According to this Kosovan Law, the EIA procedure includes the following phases: (1) selection; (2) scoping; (3) review of EIA Report. In addition to these phases, other phases not specifically mentioned as EIA phases, like the application, consultation, approval have been considered by this Law.

Relevant EIA steps, according to the Kosovo law are briefly summarized in the Fig. 10 below: it has been presented in the Booklet on the EIA Process[11], funded by the Austrian Development Agency and UNDP in 2014, in which the full EIA process has been described along with the EIA envisaged contents.

[11] http://mmph-rks.org/repository/docs/Booklet_on_the_EIA_process_757818.pdf

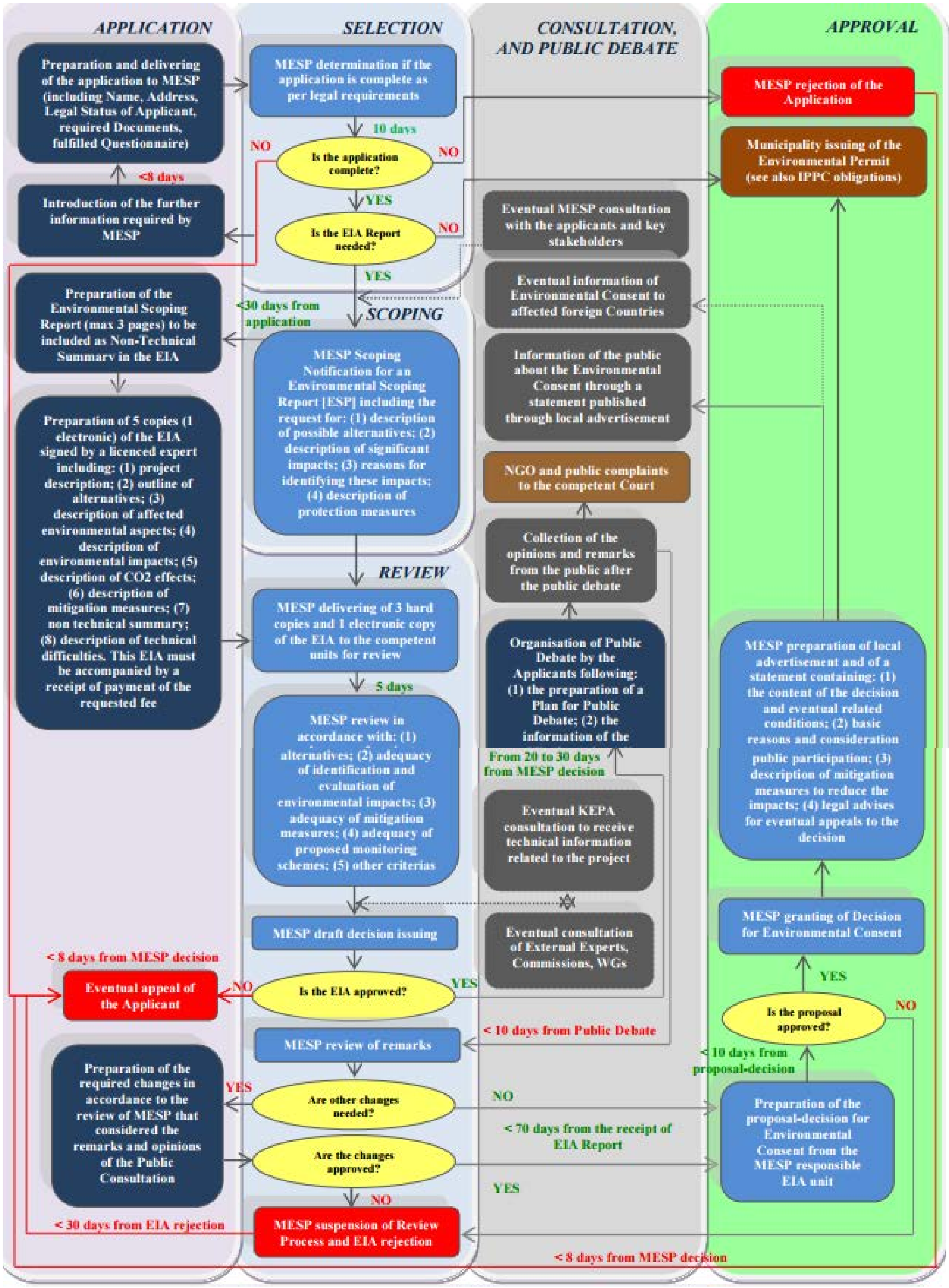


Figure 10 ESIA Process in Kosovo

The MESP is in charge of issuing various consents, approvals and permits at different stages of the Project planning process:

- Environmental Consent (approval of the ESIA Study), in accordance with the EIA law (please see Table 7 above);
- Approval of the Infrastructure Plan, required by the Law on Spatial Planning for the transport infrastructure (please see Table 8 below);
- Water Permit upon bridge construction, opening new mines (quarries) and / or waste disposal sites (please see Table 8 below);
- IPPC permit, required by the Law on IPPC, for newly opened quarries with the capacity of 100,000 tonnes per year (for underground exploitation) or 25 ha (open-pit mining, please refer to the Table 8 below),
- Construction Permit.

An overview of relevant laws governing the permitting process is provided in Table 8:

Table 10 Laws Governing the Permitting Process

Law	No.	Relevance for this ESIA
Law on Spatial Planning	No 2003/14	It requires the development of an "Infrastructure plan" for underground and above-ground installations in the field of: transport, electrical installations, gas pipelines, oil pipelines, water supply and sewage systems, telecommunications etc. It presents the land use and land use changes within the right of way of the analysed linear infrastructure and it is used primarily to prepare for the land acquisition. Art. 23 – Stipulates that prior to undertaking the Infrastructure Plan, Location Requirements and Location Approvals shall be obtained.
Administrative Instruction on Issuing and Retaining a Water Permit	24/05	A Water Permit is required for: • River diversion (bridge construction); • Opening a new mine (quarry); • Geological and Hydro-geological investigations; • Opening new waste disposal sites.
Law on Mines and Minerals, the Law on Amending and Supplementing the Law 03/l-163 on Mines and Minerals	No. 03/L-163 and 04/L-158	Independent Commission for Mines and Minerals (ICMM) issues Licenses and Permits for new borrow pits.
Law on Integrated Prevention and Pollution Control	03/L-043	An IPPC permit shall be required for opening of any new installation for either underground (Capacity of 100,000 tonnes per year) or open-pit exploitation (area of 25 ha) of mineral resources (i.e. quarries)
Law on Construction	2004 / 15	Art. 24 – design stages: (1) Pre-Design; (2) Concept Design; (3) Main Design; (4) As Built Design.

Law	No.	Relevance for this ESIA
		Art. 33 - construction permit shall be issued … …if the requirements and conditions set forth in the rules of this Law and other applicable laws are met, especially site requirements and approval, based on Article 23 of the Law on Spatial Planning, and if the permit required is issued based on other laws. Art. 35 – list of facilities for which the MESP issues construction permit: among others, public roads that interconnect all Kosovo territory and are also interconnected with main public regional and European roads with their composing parts. Art. 48 - A construction permission is expired in case the construction work does not start within a period of 2 years from the date of issue. Or, if Construction work is interrupted for a period of one year, the building permission of the partial building permission will expire. A construction permission can be extended to 1 year upon a written application / request for extension, with the right of rehearsal. Any request for extension has to be in line with the conditions set out in the issued permission.

Managing hazardous waste[12] is regulated in such a way that only authorised companies can be involved in the collection, storage and export. Temporary storage of hazardous waste is envisaged at so called "Collection Centres", but none has been installed in Kosovo* to date. Any temporary storage of hazardous waste generated during the construction of the Project shall be at locations that have obtained a permit for this purpose.

There isn`t any permit required for establishing surplus material disposal sites according to the current Kosovo* legislation. In the Law on Construction there isn`t any requirement to define the layout, cross section and the drainage of such areas in the Design.

According to the present practice, the locations of the surplus material disposal sites are agreed between the Design and Build Contractor and the municipality on which territory the excess material will be disposed of. The MESP does not monitor the disposal site selection process or the disposal methods. Sometimes the topsoil is taken over by the land owners of the plots located nearby the road under construction. This weakness of the legislation with regard to permitting of excess material disposal sites is addressed by suitable mitigation measures defined in the Environmental and Social Management Plan.

[12] Hazardous waste can include: asbestos roofing materials and/or underground storage tanks generated upon demolition of existing buildings, previously-deposited waste materials found upon preparatory and excavation works, waste oil, oil-contaminated filters, brake fluid and other associated materials residues left in drums generated during construction etc.).

2.1.4. Land Acquisition / Expropriation

Kosovo" legislation that regulates involuntary resettlement and livelihood restoration is based on the legal framework for expropriation. The expropriation process of immovable property in Kosovo is governed by the Law on amending and supplementing the Law no. 03/L-139 for the expropriation of immovable property, namely the Law No: 03/L-205 approved by the Kosovo Assembly in 2001. The law guarantees that the expropriation of private property occurs for public interest only and within a fair compensation process.

The Law on Expropriation regulates the procedure for expropriation of property for projects that are of public interest, and the connected rights for real estate (immovable properties). The issue of public interest with regards to the expropriation is reflected on the Law on Roads (No: 2003/11), article 9, point 9.1 to 9.3. The construction of roads is in the domain of public interest. Prior to the start of the expropriation process, the public interest of the Project shall be acknowledged by the Expropriation authority based on a legal justification of the Project Proponent.

Land expropriation and resettlement in Kosovo may be undertaken by administrative bodies ("the expropriating authority") at two levels:

- ***Municipalities*** (in cases when the affected property lies wholly within a municipality's borders): the municipal mayors or any designated municipal body act as the expropriating authority on behalf of the municipality,
- ***Kosovo Government*** (in cases when the affected property falls within the territory of two or more municipalities): The Ministry of Environment and Spatial Planning acts as the expropriating authority on behalf of all central level authorities.

Other key institutions involved in the expropriation process are:

- ***Office for Valuation of Immovable Property*** (within the Department of Property Tax) within the Ministry of Finance, the only public authority competent for valuation of any immovable property that is subject to expropriation by any expropriating authority (municipality or Government).
- ***Kosovo Cadastral Agency*** (KCA), the highest authority of cadaster, geodesy and cartography in Kosovo, responsible for the overall administration of the computerised Kosovo Immovable Property Rights Register.
- ***Municipal Cadastral Offices***, required to register (in the Immovable Property Rights Register) the final decisions on expropriation of immovable property (submitted by the expropriating authority), in order to prevent owners or interest holders from transferring or granting to any third person any ownership or other rights or interests in or to the concerned property, and undertaking any construction work on the concerned property

According to the law, the owners of properties are to be compensated for their losses, mostly in monetary terms. Compensation can be provided in the form of replacement property, if available, or in cash. Kosovo law allows compensation of lost profit/income for affected businesses, if incurred as a result of expropriation.

The expropriation - compensation price cannot be lower than the market value of the affected residential and / or non-Residential Properties (businesses) and should be sufficient to acquire new, resettle and / or re - establish properties at other locations. The property value is assessed and the compensation price is set in accordance with the Methodology for assessment of for the market value of the property, which is issued by the Ministry of Finance Property Department.

Article 4 of the Law no. 03/L-205, Law on Expropriation specifies which prior conditions are to be met[13] by the concerned Expropriating Authority to proceed with the expropriation, in accordance with the applicable procedures and requirements established by the law. If the Expropriating Authority is acting on its own initiative, it shall appoint one or more of its members or officials to prepare and submit the application. The expropriation can be carried out also on behalf of other institutions applying to the Expropriation Authority. These institutions can be a Public Authority (government agency) or a Publicly Owned Enterprise. If the Expropriating Authority is the Government[14], the expropriation can be carried out for the benefit of: Public-Private Ventures; Parties to an Infrastructure Contract awarded by a Tendering Body; any lawful heir, successor, assignee or transferee of such a Partnership or party.

The expropriation is often not a straightforward process, and people generally need additional assistance to be able to restore their living standards and improve them further. This becomes even more evident when the affected population includes vulnerable groups. The most difficult cases involve those who do not possess a legal title for the land ownership.

Expropriation Authority of the Project

The Expropriation Authority for the Project is the Government of Kosovo, specifically the Department of Expropriation within Ministry of Environment and Spatial Planning; the Applicant is the Ministry of Infrastructure.

Expropriation procedure

According to article 8 of expropriation law, the application for expropriation contains the following information:

[13] An Expropriation Authority shall have the authority to expropriate immovable property only when all of the following conditions are satisfied: 1.1. the Expropriation is directly related to the accomplishment of a legitimate public purpose within its competence as specified in paragraph 2 or 3 of this Article; 1.2. the legitimate public purpose cannot practically be achieved without the Expropriation; 1.3. the public benefits to be derived from the Expropriation outweigh the interests that will be negatively affected thereby; 1.4. the choice of the property to be expropriated has not been made for, or in the furtherance of, any discriminatory purpose or objective; and 1.5. the Expropriating Authority has complied with all applicable provisions of this law.

[14] Expropriation authority can also be a Municipality. In this case applicant could not be PPP or party to an Infrastructure Contract

- the name and address of the Expropriating Authority and, if the Expropriating Authority (Expropriation Department at the ESP) is not acting on its own initiative, the name and address of the Applicant (here, the Applicant will be Ministry of Infrastructure – Implementing Agency).
- the name and address of each person who is, or who claims to be, an Owner or Interest Holder with respect to each and every concerned parcel of immovable property in so far as this information may be readily ascertained from the available cadastral and other official immovable property records in Kosovo, including the records of the Kosovo Property Agency and the most recent property tax records;
- the location and number of each and every concerned parcel of immovable property, and - if less than the entire area of any such parcel is to be expropriated and/or if less than all rights relating to any such parcel are to be expropriated - a specific description of the part and/or rights that are the subject of the application:
- for each such parcel, a description of any and all rights (whether confirmed or claimed) relating to such parcel that the Applicant is requesting to be expropriated.
- a detailed description of the public purpose for which the expropriation is being requested;
- any significant documents demonstrating the legitimacy of the public purpose and/or the necessity of the applied for expropriation (or, if any such document is publicly available electronically, a clear indication of where such document may be obtained);
- information on whether, and to what extent, the requested expropriation includes fixtures, accessory parts and/or fruits of the immovable property; and
- detailed information, to the extent this is ascertainable from the records specified in item 1.2 of this paragraph, on any limitations on or disputes regarding the ownership or other rights or interests held or claimed to be held by Persons identified under item 1.2 of this paragraph.

The Expropriation Authority takes the final decision for approval or denial, in whole or in part of the application for expropriation. As long as a complaint is not resolved at the competent court, the Expropriation Authority does not approve the Final Decision on any concerned property or entitlement.

Expropriation Authority should carry out the Valuation of real estate (see § “valuation of assets” below). The law provides that the amount of compensation for expropriation specified in the final decision is paid in full within two (2) years from the date of entry into force of the decision.

An Expropriation procedure, or the relevant aspect thereof, shall be concluded or terminated when:

- Transfer of ownership cannot be passed without completion of the procedure and the payment of the compensation. The ownership right over the expropriated property is lawfully registered in the name of the Municipality (if the Expropriation was conducted by the Expropriating Authority of such Municipality) or the Republic of Kosovo (if the Government is the Expropriating Authority) after the conduct of the procedure and the payment of the compensation required by the present law;

- If the Expropriating Authority issues a decision that rejects, in whole or in part, the application for Expropriation:
    - upon the expiration of the time period during which the Applicant may file a complaint with the competent court challenging such decision, if the Applicant has not timely filed such a complaint, or
    - if the Applicant has timely filed such a complaint, the date on which a final non-appealable judgment has been issued by that court, or if applicable, an appellate court;
- prior to the adoption of an Expropriation decision, the Applicant withdraws its application, in whole or in part; or
- a final non-appealable judgment of a competent court requires such conclusion or termination.

From the day the Expropriation becomes effective: all pre-existing ownership and possessory rights, security interests, servitudes, construction rights, pre-emption rights and any other rights in or to the property expropriated by the Expropriation decision shall be terminated.

Cut-off Date

The Cut-Off Date is the date after which persons found to settle in the Project area are not eligible to Project compensation or other resettlement benefits, while similarly immoveable assets or crops established after the Cut-Off Date are not to be compensated.

The intent of the Cut-Off Date is to “freeze” eligible individuals or households and eligible properties thereby avoiding opportunistic attempts at maximizing compensation through structures erected intentionally or crops established on purpose. Potentially affected people need to be informed of the Cut- Off Date in order to minimize potential claims related with eligibility. Where opportunistic and/or fraudulent attempts at maximizing compensation are assessed as a significant risk, caution must be exerted in disclosing the Cut-Off Date.

As per the Kosovar legislation the Cut-off Date is established with the Decision of Acceptance of the application for the expropriation and the disclosure of the decision in public media. The Cut-Off Date is established when:

- the notification of intent of expropriation is delivered to affected owners where expropriation is applicable; or
- the census is completed.

2.1.5. EU Directives of Relevance for the ESIA

A number of EU directives are applicable to the ESIA Study. They cover environmental assessment, pollution prevention and control, industrial emissions, air quality, storage of carbon dioxide, greenhouse gas emissions, water, conservation of natural habitats and biodiversity, hazardous materials, noise. A list of the EU directives relevant to the ESIA is provided below:

- Directive 2014/52/EU[15] amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- Directive 2008/50/EC[16] on ambient air quality and cleaner air for Europe;
- Directive 2008/105/EC[17] on environmental quality standards in the field of water policy (amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC);
- Directive 2008/98/EC[18] on waste (Waste Framework Directive)
- Directive 2006/11/EC[19] on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community;
- Directive 2006/118/EC[20] on the protection of groundwater against pollution and deterioration;
- Directive 2012/18/EU[21] on the control of major-accident hazards involving dangerous substances (amending and subsequently repealing Council Directive 96/82/EC);
- Directive 2002/49/EC[22] relating to the assessment and management of environmental noise;
- Directive 92/43/EEC[23] on the conservation of natural habitats and of wild fauna and flora;
- Directive 2009/147/EC[24] on the conservation of wild birds
- Directive 2008/96/EC25 on road infrastructure safety management
- Directive 89/391/EEC[26] – Ocupational Health and Safety

2.1.6. Potential Lenders` Requirements

Currently EIB and EBRD consider financing the implementation of the Project.

The **EIB** Statement on Environmental and Social Principles and Standards, sets the policy context for the protection of the environment and human well-being. This framework promotes the EU approach to environmental and social issues, and is aligned with international best practice.

[15] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0052
[16] http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32008L0050
[17] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:348:0084:0097:en:PDF
[18] http://ec.europa.eu/environment/waste/framework/
[19] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0052:0059:EN:PDF
[20] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:372:0019:0031:EN:PDF
[21] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0018
[22] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32002L0049
[23] http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31992L0043
[24] http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32009L0147
[25] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32008L0096
[26] https://osha.europa.eu/en/legislation/directives/the-osh-framework-directive/1

This is reflected in the objectives and targets of its Corporate Operational Plan (COP-http://www.eib.org/attachments/strategies/cop_2010_en.pdf) as well as in its environmental and social safeguards, through the EIB Statement on Environmental and Social Principles and Standards. Such procedures, principles and standards are translated into the routine practices of the EIB in the Environmental and Social Practices Handbook [27], which is subject to regular review and revision.

According to the EIB Statement on Environmental and Social Principles and Standards, all operations funded by EIB, which are located in the EU, Candidate and potential Candidate countries, and which are likely to have significant effects on the environment, human health and well-being and may interfere with human rights, will be subjected to an assessment according to the EU EIA Directive 2011/92/EU; in addition, they shall comply with national legislation and regulations as well as any obligations and standards in the relevant international conventions and multilateral agreements to which the host country is party. The EIB applies a number of core environmental and social safeguarding measures that reflect international good practice. It requires all its projects to:

- Apply the European Principles for the Environment, i.e. comply with EU environmental principles, standards and practices, if practical and feasible in some regions;
- Comply with the EU environmental Acquis on environmental assessment as defined in the EIB Sourcebook on EU Environmental Law;
- Comply with international conventions and agreements ratified by the EU;
- Comply with the EU social Acquis as defined in the EIB Reference Book on EU Social Legislation and through the EIB Social Guidance Notes;
- Apply “best available techniques”, as appropriate;
- Apply good environmental management practices during project implementation and operation; and
- Adhere to other specific international good environmental and social practices.

Environmental and social sustainability according to the EIB Statement is a condition for projects to receive support from the Bank. Environmental and social assessment is therefore an integral part of the Bank’s appraisal and monitoring process.

The main aim of the bank is to ensure the adherence to the principles and application of the Core Labour Standards of the International Labour Organization (ILO), alongside relevant EU legislation. In line with relevant EU legislation and best international practice and under the umbrella of the ESIA, the promoter will carry out different types of assessment, such as social impact assessment which may include impacts on human health and human rights, biodiversity impact assessment, climate change impact assessment, and cultural heritage impact assessment, if applicable. If deemed necessary by the EIB, based on the nature of the Project and country context, the promoter may be required to carry out a stand-alone human rights impact assessment and/or other supplementary assessments.

[27] http://www.eib.org/attachments/strategies/environmental_and_social_practices_handbook_en.pdf

When the EIB is co-financing in partnership with other IFIs that have adopted their own environment and social (E&S) policies, adequate implementation of those policies may prove enough to meet the EIB E&S standards, pursuant to EIB's own assessment. Such possibility does not relinquish the EIB's own environmental and social due diligence duty and any gaps between that and other lenders shall be duly accounted for.

The Environmental and Social Policy of the **EBRD**[28], as approved by the Board of Directors at its Meeting on 7th May 2014, outlines how the Bank will address the environmental and social impacts of its projects by:

- defining the respective roles and responsibilities of both EBRD and its clients in designing, implementing and operating projects in line with this Policy and the Performance Requirements
- setting a strategic goal to promote projects with high environmental and social benefits
- mainstreaming environmental and social sustainability considerations into all its activities

To help clients and/or their projects achieve to environmental and social sustainability, the Bank has defined specific PRs for key areas of environmental and social sustainability as listed below:

- PR 1 - Assessment and Management of Environmental and Social Impacts and Issues
- PR 2 - Labour and Working Conditions
- PR 3 - Resource Efficiency, Pollution Prevention and Control
- PR 4 - Health and Safety
- PR 5 - Land Acquisition, Involuntary Resettlement and Economic Displacement
- PR 6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PR 7 - Indigenous Peoples
- PR 8 - Cultural Heritage
- PR 9 - Financial Intermediaries
- PR 10 - Information Disclosure and Stakeholder Engagement

Each PR defines, in its objectives, the desired outcomes, followed by specific requirements for projects to help clients achieve these outcomes. Compliance with relevant national law is an integral part of all PRs. The planned Project will meet the minimum requirements of the following PRs (Table 8):

Table 11 Summary of the Relevant EBRD Performance Requirements (PRs)

PR	Relevance
PR 1	Establishes the importance of integrated assessment to identify the environmental and social impacts and issues associated with projects and the client's management of environmental and social performance throughout the life of the Project. The environmental and social assessment process will be based on recent information, including an accurate

[28] http://www.ebrd.com/what-we-do/strategies-and-policies/approval-of-new-governance-policies.html#a1

PR	Relevance
	description and delineation of the Project and the client's associated activities, and social and environmental baseline data at an appropriate level of detail. The assessment process should also identify: (i) applicable environmental and social laws and regulatory requirements of the jurisdictions in which the Project operates, including those laws implementing host country obligations under international law; and (ii) applicable requirements under the PRs. Central to this approach is the application of the mitigation hierarchy and GIP.4 For projects that could have adverse environmental and social impacts, the client will, as an integral part of the assessment process, identify the project's stakeholders and design a plan for engaging with the stakeholders in a meaningful manner to take their views and concerns into consideration in planning, implementing and operating the Project in accordance with PR 10.
PR 2	Recognises that for clients and their business activities, the workforce is a valuable asset, and that good human resources management and a sound worker-management relationship based on respect for workers' rights, including freedom of association and right to collective bargaining, are key ingredients to the sustainability of business activities. Projects are required to comply, at a minimum, with (i) national labour, social security and occupational health and safety laws, and (ii) the fundamental principles and standards embodied in the ILO[29] conventions. The client will provide an effective grievance mechanism for workers (and their organisations, where they exist) to raise workplace concerns.
PR 3	Recognises that increased economic activity and urbanisation can generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. Therefore, resource efficiency and pollution prevention and control are essential elements of environmental and social sustainability and projects must meet good international practice (GIP) in this regard. The client will adopt technically and financially feasible and cost effective measures for minimising its consumption and improving efficiency in its use of energy, water and other resources and material inputs as well as for recovering and re-utilising waste materials in implementing the Project.
PR 4	Recognises the importance of avoiding or mitigating adverse health and safety impacts and issues associated with project activities on workers, project-affected communities and consumers. The client will take into consideration relevant EU road and traffic safety management standards, identify road safety measures and incorporate technically and economically feasible and cost-effective road safety components into the Project design to mitigate potential road safety impacts on the local affected communities. Where appropriate, the client will undertake a road safety audit for each phase of the Project and routinely monitor incident and accident reports to identify and resolve problems or negative safety trends.
PR 5	Supports and is consistent with the universal respect for, and observance of, human rights and freedoms and specifically the right to adequate housing and the continuous improvement of living conditions. The client will consider feasible alternative Project designs to avoid or at least minimise physical and/or economic displacement, while balancing environmental, social, and economic costs and benefits. Where it is unavoidable, resettlement should be minimised and appropriate measures to mitigate adverse impacts on displaced persons and host communities should be carefully planned and implemented. Project-related land acquisition and/or restrictions on land use often leads to both physical

[29] http://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm

PR	Relevance
	displacement of people as well as their economic displacement. The client will offer all displaced persons and communities compensation for loss of assets at full replacement cost and other assistance. This is intended to restore, and potentially improve, their standards of living and/or livelihoods of displaced persons to pre-displacement levels. The measures can be based on land, resources, wages and/or business activities. Standards for compensation will be transparent and consistent within the Project.
PR 6	Recognises that the conservation of biodiversity1 and sustainable management of living natural resources are fundamental to environmental and social sustainability. Through the assessment process, the client should identify and characterise, early in the Project life cycle, the potential Project-related opportunities, risks and impacts on biodiversity. The extent of the assessment should be sufficient to characterise the impacts, based on their likelihood and the significance and severity of impact, and reflect the concerns of potentially affected communities and, where relevant, other stakeholders. The assessment should also consider direct, indirect and cumulative impacts and evaluate the effectiveness and feasibility of the mitigation measures to be applied to the Project. The assessment process should include consideration of potential landscape level impacts, as well as impacts on the ecological integrity of the ecosystems, independent of their protection status and regardless of the degree of their disturbance or degradation. Appropriate mitigation measures are put in place, in accordance with the mitigation hierarchy, to ensure no net loss and preferably a net gain of priority biodiversity features over the long term, to achieve measurable conservation outcomes.
PR 8	Recognises the importance of cultural heritage for present and future generations. The aim is to protect cultural heritage and to guide clients in avoiding or mitigating adverse impacts on cultural heritage in the course of their business operations. The clients are expected to be precautionary in their approach to the management and sustainable use of cultural heritage.
PR 10	Recognises the importance of an open and transparent engagement between the client, its workers, local communities directly affected by the Project and, where appropriate, other stakeholders as an essential element of good international practice (GIP) and corporate citizenship. The clients are expected to identify and engage with stakeholders as an integral part of their overall environmental and social management system (ESMS), the Project's environmental and social assessment process and the environmental and social management plan (ESMP) as outlined in PR 1. Clients will conduct stakeholder engagement on the basis of providing local communities that are directly affected by the project and other relevant stakeholders with access to timely, relevant, understandable and accessible information, in a culturally appropriate manner, and free of manipulation, interference, coercion and intimidation. For projects that are likely to have adverse environmental or social impacts and issues, the client will develop and implement a Stakeholder Engagement Plan (SEP) appropriate to the nature and scale or the risks, impacts and development stage of the Project.

3. PROJECT DESCRIPTION AND CONSIDERATION OF ALTERNATIVES

3.1. Project Description

The Project – Construction of Motorway N9, section Kijevë – Klinë to Zahaq (31 Km), is at Conceptual Design stage. The early design stage entails that most of the motorway structures are located indicatively and also the Alignment itself is subject to further refinement and consequent changes. The Project Description provided herein reflects this situation and lacks details on:

- Motorway structures (interchanges, overpasses/underpasses, bridges, viaducts, drainage),
- Scope and timing of construction activities and works,
- Location of support facilities,
- Land Use and Land Take requirements

3.1.1. Detailed Project Location

The Project forms part of the east-west route between Prishtine and the border with Montenegro. The larger towns along the corridor are Pristinë and Pejë. The Alignment of the Project is located at a distance of up to 1.5 km north from the existing road N9. The existing road will be used as a parallel and servicing road. No interventions on the existing road are planned with the Project.

The Alignment starts near Kijevë (38 km west of Prishtinë) north to the village of Kijevë and ends at the village of Zahaq, 7 km east of the town of Pejë. The terrain includes gentle slopes crossed by many short gullies with inconsiderable catchment areas. The motorway runs through the so called Dukagjini region (plain) which is formed by the valleys of the rivers Drini I Bardhe and Bistrica e Pejës. The Drini I Bardhe River is crossed by a bridge near Klinë. Bistrica e Pejës River runs in parallel with the Alignment: the existing road N9 is located in between the new motorway and the river.

The starting section of the Alignment is formed upon a flat plateau; the terrain then gradually decreases towards the Drini I Bardhe riverbed and then climbs mildly to higher altitudes, towards Pejë. The difference between the lowest (370 m) and the highest (615m) elevations of the corridor is 245m (Figures 11 and 12).

Figure 11 Outline of the Section Km 0+000-Km17+000

Figure 12 Outline of the Section km17+000-km 31+000

The Alignment bisects the settlements Dollc, Zajm and Drenoc and bypasses the villages Drsnik, Jabllanicë, Kliçinë, Leshan, Lugagji, Gllaviqicë, Ramun and Zahaq. Route also crosses the northern part of the villages Pjetërq I Epërm, Pjetërq I Poshtëm leaving a small settlement disconnected from the main village. The existing Residential and Non-Residential Properties (businesses) are located at a distance of 1 - 50 metres from the road edge. During the next design stages, efforts will be made to avoid such situations and keep a corridor of 20 meters on either side of the motorway free of any residential houses / commercial buildings, in line with the right-of-way defined in the Law on Roads (No. 2003/13).

The Route crosses one regional (R 104) and several local roads by either underpasses or overpasses. To enable access to properties along the planned route, six grade separated interchanges are planned. From these grade, separate junctions traffic will transfer onto the local road network and subsequently allow access to properties along these local roads and the existing N9. One crossing with a local road in the starting part of the Alignment has been overlooked at this design stage, which is noted under the detailed description of the Alignment below. With the Preliminary Design suitable solution will have to be developed to provide access of the disconnected properties to the network of local roads and the existing road N9.

The Route`s endpoint connects to the existing road N9 near the settlement Zahaq. As a result, the heavy traffic of the motorway and the vehicles travelling along the service road N9 will join and will be conveyed through the centre of the town Pejë. During the next Deisgn stage, solution to avoiding this bottleneck should be found.

Five sections of the Alignment are distinguished based on the terrain morphology and predominant land use. For each section the following features are described in the following text:

- settlements located within the Route corridor (bypassed or bisected),
- crossings with water courses and roads,
- critical areas where Residential and Non-Residential Properties are located within the right-of-way of the Alignment (20 meters either side of the Route).

Section 1: Km 0+000 - Km 4+100:

The Alignment is formed in flat terrain; altitudes are in the range of 600 – 610 m above sea level. The predominant land use is agricultural plots and pastures. The Route follows the existing road N9 at a distance of max. 1.5 km. and min. 350 m. (Figure 13).

Figure 13 Section km 0+000-4+100

The starting point of the Alignment connects to the existing highway, which is branching from the existing road N9 and ending north of Kijëvë. The starting point of the Alignment is shown in the Figure 14 below.

Figure 14: End of the motorway north of Kijëvë and start of the Project Alignment

The village Drsnik is located nearby the Alignment, on the south. Within the right-of-way of 20 meters either side of the Alignment there aren`t any properties found. The villages Qabiq and Uje Mire are located on the north, but they are not affected by the Route as the closest house is 2km away from the motorway.

Several gullies and local roads are crossed. At crossings with gullies pipe and box culverts are foreseen. The local roads crossed by the Alignment are located at the following chainages: Km 0+450 (it is branching from the existing road N9 and ending 300 meters north of the Route, providing access to a few Residential Properties); Km 3+200 (it connects the existing road N9 with the village Uje Mire); Km 3+800 (it connects villages Drsnik and Qabiq). At each crossing underpasses / overpasses are planned with the exception of the one at Km 0+450. At chainage km 3+200 an interchange is planned with the Conceptual Design. ***Upon the crossing at chainage Km 0+450 there isn`t any underpass / overpass planned. This will have to be taken into account at the next stage of the Design.***

Section 2 Km 4+100 - km 10+000:

The Alignment is formed in rolling and hilly terrain; altitudes are in the range of 510 – 615 m above sea level.

The variations in morphology of the terrain are outlined in the Figures 15 and 16 below.

Figure 15: Flat and hilly terrain of the Alignment at cca km 6+000

Figure 16: Hilly terrain of the Alignment at cca km 6+500. Different terrain morphology

The predominant land use is forest and pastures. The Route is following the existing road N9 at a distance of max. 1 km and min. 150 m. (Figure 17).

Figure 17 Section km 4+100-10+000

This section passes through the village Dollc – high density of Residential Properties is present on the south and very few scattered Residential Properties are located in the nort from the Alignment. At km 5+500 the Alignment crosses as well as passes by several Residential Properties at a distance of 3-5 meters (Figure 15). Demolishing of some Residential Properties will be likely, if the Route would not change at the Detailed Design stage. Several gullies are crossed by the Alignment. At crossings with gullies pipe and box culverts are foreseen. At km 6+813 an interchange is planned to connect to the existing road N9 and the local road leading to the village Uje Mire. Nearby the interchange a quarry is located to the south of the Alignment; another quarry is present at Km 9+000 on the north. Overpasses are planned at Km 9+011 and Km 9+888, to enable connecting the quarries which are located at either side of the Route.

Section 3 Km 10+000 - km 16+000:

The Alignment is formed in a hilly and roling terrain and flat open terrain; altitudes are in the range of 370 - 520 m above sea level. Some sections are challenging in terms of the design, especially in hilly terrains and at the crossings with transport infrastructure (railway, the road to Gjakove branching of the road N9 near Klinë) and the Drini I Bardhe River.

The variations in morphology of the terrain and challenges for the design are outlined in the Figures below.

Figure 18: Cca km 10+000 – km 12+000: Challenging hilly section for defining vertical solution of the Alignment

Figure 19: Cca km 10+000 – km 12+000: Challenging hilly section for defining vertical solution of the Alignment

Figure 20: Km 13+300 – km 13+600: Crossing Point with the Railway

Further to the west, the crossings of the Alignment with Drini I Bardhe River and the road to Gjakova are located, at very short distances. In the Preliminary Design a solution will be identified to the problem of succeeding large structures (bridge and interchange); it will be a pressing challenge for the Designers.

Figure 21: Km 15+000: Area of a 17-18m cut

Figure 22: View along the Alignment west of Klinë

The predominant land use is forest and pastures (on the hilly and roling terrains) and agricultural land (on flat open terrains formed by the Drini I Bardhe River). The Route is following the existing road N9 at a distance of max. 1 km and min. 200 m. (Figure 23).

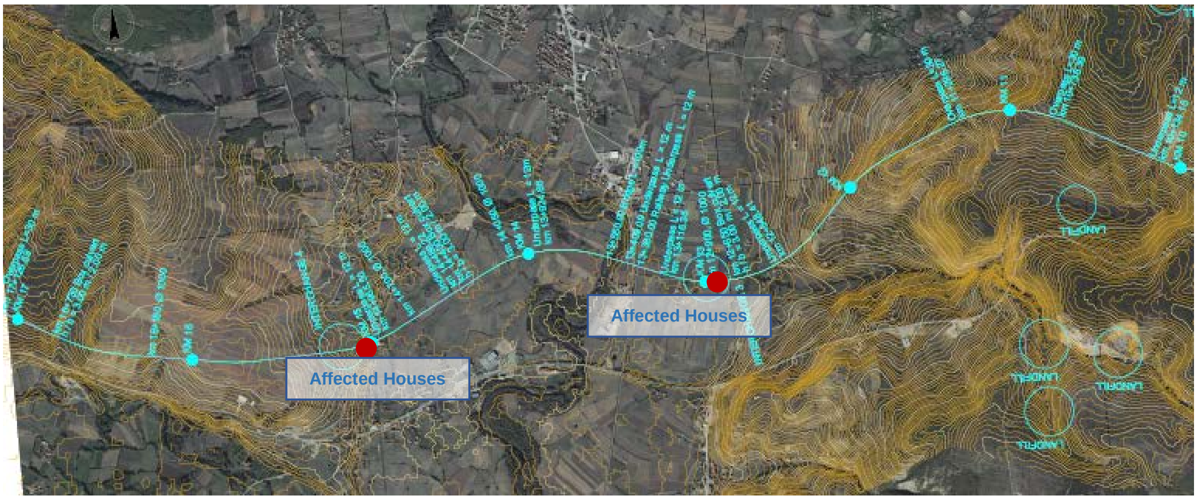


Figure 23:Section km 10+000 – km 17+000

The route bisects Zajm and Drenoc and passes by the villages Pjetërq I Epërm, and Pjetërq I Poshtëm. Several Residential Properties located within the right of way of the motorway will be affected at the chainages km 13+000 and a small settlement at km 15+000. Settlements Perline and Klinë are located on the north of the Alignment but these are not affected by the Alignment as the closest house is 1km and 3 km away from the Alignment respectively.

At this section the terrain is frequently intersected with gullies which are crossed by the Alignment. At crossings with gullies pipe and box culverts are foreseen. At km 13+550 the Drini I Bardhe River is crossed, where a new bridge will be constructed.

This section is characterised by relatively high population density and of the local roads whereby structures enabling connections to the road network are placed at short distances. At km 12+650 and km 15+000 interchanges are planned to connect the route to the existing road infrastructure (the interchange will connect to the Klinë – Decane motorway and the one at chainage Km 15+000 will join the regional road R 104). Overpasses at crossings with local roads are planned at: Km 10+134 (the road connects the existing road N9 with Drsnik), Km 12+548 (the road connects N9 with Drsnik), Km 13+116 (the road connects N9 and Perline), Km 13+409 (the road connects N9 and Klinë), Km 13+924 (the road connects N9 and Klinë), km 14+486 (the road connects N9 and Perline) and km 14+955 (the road connects N9 and Perline). A Motorway Underpass is planned at km 13+380 to link the existing road N9 and Klinë.

Section 4 Km 17+000- km 23+000:

The Alignment is formed in a rolling open terrain; altitudes are in the range of 380 - 451m above sea level. The predominant land use is agricultural land. The Alignment follows the existing road N9 at a distance max. 1.5 Km and min. 200 m. (Figure 24). One can see that the Conceptual Design for this section operates with an alternative alignment for the section from Km 19+000 to Km 23+000 which stretches further to the north and avoids populated areas. During the Preliminary and Detailed Design stages the Alignment will be fixed.

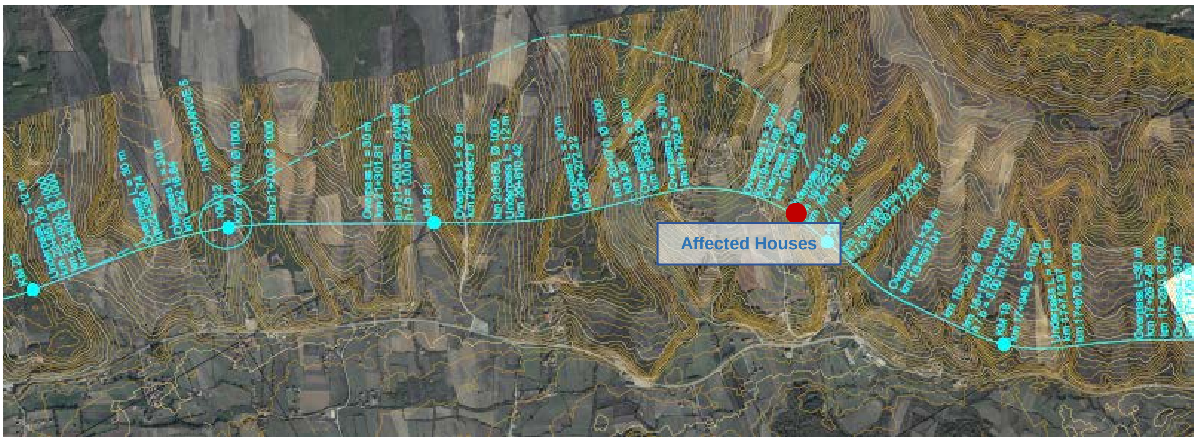


Figure 24 Section km 17+000 – km 23+000

The route bisects village Jabllanicë at km 19+400-19+800 and bypasses the villages Kliçinë, Leshan and Lugagji. At the section crossing the village Jabllanicë, the route approaches about 100 Residential Properties and several businesses, at a distance of 3-5 meters. Demolishing of some Residential Properties will be likely if the Alignment would not change at the Detailed Design stage. The alternative shown in Figure 24 above, avoiding settlements, was not adopted in the Conceptual Design due to the extensive volume of earthworks and larger length which have effect in higher construction costs. The Designers will make further efforts to refine this section of the Alignment: the solution should explore trade offs between extensive construction costs and resettlement.

Settlements Jagode and Paskalice are located on the north of the Alignment, but these are not affected, as the closest house is 2.5 - 3 Km away from the Route.

Several gullies are crossed by the Alignment for the considered section. Locations of two culverts are shown in the figures below.

Figure 25. Km 16+180: location of a pipe culvert at a gully

Figure 26: Km cca 20+000: location of a culvert at a gully

At km 22+000 interchange is planned to connect the route to the existing road N9 and enable access to settlements located to the south of the Alignment. Most of the local roads which are crossed by the Route enable access of population to agricultural properties. Overpasses that will be constructed at km 17+126, km 17+287, km 18+597, km 19+423, km 19+792, km 19+928, km 20+272 and km 22+368 will connect the existing road N9 with the network of local roads leading to these agricultural properties and the settlements Jagode and Paskalice. Undepasses are planned at km 17+712, km 19+225, km 20+650, km 21+301 and km 22+857 for the same purpose as overpasses. Structures will be built more often due to the relative population density of settlements and of the local road network.

Section 5 Km 23+000 - km 31+000:

The Alignment is formed in a rolling open terrain; altitudes are in the range of 410 - 465 m above sea level. The predominant land use is agricultural land and pastures. The Alignment follows the existing road N9 at a distance max. 1.5 Km and min. 200 m. (Figure 27).

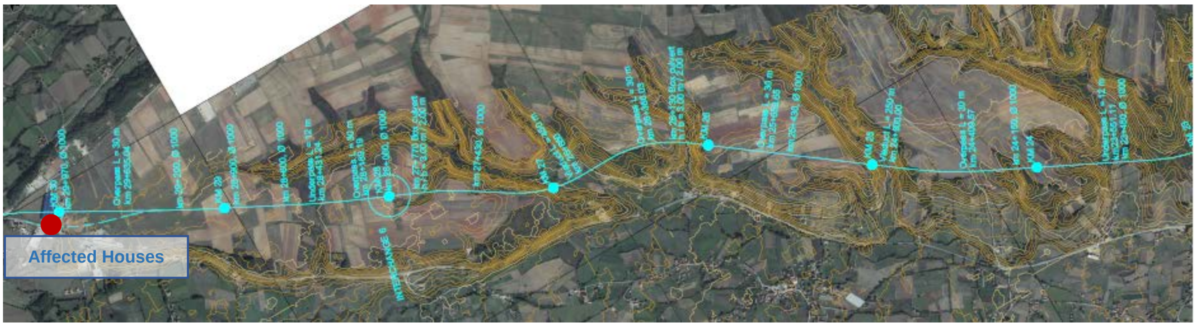


Figure 27: Section km 23+000 – km 31+000

The route passes by the villages Gllaviqicë and Ramun; at the end, before entering in the village Zahaq, it crosses several Residential Properties. The design of the final section at km 30+000 - km 31+000 is not finalised and two alternatives still exist. By one of the alternatives, demolishing of a commercial structure is foreseen. It is expected that at the next stage of the Design the Alignment will avoid any demolishing.

During the early Stakeholder Engagement activities (May 2015), an interview with the Mayor of the Municipality Pejë was conducted, who raised a comment regarding the Alignment, connecting to the existing road N9 near Zahaq. He proposed to end the Alignment offline, to enable for conveying the traffic outside the centre of Pejë. This proposal should be further considered by the Project Beneficiary and the Designers.

To enable continuous traffic along the local roads, underpasses are planned at km 23+551 and km 28+431, while overpasses will be constructed at km 24+409, km 25+659, km 26+366, km 28+169 and km 29+635. These structures will enable connecting the existing road N9 and the properties in settlements Nabergjan and Budisalc, which are located to the nort of the Alignment. Viaducts will be built at km 25+000 km 27+000 to cross over ravines.

3.1.2. Technical Elements of the Alignment

The motorway will be a dual-lane carriageway designed to International standards and specifications, with a design speed of 100-120 Km/hr. The maximum inclination slope of the vertical solution is i_{max}=5%.

The width of the cross section of the motorway will be as follows:

- Traffic lanes 4x3.75m = 15.00m’
- Stopping lanes 2x2.50m = 5.00m’
- Edge lanes 2x0.50 + 2x0.20m = 1.40m’
- Gutter/berm 0.75/1.00 = 1.75m’
- Shoulder 2x1.00 = 2.00m’
- Median = 4.00m’
- Total = 27.40m

The typical cross section is shown in the Figure 28 below.

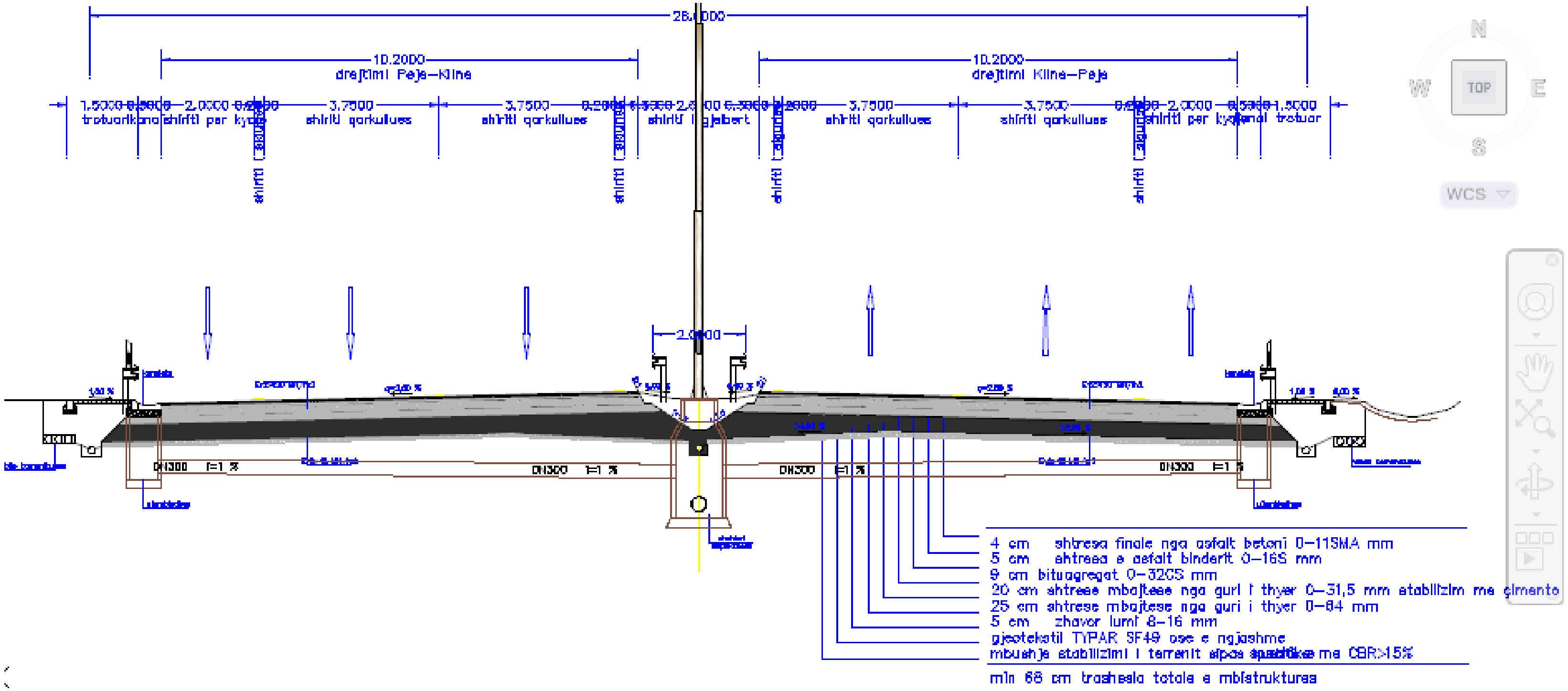


Figure 28: Typical Cross Section

Taking in consideration the current development of the Conceptual Design, the dimensioning of the pavement construction is not conducted. The pavement construction is constructively accepted with the following dimensions:

- Subbase of crushed stone d=35cm
- BNS 32SA d=10cm
- BNS 22 SA d=7cm
- AC 16S polymer – bitumen d=5cm

3.1.3. Considered Project Alternatives

The following alternatives have been identified and assessed:

- Zero Alternative (“Doing Nothing” Scenario)
- Widening of the existing road (for which detailed design has been prepared, please see above section 1.3.1, “Project History”),
- Southern Alternative
- North Alternative 1
- North Alternative 2

The purpose of this assessment was to determine, at an early stage in the Project, if the alternative Alignments could provide a high class safe transport, having the capacity to fulfill forecast traffic demand, at optimal environmental and social negative impact. The criteria encompassed Lenders` Environmental Advisoring, environmental, social and economic considerations.

3.1.4. Zero Alternative

Under the Zero Alternative the existing situation will continue without large investments taking place. with continued normal maintenance works and small adjustments where and when required. The Zero Alternative is the point of reference to which the established environmental, social and economic criteria of the project alternatives are compared.

For this alternative the existing road will continue to serve the traffic of the Route 6. On the positive side, there will be no habitat destruction as a result of the construction of the planned motorway. Also, no land take will be needed.

However, the traffic flows will increase which will cause congestion, the travel time will likely increase and air and noise pollution will be generated. The road safety will also worsen. The accessibility of services in larger towns (healthcare, education and others) will not improve as well as people who travel for work will face difficulties. Education and hence better employment opportunities will not be exploited by the population. The pace of economic development will remain unchanged and the opportunities for boosing the local and regional market will be missed. No new employments will be created in the absence of the planned Project.

3.1.5. Location of Considered Alternatives

Existing Alignment

The full route is approximately 30km and, principally due to the variation in terrain, divides into two Sections: Kijëvë – Dollc (Klinë) (12.5km) and Klinë – Zahaq (17.7km). It starts offline from north of Kijëvë and continues offline for 6.2km where it joins the existing road and from this point to Zahaq, except for minor adjustments, it follows the Alignment of the existing road. Various “hotspots” have been identified along this Alignment raising environmental and social concerns. These “hotspots” have been identified as per category (residential buildings, businesses, cultural heritage, sensitive habitats which are being located in the immediate vicinity of the road) and located in a map (*Figure 29* below).

Southern Alignment

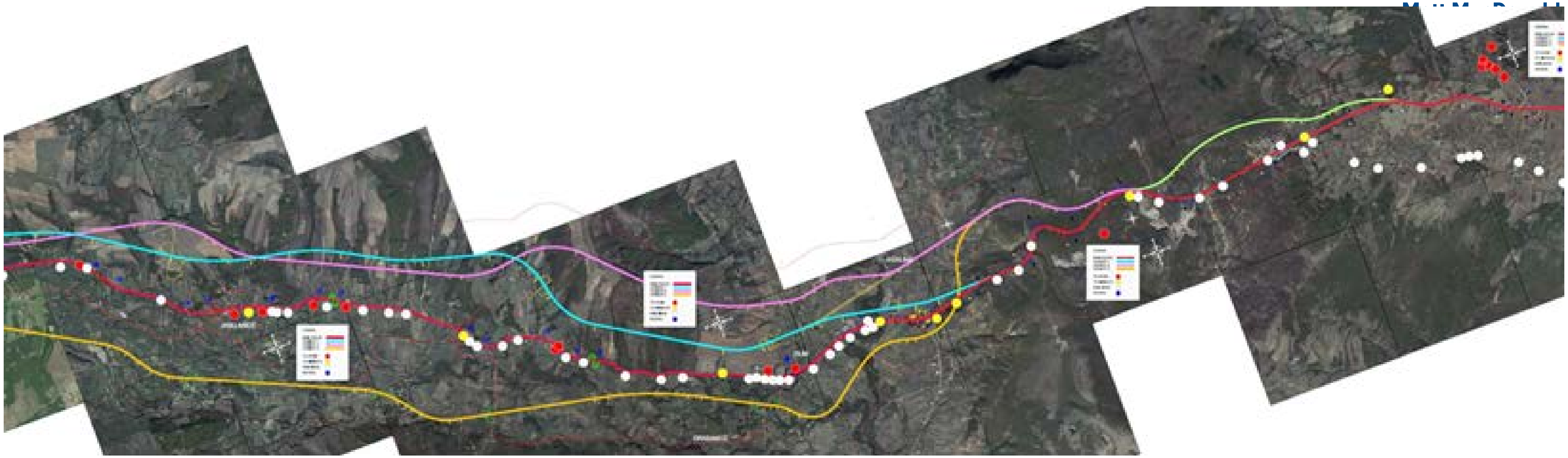
Starting offline from north of Kijëvë it continues offline to the north of the existing road until approximately km13 where it descends to the plain east of Klinë, crosses the existing road, crosses the Drini I Bardhe River and continues along the River Bistrica flood plain south of the existing road until it joins the existing road at Zahaq. No “hotspots” have been identified for this alternative.

Northern Alignment 1

Starting offline from north of Kijëvë it continues offline to the north of the existing road until it joins the existing road at Zahaq. This Alignment crosses Northern Alignment 2 at various locations. No “hotspots” have been identified for this alternative.

Northern Alignment 2

Starting offline from north of Kijëvë it continues offline to the north of the existing road until it joins the existing road at Zahaq. This Alignment crosses Northern Alignment 1 at various locations. No “hotspots” have been identified for this alternative.



Red – online of existing road
Other – offline alternatives

	Avoid – monument, graveyard, church, rare plant
	Mitigate – forest, pasture, river habitat
	School
	Quarries, borrow pits, dump sites
	Buildings, Non-Residential Properties (businesses) likely to be impacted

Figure 29: Road "Kijëvë – Dollc (Klinë) – Zahaq" Alternative Alignments with Indicated Environmental and Social "Hot Spots" for the Existing Alignment

3.1.6. Assessment Criteria

The following initial criteria have been used in the preliminary analyses of alternatives:

- Engineering:
  - Geometry – Design Speed;
  - Future Increase in Capacity;
  - Junctions and Accesses (speed, flow, safety);
  - Earthworks;
  - Flood Damage Risk;
  - Construction Disruption
  - Security, Boundary Fencing;
  - Servicing nearby properties (alternative to the motorway)
- Environmental
  - Impacts on Biodiversity (area of sensitive habitats to be destructed);
  - Impacts on Air Quality and Traffic Noise (number of settlements / population affected)
  - Impact on Water Resources (number and sensitivity of water courses crossed);
  - Climate Change Impact;
- Social
  - Involuntary Resettlement (number of settlements / population affected);
  - Splitting Communities (number of bisected communities);
  - Avoided Communities (number of non-residential properties affected by the reduced traffic along the existing road N9);
  - Destruction of Cultural Heritage Sites (number of cultural heritage sites affected);
  - Road Safety Considerations (restricted / unrestricted access to properties and junctions with the existing road network).

To compare the alternative Alignments a simple method was used whereby a set of key principles to be assessed were determined and each Alignment was compared for its ability to satisfy each key principle:

- An Alignment assessed as fully satisfying the specific key principle was assigned 1.
- An Alignment assessed as being totally unable to satisfy, or in any reasonable way partially mitigate, the negative impact on a specific key principle was assigned 4.
- Intermediate scores (2 and 3) were assigned as deemed appropriate to the Alignment satisfying the key principle.

The assigned scores were then aggregated for each Alignment to identify the lowest scoring, thus the likely preferred, Alignment. Detailed analysis of the alternatives is performed during the Pre-Feasibility Study for the Project. The results of the preliminary scoring are presented in Tables 12, 13 and 14.

Table 12 Analyses of Alternatives: Environmental and Social Overview

Note: Lowest score indicates most likely preferred option on environmental and social grounds

Impacts	Southern Alternative	Southern Alternative (COWI 2006)	Northern Alternative 1	Northern Alternative 2	Existing Design
Biodiversity	Riparian vegetation, wet meadows. **4**	Section Drenoc-Jabllanice-Gllavigjice-Zahaq: riparian vegetation, wet meadows and settlements. **3**	Fragmented forest, pastures and crop fields; crossing over a White Drin meander. **2**	Fragmented forest, pastures and crop fields. **1**	Forest, riparian vegetation, agricultural land. **1**
Social	14 crossed settlements, 1 settlement approached at distance up to 30 meters. **2**	16 crossed settlements, 2 settlements approached at distance up to 30 meters. **3**	13 crossed settlements, 2 settlements approached at distance up to 30 meters. **2**	13 crossed settlements, 2 settlements approached at distance up to 30 meters. **2**	18 settlements crossed, 2 settlements approached at distance up to 30 meters. **4**
Noise / Air	As for “Social”. **2**	As for “Social”. **3**	As for “Social”. **2**	As for “Social”. **2**	As for “Social”. **4**
Water	Entering the Pecka Bistrica River`s terrace; Bistrica, crossing White Drin. **4**	Approaching River Pecka Bistrica, crossing River White Drin. **3**	Crossing River White Drin. **2**	Crossing River White Drin. **2**	Existing crossing River White Drin to be widened (to more than double existing width). **2**
Score	**12**	**12**	**8**	**7**	**11**

Table 13 Analyses of Alternatives: Engineering Overview

Note: Lowest score indicates most likely preferred option on Engineering grounds

Impacts	Southern Alternative	Northern Alternative 1	Northern Alternative 2	Existing Design
Geometry / Design Speed	120 kph **1**	120 kph **1**	120 kph **1**	60 kph in several locations. **4**
Future widening	Possible **1**	Possible **1**	Possible **1**	Severely constrained **4**
Junctions and accesses (speed flow, safety)	Limited to 4 main junctions. **1**	Limited to 4 main junctions. **1**	Limited to 4 main junctions. **1**	Numerous – speed constraints; high safety risk. **4**
Earthworks	High volume of fill for raised embankment throughout flood plain. **4**	Possibly balance cut and fill for 80% of total length. **2**	Possibly balance cut and fill for 80% of total length. **2**	Relatively minimal work. **1**
Flood damage risk / erosion prevention measures	In river flood plain for 60% of the route. **4**	No risk **1**	No risk **1**	No risk **1**

Impacts	Southern Alternative	Northern Alternative 1	Northern Alternative 2	Existing Design
Structures	Many new structures over water; potential foundation issues in alluvial soil. **4**	New structures. No significant issues. **1**	New structures. No significant issues. **1**	Rehabilitate, widen, some replacements. No significant issues. **1**
Structures	Many new structures over water; potential foundation issues in alluvial soil. **4**	New structures. No significant issues. **1**	New structures. No significant issues. **1**	Rehabilitate, widen, some replacements. No significant issues. **1**
Construction Disruption	Limited. Use site for haul roads. **1**	Limited. Use site for haul roads. **1**	Limited. Use site for haul roads. **1**	Major diversions and use of existing road. **4**
Environmental mitigation	Required in few locations. May be able to use embankments and planting. **2**	Required in few locations. May be able to use embankments and planting. **2**	Required in few locations. May be able to use embankments and planting. **2**	Required in many locations. Will need to use acoustic barriers due to limited space thus high cost **4**
Boundary Fencing	Possible to install thus better safety and security. **1**	Possible to install thus better safety and security. **1**	Possible to install thus better safety and security. **1**	Not practical to install thus high risk to safety of road users and pedestrians. **4**
Alternative route	Yes **1**	Yes **1**	Yes **1**	No **4**

Impacts	Southern Alternative	Northern Alternative 1	Northern Alternative 2	Existing Design
Score	**20**	**12**	**12**	**31**

Table 14 Analyses of Alternatives - Summary

Note: Lowest score indicates most likely preferred option on environmental, social and Lenders` Environmental Advisoring grounds

	Southern Alternative	Northern Alternative 1	Northern Alternative 2	Existing Design
Acceptable Lenders` Environmental Advisoring solution	Yes 1	Yes 1	Yes 1	No 4
Acceptable Environmental Impact or Mitigation	No 4	Yes 1	Yes 1	No 4
Acceptable Social Impact	Yes 1	Yes 1	Yes 1	No 4
Fulfils requirements EU Regulation 1315 ie High Class Road	Yes 1	Yes 1	Yes 1	No 4
Score	7	4	4	16

3.1.7. Multi-criteria Analysis

In addition to the initial analyses, robust multi-criteria analyses have been carried out after submerging the alternatives North 1 and 2 into one alternative to derive the preferred route. Detailed multi-criteria analysis is available in the Pre-Feasubility Study developed within the scope of the Asignment.

3.2. General Approach

In evaluating and comparing different options, the principle was to assess the relative relationship between cost of implementing the option and resulting impacts from implementing the option. Impacts from implementing a specific option may be positive or negative thus the degree of their impact relative to an alternative option is also relevant.

The conclusion of that evaluation was to exclude Alignment options to the south of the existing road, refine the alternative Alignment to the north of the existing road and perform a more in-depth study, assessment and comparison of the existing online designed option and the northern alternative.

Criteria were set against which each Alignment was evaluated and each criteria were assigned a "weighting" with respect to its position in the hierarchy of the selected set of criteria. The aggregate of the individual "weightings" of the criteria was 100%. Having identified the principle set of criteria to be assessed, the next step was to identify the objectives to be fulfilled under each criteria. Each Alignment was assessed and scored with regard to how it fulfils each objective. The three categories of assessment were:

- Quantitative: where impacts can be quantified in numerical units.
- Qualitative: where impacts cannot be measured in numerical units and are assessed on a scale.
- Monetary: where monetary values can be calculated.

3.3. Criteria and Weighting

Generally, the most important trade-off in the overall assessment of criteria and objectives was between costs and benefits where benefits are derived from the aggregate positive impacts of the project on a range of criteria.

In developing the criteria and weightings the Consultant has assigned 30% to Costs and 70% to Impacts. The Costs consist of the capital investment, future maintenance and residual value at the end of the standard 25-year evaluation period. The Impacts, from which Benefits may be derived, consist of several criteria: strategic importance, economic value, environment and social, safety and cost of capital investment, the last usually being subject to national budget constraints.

A list of the Categories (Costs and Impact) and criteria applicable to each with their respective high level weightings is shown in Table 15.

Table 15*: Assessment Categories, Criteria and respective Weightings*

Category	Weighting	Criteria	Adjusted Criteria Weighting
Costs	30%	Costs	30%
Impacts	70%		
		Strategic Value	15%
		Lenders` Environmental Advisoring	5%
		Environment & Social (note 1)	10%
		Socio-economic (note 2)	5%
		Safety (note 3)	5%
		Economic (note 4)	30%
	100%		100%

Notes:

1. *Air emissions economic benefits as assessed under Cost Benefit Analysis is included in "Economic".*
2. *VoC and VoT economic benefits as assessed under Cost Benefit Analysis is included in "Economic".*
3. *Accident savings as assessed under Cost Benefit Analysis is included in "Economic".*
4. *Includes air emissions, VoC, VoT, accident savings and other generated benefits.*

Each of the criteria and their relevant objectives are briefly described in Table 11 along with the weightings applicable to each set of objectives for each criterion.

3.4. Scoring of Fulfilment of Objective

Each objective of each criteria was scored using the results of the economic, environmental and social assessments. For objectives that had values derived from economic analysis, their score was derived by firstly: comparing the relevant Net Present Values achieved for that objective under each Alignment to identify the relationship factor between the two Alignments, then secondly, multiplying the relevant weighting for the objective by this factor.

For objectives that did not have values derived from economic analysis, their score was based on a comparison of the relevant quantitative and/or qualitative impacts and benefits achieved for that objective by each alternative Alignment. The higher the score the better that Alignment fulfilled the objective compared to the alternative Alignment. The scores for each objective of each Alignment and the aggregate scores of each Alignment are shown in Table 16.

Table 16 ***Assessed Criteria and Objectives with their respective Weighted Values***

No.	Category	Category Weighting	Sub No.	Element	Element Weighting	Online			Offline		
						Online Existing	Element Weighted Value	Overall Weighting	Offline Northern	Element Weighted Value	Overall Weighting
		%			%						
1	Costs	30	1.1	Lower Capital investment - construction stage	90	62	55.80	8.37	38	34.20	5.13
			1.2	Lower Maintenance	5	65	6.50	0.98	35	3.50	0.53
			1.3	Residual Value	5	42	2.10	0.11	58	2.90	0.15
					100						
2	Strategic Value	15	2.1	Provides sufficient capacity for regional growth	50	100	50.00	7.50	100	50.00	7.50
			2.2	Enable high speed transfer between centres	25	30	7.50	1.13	100	25.00	3.75
			2.3	Satisfies TENs classification (high class road)	25	60	15.00	2.25	100	25.00	3.75
					100						
3	Lenders` Environment al Advisoring	5	3.1	Technically reasonably achievable and practical	25	100	25.00	1.25	100	25.00	1.25
			3.2	Ability to increase capacity	25	0	0.00	0.00	100	25.00	1.25
			3.3	Ability to provide impact mitigation	15	15	2.25	0.11	100	15.00	0.75

No.	Category	Category Weighting	Sub No.	Element		Online			Offline		
					Element Weighting	Online Existing	Element Weighted Value	Overall Weighting	Offline Northern	Element Weighted Value	Overall Weighting
		%			%						
				measures							
			3.4	Avoidance of disruption during construction	10	20	2.00	0.10	85	8.50	0.43
			3.5	Avoidance of flood risk	15	80	12.00	0.60	90	13.50	0.68
			3.6	Alternative local route	10	0	0.00	0.00	100	10.00	0.50
					100						
4	Environment & Social	10		CBA Benefits - Environmental							
			4.1	Noise impact limitation	10	35	3.50	0.35	65	6.50	0.65
			4.2	Air pollution impact limitation	10	20	2.00	0.20	80	8.00	0.80
			4.3	Biodiversity - impact limitation	40	90	36.00	3.60	70	28.00	2.80
			4.4	Water quality - impact limitation	20	80	16.00	1.60	40	8.00	0.80
			4.5	Avoidance separation of communities	5	80	4.00	0.40	40	2.00	0.20
			4.6	Avoidance monuments, cultural sites, etc.	15	20	3.00	0.30	100	15.00	1.50
					100						
5	Social-	5	5.1	Avoidance expropriation agricultural	20	90	18.00	0.90	0	0.00	0.00

No.	Category	Category Weighting	Sub No.	Element	Element Weighting	Online Existing	Element Weighted Value	Overall Weighting	Offline Northern	Element Weighted Value	Overall Weighting
						Online			Offline		
		%			%						
	economic			land							
			5.2	Avoidance expropriation developed land (resettlement)	80	20	16.00	0.80	70	56.00	2.80
				Benefit of Travel Time Savings		42	0.00	0.00	58	0.00	0.00
				Benefit of Vehicle Operator Costs		75	0.00	0.00	25	0.00	0.00
					100						
6	Safety	5		Reduction accident costs - CBA		51	0.00	0.00	49	0.00	0.00
			6.1	Reduction accidents - involving pedestrians, etc.	70	0	0.00	0.00	100	70.00	3.50
			6.2	Reduction accidents - involving animals	30	0	0.00	0.00	75	22.50	1.13
					100						
7	Economic Benefits	30	7.1	Environmental (air emissions)	10	40	4.00	0.20	60	6.00	0.60
			7.2	Benefit of Travel Time Savings	30	42	12.60	0.63	58	17.40	0.87
			7.3	Benefit of Vehicle Operator Costs	30	60	18.00	0.90	40	12.00	0.60
			7.4	Reduction accident costs - CBA	15	51	7.65	0.38	49	7.35	0.37
			7.5	General Traffic Consumer Surplus	15	40	6.00	0.30	60	9.00	0.45

Mott MacDonald

No.	Category	Category Weighting	Sub No.	Element	Element Weighting	Online			Offline		
						Online Existing	Element Weighted Value	Overall Weighting	Offline Northern	Element Weighted Value	Overall Weighting
		%			%						
					100						
		100.0						32.66			42.45
								Online			North
								43%			57%

The aggregated weighted Multi-Criteria Analysis scores from Table 16 provided the following result:

Implement the Existing Design Online Alignment	46%
Implement the Northern Offline Alignment	54%

3.5. Summary of the Analyses of Alternatives

Following discussion during the Workshops in October 2015 and February 2016, the MoI issued in June 2016 a decision to choose the Northern Alignment as recommended by the IPF3 consortium due to the following considerations:

Southern Alignment Klinë - Zahaq

The Alignment south of the existing road from Klinë to Zahaq did not have any technical and engineering advantage to the northern Alignment; it was very likely that the associated costs will be higher than investing in construction of the northern Alignment. Compared to the northern Alignment it had significant greater environmental impact. Its social impact was no less than the northern Alignment. The southern Alignment **was excluded from multi-criteria analyses**.

Existing Alignment

Due to substantial deficits in terms of:

- the speed limitations in populated areas,
- inability to place a safety fence and hence enabling a free access to adjacent properties and causing severe safety issues,
- noise and social impacts with regard to adversely affecting at least 130 Residential Properties located within the distance of 20 m from the existing road, as well as 14 cultural heritage sites,
- the need to acquire approximately 47 ha agricultural land,
- impeding access to community services of 1,532 elderly people and 3,175 students,

the Existing Alignment **was not selected**.

Offline North of the Existing Alignment for full length Kijëvë- Zahaq

The two North Alignments (1 and 2) were very similar and therefore they were submerged and refined into one Alignment. The single North Alignment showed significant technical and engineering, as well as environmental and social advantages to the Existing Alignment. Therefore, it was **selected as the best alternative**.

3.6. Construction Activities and Works

Construction activities will bring different outdoor machinery and equipment that are required for the construction process. The following activities will be undertaken during the construction phase:

- Preparatory works:
  - Clearance of existing land and vegetation;
  - Pre-construction investigations e.g. boreholes, soil testing;
  - Organising for temporary sites used for construction works or housing of construction workers;
  - Erecting facilities for storage of goods or materials;
  - Preparing access roads; efforts will be made to utilise existing accesses to the highest possible extent;
- Construction works (earth works, works on civil structures etc.);
  - Building facilities for long term housing of operational workers;
  - Development of structures (bridge, viaducts, overpasses, underpasses, grade separated interchanges etc.);
    - Impoundment, re-alignment or other changes to the hydrology for the purpose of building the bridge over Drini I Bardhe River;
  - Erosion control and drainage;
  - Earthworks (cuts and fills);
  - Underground works including blasting;
  - Paving and finishing;
- Auxiliary Works:
  - Works on signalisation in order to regulate the increased traffic for transportation of goods and materials to the construction sites;
  - Managing of use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment:
    - Managing borrow pits and excess material disposal sites;
    - Managing solid and liquid wastes;
    - Managing storage of materials and leakages;
    - Maintenance of equipment;
  - Transport of personnel and/or materials;
  - Supply of water and energy;
  - Telecommunications.

3.6.1. Support Facilities

Support facilities are required to enable for the construction of the Project as follows:

- Offices
- Camps;
- Quarries;
- Crushers;
- Concrete, Cement Treatment Base (CTB) and Asphalt Plants, and
- Beam Plants.

These facilities will be dispersed along the route to support the construction activities.

Offices

It is expected that the Design and Build Contractor's approach will be to recruit the workforce locally through subDesign and Build Contractors. Small camps may be required for temporary accommodation of specialist workers. The location of these camps will be on sites out of the city. This will be done in order to prevent potential adverse impacts on the local community.

All facilities for accommodation of workers will be designed and operated in accordance with the provisions of the IFC & EBRD Workers Accommodation Guidance[30]. It provides guidance and benchmarking standards over the range of topics related to the provision and management of worker's accommodation, covering the following topics:

- General living facilities (including topics such as drainage, heating, ventilation, lighting, water, sanitation, waste disposal);
- Room / dormitory facilities (including bed arrangements and storage facilities);
- Sanitary and showering facilities;
- Canteen, cooking and laundry facilities;
- Food safety and nutritional standards;
- Medical facilities, doctors;
- Leisure, social and telecommunication facilities;
- Management of the accommodation;
- Community relations and consultation;
- Fees and charges for the facilities and services;
- Health and Safety onsite;
- Accommodation and local community security;
- Workers' rights, rules and regulations; and
- Workers' consultation and grievance mechanism.

30 http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/learning+and+adapting/knowledge+products/publications/publications_gpn_workersaccommodation

Borrow Pits and Quarries

There are five types of natural resource required for this Project:

- Borrow from in situ soils for embankment formation;
- Borrow of riparian sand and gravel for structural concrete;
- Quarried sand and gravel for formation of capping course, pavement sub-base,
- Cement Treatment Base (CTB), bituminous base paving and concrete; and
- Quarried igneous material for bituminous wearing course paving.

Quarries will be selected based upon:

- Location, to ensure that haulage is kept to a minimum;
- Quality and suitability of the stone which requires approval from the Supervising Lenders` Environmental Advisor; and
- Ministry of Infrastructure/Independent Commission for Mines and Minerals (ICMM) approval.

From the Lenders` Environmental Advisoring geological perspective, it is estimated that the material from the excavations is of good quality suitable to be used for construction of the embankments.

In general, most of the Alignment from km 0+000 (the start) to km 8+000 and from km 14+000 to km 30+000 (the end) is designed so that the excavated material from cuts balances the quantity of material required for the embankments. However, between km 8+000 and km 12+500 the motorway passes through hilly terrain which requires some significant cuttings, particularly in the section km 10+000 to 12+500 where the Alignment descends from the hills down to the plain east of Klinë, at a gradient of 5%, where the cuttings are in the order of 40m deep. Although some of the material from the cuttings between km 8+000 and km 12+500 will be used for elevating the road on embankment between km 12+500 and km 14+000, the majority will be excess to requirements.

A number of quarries is already available at the section between km 6+000 and km 9+000. The quarries will supplement the aggregate that is to be derived from the cut materials. Notably at km 15+000 is the largest cut on the Alignment, but it is yet to prove that it is consisting of good quality material which will provide non-igneous aggregate for the construction.

Quarries will be selected after geotechnical tests have confirmed that sufficient quantity and quality of rock exists in a certain location (at the Detailed Design Stage). ICMM will then approve the quarry location in parallel to gaining the approval of the Supervising Lenders` Environmental Advisor and the Ministry of Infrastructure.

For the newly opened quaries an IPPC permit might be required (depending on the capacity / size, please see above the section on permitting) and therefore the competent authority should be notified on time to obtain their opinion.

Crushers

Crushers will be located at strategic positions along the Alignment. Their locations will be decided upon based on proximity to quarries, cut areas and availability of land for stock piling crushed aggregate. Having in mind the availability of a number of quarries for the section at km 6+000-km 9+000, one of the crushers will most likely be erected in that area. The aggregate for concrete to be produced will be needed for the construction of the bridge over Drini I Bardhe River (at km 13+550), as well as for building the interchanges, underpasses / overpasses.

Considering that for the section at km 4+100 – km 17+000 there is a high demand for aggregate as 3 interchanges, 4 overpasses and 7 underpasses are planned, the best solution will be to install a centrally located crusher in the vicinity of the existing quarries to improve the efficiency of operations.

The location of crusher(s) will be defined by the Design and Build Contractor and agreed with the MESP, Ministry of Infrastructure and the Supervising Lenders` Environmental Advisor. There is no need to obtain any other permit for the crusher installation, according to the Kosovo* regulations.

Concrete Batching Plants

Along the Alignment concrete batch plants will be established to support construction. The plants will be erected as required and in locations which support the structures required along the motorway Alignment (please see the list of structures mentioned earlier).

Major concrete structures to be built include:

- Viaducts;
- Overpasses;
- Retaining Walls;
- Box Culverts; and
- Underpasses.

The locations of the Concrete Batching Plants will be defined by the Design and Build Contractor, and approved by the MESP, Ministry of Infrastructure and the Supervising Lenders` Environmental Advisor. For Concrete Batching Plants no permits are required in line with Kosovo legislation.

Cement Treatment Base (CTB) and Asphalt Plants

CTB and Asphalt Plants will be set up adjacent to the crusher. Future plants will be set up at strategic points along the Alignment; however, until the design is confirmed and land access is provided, the exact locations cannot be established.

The locations of the Cement Treatment Base and Asphalt Plants Concrete Batching Plants will be defined by the Design and Build Contractor, and approved by the MESP, Ministry of Infrastructure and the Supervising Lenders` Environmental Advisor. No special permit will have to be obtained by the competent authority.

Pre-Cast Plants

Standard bridge superstructures will most likely be formed of “U” - type beams. These “U” beams will be constructed by suitable beam plants placed at a common location. The beams of standard bridges are to be placed by means of launching girder.

The location of Pre-Cast Plants will be defined by the Design and Build Contractor and approved by the MESP, Ministry of Infrastructure and the Supervising Lenders` Environmental Advisor. No special permit will have to be obtained by the competent authority.

Construction Access

Access roads will be provided along the Alignment to minimise the effects on the surrounding environment. Access to the Alignment itself from existing roads will be possible at specific access points which will be confirmed as the design progresses. Potentially sensitive areas will be avoided when selecting appropriate access points.

The access roads will be identified and the need for establishing new accesses by the Design and Build Contractor and will be approved by the MESP, Ministry of Infrastructure and the Supervising Lenders` Environmental Advisor.

Traffic Maintenance

There are numerous locations where public roads cross the Alignment. It is important to keep public traffic and construction operations separated for safety and efficiency reasons. To accomplish this, the overpasses or underpasses will be built as early as possible. Potentially, there might be other locations with high traffic flows, which will require detours and staging of the work, together with interim traffic management measures e.g. traffic lights, manually controlled crossing points. Public information will be provided regarding traffic changes during construction operations, where appropriate.

3.6.2. Earthworks and Drainage

Earthworks

Earthworks will consist of:

- Temporary drainage;
- Clearing and grubbing of surface material;
- Blasting of rock;
- Excavation of topsoil;
- Excavation of other material up to design level;

- Filling;
- Spreading; and
- Compacting.

A major design consideration is the balance of cut and fill quantities for each section. For the 31 Km Alignment the approximate balance of cuts and fills is:

- Cuts 7.600.000,00m³
- Fills 2.700.000,00m³

Full material balance for the cuts and fills is not possible and there is a surplus from the amount of soil / rocks obtained from the cuts due to the hilly terrain along the new motorway Alignment.

From the Lenders` Environmental Advisoring geological prospection, it is estimated that the material from the excavations is of good quality to be used for construction of the embankments.

Figure 30: Km cca 6+000: Flysch sediments consisting of marl, sandstone, marly limestone and massive to blocky limestone appropriate for embankment

As the difference between the cuts and the fills is considerable, in favour to the cuts, the Conceptual Design considers excess material disposal sites on convenient transport distances to spoil the excess of the excavated material from the cuts.

Drainage

To convey and drain the side waters from the river flows and the gullies, a system of pipe and box culverts comprising of mounting pipe culverts D=1000mm and box culverts (3/2) is considered.

The following table presents designed bridges, viaducts and culverts:

Table 17: Position of bridges, viaducts and culverts along the Alignment

No.	Type of object	Chainage
1.	Pipe culvert, d=1000mm	Km 0+850
2.	Box culvert, h / b = 3.00 m / 2.00 m	km 1+300
3.	Box culvert h / b = 3.00 m / 2.00 m	km 2+200
4.	Pipe culvert, d=1000mm	km 2+600
5.	Pipe culvert, d=1000mm	km 4+400
6.	Pipe culvert, d=1000mm	km 5+130
7.	Pipe culvert, d=1000mm	km 5+650
8.	Pipe culvert, d=1000mm	km 5+900
9.	Pipe culvert, d=1000mm	km 6+600
10.	Box culvert h / b = 3.00 m / 2.00 m	km 6+920
11.	Box culvert h / b = 3.00 m / 2.00 m	km 8+520
12.	Box culvert h / b = 3.00 m / 2.00 m	km 12+650
13.	Pipe culvert, d=1000mm	km 12+900
14.	Bridge, L =100m	km 13+550
15.	Pipe culvert, d=1000mm	km 14+050
16.	Box culvert h / b = 3.00 m / 2.00 m	km 14+400
17.	Pipe culvert, d=1000mm	km 14+700
18.	Pipe culvert, d=1000mm	km 16+180
19.	Box culvert h / b = 3.00 m / 2.00 m	km 16+730
20.	Pipe culvert, d=1000mm	km 17+200
21.	Pipe culvert, d=1000mm	km 17+670
22.	Pipe culvert, d=1000mm	km 17+940
23.	Box culvert h / b = 3.00 m / 2.00 m	km 18+150
24.	Pipe culvert, d=1000mm	km 18+320
25.	Box culvert h / b = 3.00 m / 2.00 m	km 18+830
26.	Pipe culvert, d=1000mm	km 19+170
27.	Pipe culvert, d=1000mm	km 20+070
28.	Pipe culvert, d=1000mm	km 20+650
29.	Box culvert h / b = 3.00 m / 2.00 m	km 21+050
30.	Pipe culvert, d=1000mm	km 21+700
31.	Pipe culvert, d=1000mm	km 21+970
32.	Pipe culvert, d=1000mm	km 22+670
33.	Pipe culvert, d=1000mm	km 22+800
34.	Pipe culvert, d=1000mm	km 23+450
35.	Pipe culvert, d=1000mm	km 24+150
36.	Viaduct, L=250m	km 24+900
37.	Pipe culvert, d=1000mm	km 25+430
38.	Box culvert h / b = 3.00 m / 2.00 m	km 26+130
39.	Viaduct, L=450m	km 26+850
40.	Pipe culvert, d=1000mm	km 27+430
41.	Box culvert h / b = 3.00 m / 2.00 m	km 27+770
42.	Pipe culvert, d=1000mm	km 28+000

No.	Type of object	Chainage
43.	Pipe culvert, d=1000mm	km 28+600
44.	Pipe culvert, d=1000mm	km 28+900
45.	Pipe culvert, d=1000mm	km 29+200
46.	Pipe culvert, d=1000mm	km 29+970

The drainage system presented in Table 17 is indicative and might change with the progress of the design.

A drainage system of gutters and channels is to be defined to collect the runoff from the motorway pavement and the slopes and drain it to the final recipient. At this design stage information on the drainage system is not available. Also, the treatment option before discharging the run-off should be further selected.

The installation of the drainage system is a significant work activity to be commenced after the subgrade has been built to grade. The work sequence includes trench excavation, hauling of oversize materials, removal of "tights", bedding installation, distribution of pipe and drop inlets, installation of pipe and connection to drop inlets, pipe cover, trench backfill, compaction and water testing.

Blasting

Blasting will be performed in accordance with the Blasting Management Plan which is aligned with the Design and Build Contractor 's policies and Kosovo law. A blasting plan will be issued to the Ministry of Infrastructure in advance of blasting so that they are aware of the Project schedule and can approve the plan in a timely manner; nearby communities and other stakeholders will be notified about the potential impacts and duration of blasting works before they commence.

3.6.3. Structures

Various structures will be needed to enable for a continuous traffic flow, such as: interchanges and crossings, overpasses / underpasses, bridges, viaducts and culvertis.

The new grade separated interchanges on the new motorway will be mainly used by the local population to gain access to the motorway. The numerous settlements and properties are interconnected with a network of local and dirt roads crossing the Project Alignment. Details on the settlements to which access will be enabled by underpasses / overpasses are highlighted under the section 3.1.1 (Detailed Project Location) above.

Six grade separated interchanges are included enter to and exit from the motorway at the following chainages: km 2+900, km 6+740, km 12+900, km 14+950, km 20+050 and km 28+100. In this phase of design, the abovementioned structures are considered at approximate locations with length and width separately for each structure in order to obtain approximate quantities and their investment value which are needed for the Project financing purpose. The system of grade separated interchanges will be defined in the next design phases.

A fence on both sides of the road is foreseen to allow entrance to and exit from the motorway only at the grade separated interchanges.

Where engineering works will be carried out in or on the banks of Drini I Bardhe River, it wil be necessary to isolate and de-water the work area to create dry working conditions to reduce the risk of sediment entering the river. The location of bridge abutments is not defined at the Conceptual Design stage. At the Preliminary and Detailed Design stages, particular attention will be paid to locating them in such a way as to avoid significantly encroaching into the waterway and thereby reducing the available waterway area. Abutments should also be located so as to avoid obstruction of movement of terrestrial fauna along the riparian zone (i.e. allow free movement of animals along the riverbanks).

The major structures, both Alignment and the bridge, will be constructed in conjunction with earthworks that will progress in such a manner to support the expeditious completion of the structures. The initial and critical work on the structures will be installation of piling where applicable. This will be followed by pile cap, then abutment and pier construction. Earthwork adjoining the structure will then be completed. The span construction will not progress until the motorway formation and sub-base is in place to allow for transportation of the U-beams from the casting yards to the individual structure locations. Hence, span construction will be linear from the beam plant locations.

3.6.4. Paving

The pavement structure will consist of 3 asphalt layers, a bearing layer made of cement stabilized grained stone material (CTB) and a bearing layer made of unbound crushed stone material which is to be placed on top of fill material. At the time of this revision the thickness of each layer was under consideration by the designer and is dependent on the required life of the pavement.

Pavement construction will be performed to ensure that access along the Alignment is not disrupted for otherdisciplines. The quality of the paving can be negatively affected by winter weather conditions (rain and snow). As a result, paving will not be performed during the extreme winter months (November–March).

3.6.5. Work Hours

The Project working cycle will comply with Kosovo* legislation and directives and the EBRD Performance Requirements.

According to the Law on Labour (Law No.03/L-212), Article 20 of this laws specifies that full time working hours’ shell be fourty (40) hours per week, 8 hours per day with half hour lunch break. While the article 22 specifies the conditions when reduced working hours can be applied (not less than twenty (20) hours per week for the jobs with high level of hazard), Article 23 sets the conditions when the extended working hours may be applied (for a maximum of eight (8) hours per week). It is important to notice that aforementioned law’s article 27 sets night shifts to be working hours between 22:00 and 6:00.

Also, the project working cycle will comply with the requirements deriving from the Law No. 2003/19 on Occupational Safety, Health and the Working Environment.

The project working cycle will comply with EBRD Performance Requirements, and in particular it will have to comply with the PR 2- Labour and Working Conditions which as such regulate ample of issues relevant to the project working conditions and labour relations cycle such as Management of working relations, wage benefits and conditions to work, occupational health and safety, security personnel, etc.

3.6.6. Employment

The build up of the workforce over the 36-month construction period for the Alignment will be in the range of 250-300 workers with a peak employment throughout 2017-2018.

3.6.7. Land Use and Land Take

This overview of the land use setting along the route is based on the habitat mapping (please see section 5.1.11.5). Main categories are terrestrial and aquatic natural environment, agricultural areas, residential areas and infrastructure. Some of these categories are divided into specific subcategories.

With regards to the permanent land take for the construction of the new motorway, the land take need is assessed within the territory of 2x20m buffer along the Alignment. One should bear in mind that these calculations are only approximate and should not be used for the purposes of expropriation. Detailed land take requirements will be known at the latter stages of the Project. At this point Land Acquisition Resettlement Framework (LARF) will be prepared. Resettlement Action Plans (RAP) will be prepared at the later stages of the development of the Project when required information for it is available. Once RAP is agreed legal procedure for permanent land can be initiated as per steps and activities elaborated on the section 2.1.2.2 (Expropriation Process) of this document. Notwithstanding, according to the habitat mapping, the fllowing areas under different land use types will have to be acquired:

- 75.2 ha of agricultural land out of which 67.4 under field and acres
- 38.28 ha of forested land.
- 3.7ha of semi natural grasslands
- 6.34ha of artificial areas and settlements

During construction works temporary land take will be required from the requirements for construction compounds and work sites along or close to the rail route, and space for storage of plant, materials and locating site offices. Design and Build Contractors' may temporarily require land for other facilities such as Borrow Pits & Landfills, Concrete Batching Plants, Aggregate Crushing Facilities, Labour & Workforce Numbers, Facilities & Accommodation, Construction Laydown Areas & Design and Build Contractor Facilities.

The locations of the construction compounds are yet to be decided. This shall follow legal requirements and the agreements to be reached with the affected landowners. Information on land ownership is not available at present.

3.6.8. Bill of Quantity

An approximate bill of quantity is prepared for all the types of construction works for construction of the Kievo – Klinë – Zahaq motorway.

The total value of the construction works is estimated to be 106,185,800.00 EURO.

The unit price per km is estimated to be 106,185,800.00 / 31 = 3,425,348.40 EURO.

The costs for the land expropriation, design, supervision and geotechnical site survey and laboratory investigations represent the total investment cost for the construction of the new motorway Kijevo – Klinë – Zahaq amounting 141,984,818.00 EURO.

Considering that the new design is treated at the level of General Design, where in principle the Alignment corridor is defined, it has to be emphasised that the design elements are treated in general terms. For certain items only the need, the general location and types are defined, such as the structures, interchanges, traffic signalisation and equipment, drainage system and other.

Considering the above stated level of the design development stage of the new motorway, the error margin of the investment cost is in the range of +/-20%.

3.6.9. Waste Management

Solid waste will be generated during construction of the Project and its associated structures.

Significant quantities of rock and soil materials will be generated from earth moving during construction activities. The excess material disposal sites will have to be identified and disposal method (area, compaction, slope stability, drainage, access etc.) defined during the Detailed Design stage. The sites for the disposal of inert material (construction and demolition waste) will be identified in consultation with the authorities (municipalities and MESP).

During the Construction Phase the management of construction site excavation materials should be carried according to the recommendations of the IFC EHS Guidelines for Construction Materials Extraction and the General EHS Guidelines.

3.6.10. Construction Environmental Management Plan (CEMP)

3.6.10.1. Construction Management

A Construction Environmental Control Plan (CEMP) will need to be developed in order to describe the environmental management program for Project construction activities. This document will serve as an outline plan for the Design and Build Contractors. The CEMP will include information necessary to implement a comprehensive program for managing environmental compliance during construction (see Chapter 8 "Environmental & Social Management Plan CEMP").

The objectives of the CEMP are to:

- ☐Define the requirements for compliance with national and local regulations, permit/consent conditions, client/contract requirements, and all other applicable environmental documents including the Project Environmental and Social Impact Assessments (ESIA) and Environment and Social Management Plan (ESMP).
- Clearly define the responsibilities and actions required by all parties during project execution to maintain compliance with the environmental requirements.
- Provide the necessary procedures for communication, documentation, and review of environmental compliance activities.
- The Design and Build Contractor`s environmental responsibilities shall be detailed in the Contract as follows:
    - o Take all reasonable steps to protect the environment (both on and off site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of [his] operations; and
    - o Ensure that emissions, surface discharges and effluent from the site and arising from the Design and Build Contractor`s activities shall not exceed the values stated in the Environmental Permit, the specification or otherwise prescribed by Kosovar Law.

This CEMP is applicable to all Project construction activities. There will be a manager for each major element of construction:

- Earthworks and Drainage;
- Structures;
- Paving; and
- Equipment and Quarries and Plant.

3.6.10.1. Traffic solution

Traffic management is defined through horizontal and vertical signalization. Within the technical documentation at the level of Final Detailed Design and defined Alignment, a separate Design for traffic signalisation and equipment will be prepared including the detailed investment cost.

3.6.10.1. Project Associated Facilities - Service Facilities

The Project comprises of the carriageway with shoulders, curbs, gutters, drains, noise and visual barriers, cuts / fills and associated landscaping, as well as all intersections including bridges, culverts, overpasses, underpasses, interchanges and grade separation devices.

The Project Service Facilities are those located within the motorway righ - of – way: parking and rest areas, tollbooths, lookouts, safety ramps, emergency facilities, maintenance depots including loading and unloading facilities, petrol stations, restaurants etc.

The need for and suitable Project Service Facilities will be defined during the Detailed Design stage.

3.6.11. Operation and Long Term Management

Operation and maintenance activities (IFC Guidelines, 2007) are numerous but mainly include:

- Road repair,
- Snow and ice removal, and
- Vegetation maintenance.

3.6.11.1. Road Repair

Asphalt pavement is susceptible to cracking and other breakdowns that have to be repaired. Asphalt emulsions will be used to fill up small cracks. Cutbacks, which are a mixture of asphalt and petroleum solvents, are not used as frequently because of potential environmental effects of the solvents. Repair tasks include equipment operation, sweeping, application of asphalt, and compaction rolling (Design Manual for Roads and Bridges - DMRB) DMRB, 1998).

When the road surface deteriorates to the extent that spot repairs and surface treatments are not useful, resurfacing will be necessary. For asphalt pavement, resurfacing will be accomplished by use of milling machines, which remove the top layer of pavement. The removed pavement will be crushed or otherwise processed to make it useable as sub-base or other material. Milling and paving of asphalt roads will be completed in a single pass.

3.6.11.2. Snow and Ice Removal

Snow/ice removal consists of ploughing snow and ice from bridges, roadways, and shoulders. Wide ditches will facilitate the storage for plowed snow, which otherwise would be piled along the edge of the roadway or require removal. De-icing with chemicals (e.g. common salt [sodium chloride] or magnesium chloride) will be used to facilitate safe driving. Alternatives to chloride salts include calcium magnesium acetate and potassium acetate may be considered. Spreading of sand or crushed stone will also be used for increased traffic safety.

3.6.11.3. Vegetation

Vegetation alongside the motorway requires periodic maintenance to enhance aesthetics and prevent encroachment i.e. potential safety hazards (e.g. reduced visibility, obstruction of signs, and debris in the roadway). Vegetation maintenance will include mechanical mowing, trimming, removal of brush, cleanup, and removal of trees when necessary.

3.6.11.4. Waste Management

Solid waste generation during operation and maintenance activities will include road resurfacing waste (e.g. removal of the old road surface material); road litter, illegally dumped waste, general solid waste from rest areas; animal carcasses; vegetation waste from right-of-way maintenance; and sediment and sludge from stormwater drainage system maintenance (including sediment traps and oil/water separation systems). Waste management strategies will include:

- Road Resurfacing
    - During resurfacing, maximizing the rate of recycling of road resurfacing waste either in the aggregate (e.g. reclaimed asphalt pavement or reclaimed concrete material) or as a base;
    - Incorporating recyclable materials (e.g. glass, scrap tyres, certain types of slag and ashes) to reduce the volume and cost of new asphalt and concrete mixes.
- Miscellaneous Wastes
    - Collecting road litter or illegally dumped waste and managing it according to the recommendations in the General EHS Guidelines.
    - Provision of bottle and can recycling, where appropriate and trash disposal receptacles at parking lots to avoid littering along the road;
    - Manage herbicide and paint inventories to avoid having to dispose of large quantities of unused product. Obsolete product will be managed as a hazardous waste as described in the IFC General EHS Guidelines;
    - Collecting animal carcasses in a timely manner and disposing through prompt burial or other environmentally safe methods;
    - Composting of vegetation waste for reuse as a landscaping fertilizer;
    - Managing sediment and sludge removed from storm drainage systems maintenance activities as a hazardous or non-hazardous waste (IFC General EHS Guidelines) based on an assessment of its characteristics.

4. ASSESSMENT METHODOLOGY AND SCOPING ASSESSMENT

4.1.1. The Approach

The ESIA Methodology is based on extensive experience and knowledge of the:

- National and EU environmental and social legislation relevant to the Project, see Chapter 2 (and the understanding of the important gaps existing between National & EU legislation);
- Environmental and Social Impact Assessment procedure in Kosovo*;
- International environmental and social policies and performance requirements (e.g. EIB, EBRD and IFC);
- Environmental impact assessment techniques and methods (e.g. national and EU Guidance on EIA procedures, Scoping Check Lists, DMRB[31] Volume 11, Leopold Matrix etc.);
- Multilateral Conventions that Kosovo* has ratified, including those focused on transparent and open public disclosure processes (see Chapter 2), for example the Aarhus and Espoo Conventions;
- Importance of public involvement at the earlier phases of Project preparation in order to ensure open discussion and public participation in the decision-making process.

The Conceptual Design developed under the Project - "Update of the Feasibility Study, ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë – Pejë (SEETO Route 6 B), section from Kijevë - Klinë to Zahaq (30Km) in Kosovo" has been analysed in the assessment process.

The aim of an Environmental & Social Impact Assessment (ESIA) is to identify the potential environmental and social impacts of the Project and to evaluate mitigation and management measures to avoid, reduce or remediate potential impacts. The general approach to the Project has been developed on the basis of the standard ESIA practice defined in the following steps:

- **Define the Project & Consider Alternatives:** Define the proposed Project activities, including the construction works & operation practices, which are likely to affect the surrounding environment and communities, along with considering the alternatives (e.g. route Alignment alternatives) *(see Chapter 3)*;

- **Scoping:** Define the scope of the assessment based on the issues which may cause significant effects on the receiving environment and communities, based on the opinion of stakeholders as well as the Scoping Opinion of the regulatory authority (i.e. the MESP) *(see Chapter 4)*;

[31] Design Manual for Roads and Bridges (DMRB); Volume 11: Environmental Assessment: Section 2 (2008); dft.gov.uk

Mott MacDonald

- **Baseline Conditions:** Define the existing baseline environmental and social conditions of the study area along the route and within the potential area of influence of the Project. The baseline seeks to identify the environmental and social receptors and resources within the study area in order to understand and determine the value (or sensitivity) of these receptors and resources *(see Chapter 5*;

- **Study Area(s):** Establish the study areas, including both the spatial and temporal boundaries *(see Chapter 6)*;

- **Identify Potential Social & Environmental Impacts of the Project:** Define (for relevant aspects) the value (or sensitivity) of the receptors and resources likely to be impacted. Identify the potential environmental and social impacts, (including cumulative and synergistic impacts). Determine the magnitude of potential impacts (i.e. change) from the Project on the environmental and social baseline conditions (including the receptors and resources). Determine the likely significance of the effect of these impacts before mitigation measures are applied (i.e. Significance of Effects (without mitigation); (*Chapter 6*);

- **Detail Appropriate Mitigation Measures**: Detail appropriate mitigation measures to address predicted negative effects and enhancement measures to maximise anticipated benefits (see Chapter 7);

- **Assess the Residual Effects of the Project and Determine Level of Significance**: Determine significance of residual effects (including any residual cumulative and synergistic) after consideration of the effectiveness of the design and committed mitigation measures. Therefore, this stage of the assessment determines the likely significance of any residual effects following the application of mitigation measures (i.e. Significance of Effects (with mitigation)) by considering the Significance of Effects (without mitigation) along with the probable success of mitigation measures; (see Chapter 7).

- **Plan Environmental & Social Management & Monitoring Arrangements**, including Stakeholder Engagement; (*see Chapter* 8).

4.2. Scoping Opinion and Assessment

In order to determine the scope of the assessment, the identification of the environmental and social aspects, which are likely to be potentially affected, by the Project has been undertaken. The scoping process was based on:

- the Scoping Opinion and guidance provided by the Ministry of Environment and Spatial Planning (MESP);
- Stakeholder Scoping; and

- Scoping matrix (based on the Leopold Matrix method): a scoping matrix has been used to identify the potential interaction between the Project activities and the various environmental and social aspects.

4.3. Scoping Opinion of the Regulator (MESP)

The MESP representative - EIA officer Mr. Shukri Shabani attended the Scoping Workshop which was held on 27.10.2016 and provided positive feedback on the ESIA scope set out following the Pre-Feasibility stage of the Assignment. He acknowleged the results of the scoping analyses and the Leopold Matrix and had no objections to the overall scoping process.

4.4. Stakeholder Scoping

In order to ensure stakeholder engagement early in the environmental and social appraisal process, Scoping Stakeholder activities were organized throughout 2015 and in early 2016. The Stakeholder Scoping included the following:

- Presentation of the Project to the Mayors and relevant public administration of affected municipalities (Klinë and Pejë), May / June 2015;
- Presentation of the Project to national authorities (Ministry of Environment and Spatial Planning, Kosovo Environmental Protection Agency, Institute of Hydrometeorology and Ministry of Culture, Youth and Sport), May / June 2015;
- Workshop on Potential Project Alternatives, October 2015;
- Consultations with the regional employment centres in Klinë and Pejë, December 2015;
- Survey of households and businesses, aiming to supplement statistical information on affected communities;
- Workshop on Considered Project Alternatives and Preliminary Environmental and Social Impact Assessment, (Pre-Feasibility stage), February 2016;
- ESIA Scoping Workshop, October 2016.

The discussions and outcomes of the meetings / workshops listed above fed into the preparations of the Scoping Workshop.

The objectives of the scoping workshop were to:

- Disclose relevant Project information;
- Understand the local circumstances regarding the social and economic development of the region / municipalities and opportunities for further development after the Project implementation;
- Discuss the possible environmental sensitive areas along the motorway corridor and any “hot” environmental issues already identified earlier; and
- Discuss the best suitable consultation methods and ways in which the public can participate in open, proactive manners.

The main discussions are summarised below:

- The representative of Municipality of Klinë expressed his strong support to the Project stating that the new motorway will positively contribute to the socio-economic development of their municipality.
- Furthermore, Municipality of Klinë representative suggested that during the next Design stage, preferably during the Preliminary Design, the road transport plan of the Klinë municipality is assessed in order to avoid any barrier effect of the Project for the implementation of a planned transit road passing through the Dërsnik valley, going through Zajm village and connecting to the existing road N9.
- The MESP representative welcomed the ESIA approach and appreciated that the baseline noise and air quality for the existing road N9 was based on field measurements; he also confirmed that information provided under various sections of baseline analyses is correct and is based on secondary data from latest studies / reports.

All the main findings, concerns and recommendations provided by the various stakeholders during the scoping meetings were taken into consideration in the scoping assessment.

4.5. Scoping Matrix

The potential environmental and social[32] impacts of the planned Project - N9 motorway were reviewed in the Scoping Matrix for the main Project phases (construction and operation) to identify the likely environmental and social aspects originating from them. These phases are described below:

- The Construction Phase (including design) activities considered in the scoping phase and where relevant within the subsequent impact assessment includes all those undertaken during the time of construction of all motorway elements for the entire Project. This would include all construction activities and decommissioning of the temporary construction facilities.
- The Operational Phase assessment considers all operational activities including:
    - Operation of the motorway, which may potentially result in impacts such as the generation of noise and vibration, release of chemicals, fuels or hazardous substances leakage from the traffic, killing of crossing animals, generation of various waste streams; and
    - Maintenance activities of the motorway, which may potentially result in impacts such as on the occupational health and safety for the workers that will perform regular maintenance of the motorway and public safety during the maintenance.

[32] Also referred to as socio-economic

Decommissioning of construction sites and temporary facilities is also considered within the scope of the assessment as part of the Construction Phase activities. However, this phase, due to limited information at this point will be developed at the later stages.

The potential impacts (adverse and positive) of all planned Project activities have been identified and the interaction among the Project activities in all these phases and the natural / physical environment and social-economic life of the population was addressed using the Environmental and Social Scoping Matrix below.

Table 18: Scoping Matrix

Phase	No.	PROJECT ACTIONS/ ENVIRONMENTAL AND SCIAL ASPECTS	Agricultural Land	Soil Erosion	Slope Stability	Surface Water Quality	Ground Water Quality	Air Quality	Noise	Aquatic Ecosystems	Terrestrial Ecosystems	Protected Sites	Public health	Land use	Employment	Cultural heritage
Pre-Construction and Construction phase	1	Topsoil removal, clearance of vegetation and disposal	X	X		X		X	X	X	X		X	X	X	
	2	Storage of material and equipment, camps, crushers, batching and asphalt plants	X	X		X	X	X	X	X	X	X	X	X	X	
	3	Construction traffic and machinery movement, materials transport	X	X		X		X	X	X	X		X		X	
	4	Earthworks, cut and fill	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	5	Underground works including blasting		X	X		X	X	X		X		X		X	X
	6	Access roads	X	X		X	X	X	X	X	X	X	X	X	X	X
	7	Pavement and finishing						X	X						X	
	8	Excess material disposal sites	X	X	X	X	X	X	X	X	X	X	X	X	X	
	9	Barrow pits		X	X	X	X	X	X	X	X		X	X	X	
	10	Rivers/ Stream crossing (bridges, culverts)		X	X	X	X		X	X	X			X	X	
	11	Erosion control measures		X	X	X	X			X				X	X	
Operation Phase	1	Traffic	X			X		X	X	X	X		X		X	
	2	Preventive soil erosion measures				X	X								X	
	3	Winter maintenance activity – salt application				X					X				X	
	4	Maintenance of drainage systems				X			X	X	X		X	X	X	
	5	Fence maintenance									X		X			
	6	Maintenance of traffic signs and road signalization											X		X	

4.6. Conclusions of the Scoping Assessment

Based on the scoping process, the assessment of impacts in the ESIA has focused on the following issues:

- Topography and Landscape
- Landscape
- Geology, Hydrogeology and Soils
- Climate
- Hydrology (Surface Water) and Groundwater
- Air Quality and Climate Change
- Noise and Vibration
- Waste Management
- Study Area
- Biodiversity
- Cultural Heritage and Archaeology
- Affected Municipalities
- Affected Settlements
- Land Use and Land Take
- Facilities / Services
- Employment
- Migration
- Economic Activities
- Sources of Income
- Vulnerable Groups

4.7. Spatial Scope

The spatial scope of the investigation area for the assessment has been determined for each of the environmental and social aspects/topics on a case by case basis in order to reflect both the:

- potential area of influence of the Project; and
- the surrounding environment over which significant effects could reasonably occur both from the Project and in combination with any other relevant projects/developments in the area.

For the majority of the environmental and social aspects/topics, the strip of land adjacent to the motorway Alignment has been considered for the assessment of impacts. However, where sensitive receptors and resources are located beyond the immediate area along the route, this has been considered where appropriate to be part of the study area for certain environmental and social topics. The results of the consultation with stakeholders (e.g. Stakeholder Scoping Meetings) have been considered when determining the relevant spatial study area for specific environmental and social topics.

Both potential direct and indirect effects are considered in the impact assessment and in determining the appropriate study areas. Each topic has considered the

- Project footprint, or areas where direct effects are likely to occur, considering also relevant buffers, and
- Surrounding area, where communities live and work and where indirect and cumulative effects are likely to occur during construction and operation of the motorway.

In Chapter 5 describing the environmental and social baseline, the study area is defined for each individual environmental and social aspect.

5. ENVIRONMENTAL AND SOCIAL BASELINE

Chapter 5 provides data and information on the existing state of environment, economic and social conditions of the Study Area. Based on the environmental and social conditions and on the sensitivity of receptors, the impacts arising from the Project are identified and adequate mitigation measures for the most significant impacts are defined.

5.1.1. Environmental Baseline

The Baseline Conditions for the key environmental resources have been analysed and presented so as to:

- Describe the important environmental resources and their sensitivity with regards to the Project
- Deduce information gaps and propose additional studies where appropriate
- Meet the requirements of national and international laws and standards and lenders` requirements

Baseline information has been obtained by desk research, field observations and samplings.

5.1.2. Topography and Landscape

Kosova is spread along 10.887 km² (or 1.1 million ha) of which 53% is arable agricultural land, 41% is forested area, and 6% is miscellaneous types of areas. It is divided into two agro-ecological areas: Rrafshi i Dukagjinit (Dukagjini Plain) (48% of the total land-area), and Fusha e Kosovës (Kosovo Plain), (52% of the total territory).

The topography of Kosovo ranges from the lowest point above sea level, 265 m at Lake Vermice, to the highest point above sea level at 2,656 m, the Gjeravica mountain peak, among the Bjeshkët e Nemuna (Damned Mountains).

The landscape in Kosovo is characterised by high mountains Bjeshkët e Nemuna – Alpet Shqiptare (Albanian Alps); Malet e Sharrit (Sharr Mountains); M. e Kopaonikut (Kopaonik Mountains), M. Qendrore (Central Mountains) and low plains - Rrafshi i Dukagjinit (Dukagjini Plain) and Fusha e Kosovës (Kosovo Plain), which are intersected by several river valleys.

Figure 31: Topography of Kosovo and the Project Location

Detailed information on the topography and landscape in the Study Area is provided below.

5.1.2.1. Study Area

The Study Area selected for these environmental items corresponds to a 0.5 km strip of land on both sides of the planned motorway axis.

5.1.2.2. Data Sources

Data was obtained from the Municipal Development Plans[33] and topographical maps to a scale of 1:25.000. Additionally, satellite imagery (Google Earth) has been evaluated. Site visits were performed during the last quarter of 2015 and first quarter of the year 2016.

5.1.2.3. Baseline Data Collection Methodology

The analyses of **topography** in the Study Area showed that the Alignment crosses the two main plains Fusha e Kosovës (Kosovo Plain), formed by the Drenica River and Rrafshi i Dukagjinit (Dukagjini Plain) Dukadjini plain (formed by the Drini I Bardje and Bistrica E Pejë s Rivers).

The description of the **landscape** along the Alignment is based on a desk study[34] and site visits executed during 2015 and early 2016, using the following criteria:

- topography of the terrain: flat (floodplain), wavy (rolling) and hilly terrain;
- predominant land uses: agricultural, pastures & meadows, forest & tree plantations, and urban area (settlements)
- landscape scenery units: distinguished on the basis of visual quality deriving from topography and land use, as well as the level of modification of the natural landscapes.

5.1.2.4. Baseline Assumptions & Limitations

There are no published landscape unit maps for the study area. A digital terrain model (DTM) to describe the topography was used for the study area.

5.1.2.5. Topography Baseline Conditions

The section of the route between km 0+000 and 15+000 spreads through the Drenica Valley. It is a long valley through which the Drenica creek, a tributary of the Sitnica River, flows. The valley forms the north-western part of the Fusha e Kosovës and stretches from the left bank of the Sitnica westward to the border with the Dukagjini Valley.

The section of the Route between km 15+000 and 31+000 passes through the Dukagjini plain that begins at the Mokna Mountain in the north and continues down to the Sharri Mountains in the south. Dukagjini region (plain) is formed by the valleys of the rivers Drini I Bardhe and Bistrica e Pejës.

[33] Municipal Development Plan of Peje (http://www.unhabitat-kosovo.org/repository/docs/MDP_angl_135548.pdf) and Municipal Development Plan of Kline (obtained from the Municipality of Kline).

[34] Landscape Protection and Management & Planning for the Municipality of Kline, 2015, https://www.coe.int/t/dg4/cultureheritage/cooperation/Kosovo/Publications/Landscape-Kline.pdf

The terrain comprises of gentle slopes crossed by many short gullies with inconsiderable catchment areas.

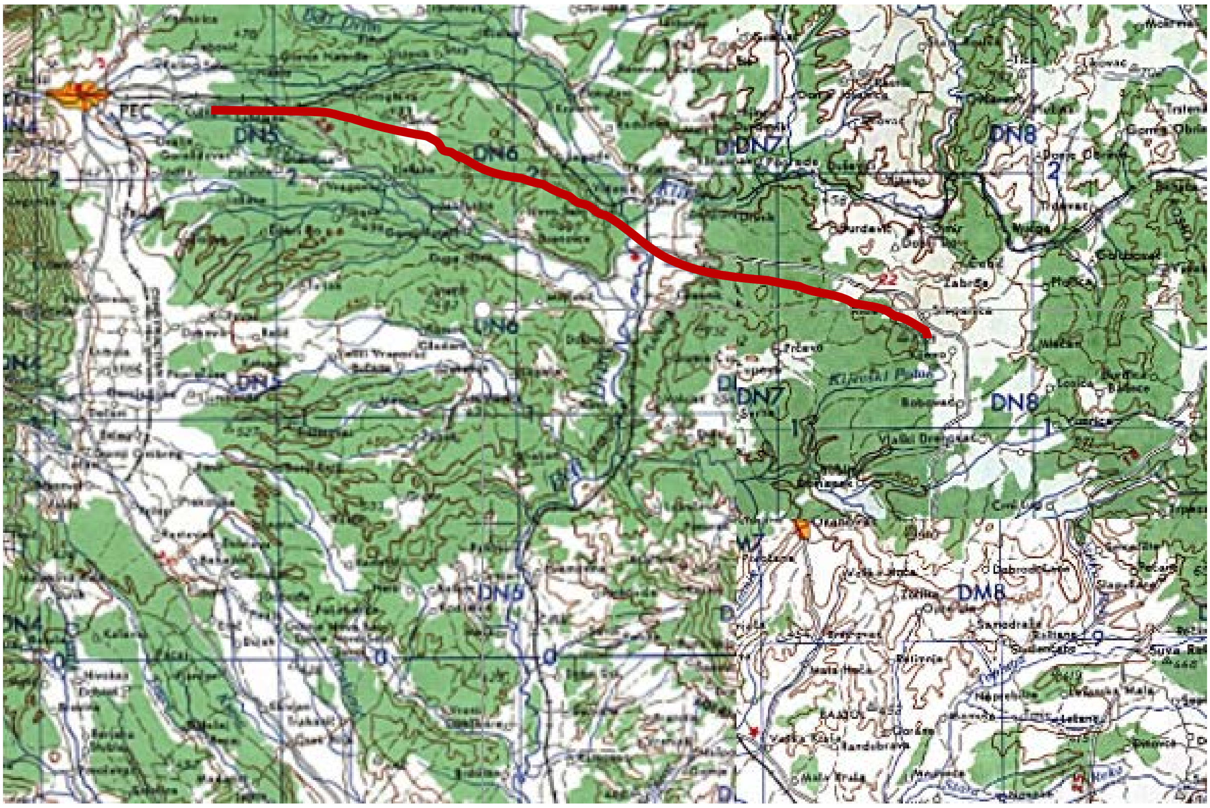


Figure 32: Topography of the Project Area

5.1.2.6. Landscape Baseline Conditions

In the Study Area three types of landscapes are distinguished based on the extent of anthropogenic influence:

- anthropogenic (agricultural land, human settlements, roads and associated facilities)
- semi-natural (degraded patchy forests)
- natural (Oriental hornbeam and White oak forests, as well as parts of the valley of Bistrica E Pejë s where riparian woodlands and meadows are present).

Three primary landscape units have been identified based on the methodology / criteria described in section 5.1.2.3 above (Figure 33):

- Agricultural landscape on wavy terrain (semi-natural),
- Agricultural landscape on floodplains (anthropogenic) and
- Landscape consisting of hilly thermophilous broadleaf forest (semi-natural and natural).

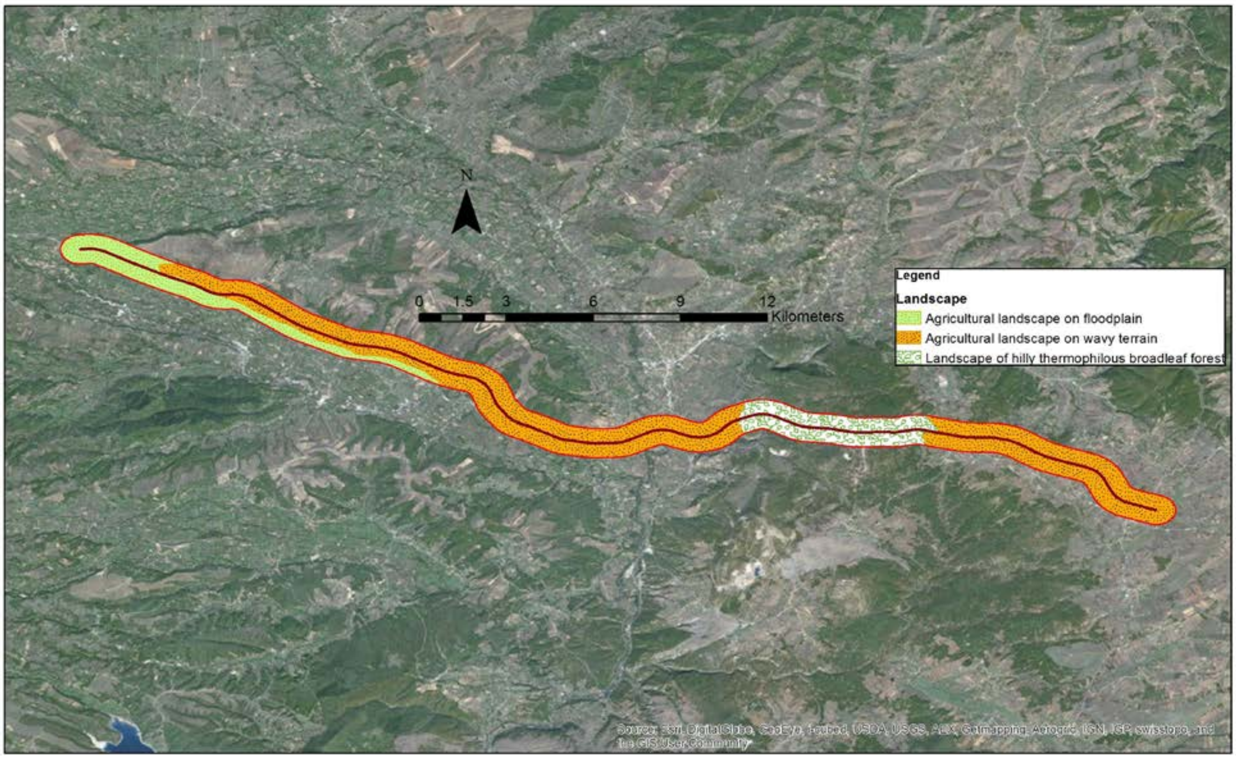


Figure 33: Landscape map of the analysed motorway corridor Kijevo-Pejë (Zahaq)

Typical landscape units along the motorway Alignment are presented in the following table:

Table 19: Typical morphological and landscape units

Section / chainage	Altitude range (m.asl)	Land form	Land use	Landscape Unit
Km 0+000 – km 4+100	600 – 610	Flat terrain	Agricultural and pasture land	Agricultural landscape on wavy terrain
Km 4+100 – km 10+000	510 – 615	Rolling and hilly terrain	Combination of lightly forested and areas with low vegetation	Landscape of hilly thermophilous broadleaved forests
Km 10+000 – km 16+000	370 – 520	Hilly terrain and flat open terrain	Agricultural and pasture land	Landscape of hilly thermophilous broadleaved forests in combination with Agricultural landscape on floodplain
Km 16+000 – km 23+000	380 – 450	Rolling open terrain	Agricultural and pasture land	Agricultural landscape on wavy terrain
Km 23+000 – km 31+000	410 – 465	Rolling open terrain	Agricultural and pasture land	Agricultural landscape on wavy terrain in combination with Agricultural landscape on floodplain.

The main features of the identified landscape units are described below.

Agricultural landscape on wavy terrain

The matrix of the landscape unit - *agricultural land on wavy terrain* – comprises of fields and pastures interspersed with patches of human settlements and small patches of natural forests. This type of landscape unit is apparent at both ends of the Alignment.

Figure 34: Agricultural lowland hills landscape

Source: Landscape Protection and Management & Planning for the Municipality of Klinë, 2015

The agricultural land comprises of small fields and pastures, abandoned agricultural land (fallow fields) as well as ruderal vegetation (along roads, near villages, etc.). The villages appear as low density isolated clusters of Residential Properties which are scattered across the agricultural land. Residential Properties are interspersed by gardens and orchards. The functionality of the agricultural landscape is improved by the presence of tree hedges and stone walls separating land plots. Another feature of this landscape unit is the existing road N9 and the adjacent Non-Residential Properties.

The primary natural vegetation presents as degraded and fragmented Italian and Turkey oak stands; when the natural Italian and Turkey oak forest was cleared for human activities, the habitat which was once continuous became divided into separate and isolated fragments. A well preserved Italian and Turkey oak forest emerging to the north of the Alignment (outside of the analysed corridor) is a remnant of the original continuous forest. Besides Italian and Turkey oak stands there are negligible remains of natural vegetation: willow belts along temporary water streams, degraded patches of shrubby vegetation with indigenous and allochthonous tree/shrub species.

The primary scenery units visible from the planned motorway are the settlements, the agricultural land, the existing road N9, the Italian and Turkey oak stands and the willow belts covering gullies.

Landscape of hilly thermophilous broadleaved forests

This landscape unit is typical for the rocky terrain descending sharply towards the Drini I Bardhe River valley. It has semi-natural and natural features. The matrix is represented by thermophilous oak forests of *Quercus pubescens* and *Carpinus orientalis* type (White oak and Oriental hornbeam). The most striking feature of this landscape is the rich biodiversity arising from the presence of Mediterranean species of flora and fauna.

The oak forests include patches of dry grasslands (hill pastures) of different sizes while bare rocks and rocky grounds appear intermittently. Hilly pastures have formed due to the degradation of the forest. Despite the fact that forests are degraded, the connectivity in the landscape is rather high due to the absence of major obstacles. It provides this landscape with significant functional value.

The above notwithstanding, the existing road N9 represents the greatest barrier to the connectivity of the landscape of hilly thermophilous broadleaved forest and disrupts its functionality. In addition, the natural vegetation is severely degraded within the immediate strip along the existing road N9 due to the existing informal trading spots for crushed stone. Another factor contributing to the landscape disturbance is the presence of a number of quarries and associated access roads branching off the road N9.

The primary scenery units visible from the planned motorway are grasslands, patches of forests, the existing road N9 and the quarries.

Agricultural landscape on floodplains

The Agricultural landscape on floodplains is spread along the valleys of rivers Bistrica E Pejë and Drini I Bardhe, constituting the middle section of the alignment. It is characterized by the dominance of agricultural land (the matrix) with patches of human settlements and remains of riparian and wetland vegetation.

Fields are dominant in this landscape type. They are intersected, however, by the remains of natural woodlands and by human settlements. One of the most prominent differences to the previous agricultural landscape type is the presence of meadows and smaller orchards. The meadows are mowed for hay. The settlements are of a similar type as in the agricultural landscape on wavy terrain. The presence of non-residential properties along the existing road N9 is even more pronounced. An important feature of anthropogenic influence is the existing road N9, the road branching off the N9 road towards Gjakova, the numerous local and dirt roads as well as the railway running parallel to the Drini I Bardhe River.

The naturalness of the *Agricultural landscape on floodplain* is considerably weak. Rivers with poplar and willow belts as well as stands of Alder (*Alnus glutinosa*) and willow woodlands in the floodplain comprise the primary semi-natural habitats. The belts of riparian vegetation are mostly preserved;

facilities for sand extraction, crushing plants as well as several spots of sand extraction as well as invasive allochtonous species present the main threat to landscape integrity.

The woodlands are highly degraded. Their remains are recognizable as hedged in by the matrix of agricultural land. They do, however, serve as core areas for biodiversity that increase the natural value of the *Agricultural landscape on floodplain.*

The main scenery units which are visible from the motorway are the settlements, agricultural land, meadows, riparian vegetation and facilities for sand extraction / crushing plants.

5.1.2.7. Assessment of Landscape Sensitivity

The assessment of value or sensitivity of the landscape units identified and described above is based on the **visual quality** and **fragility**.

Visual quality has been scored and the following manner:

- The lowest value judgments are attributed to the areas where the elements have grown in a disordered manner, with spontaneous vegetation inconsistent with the natural vegetation, as well as with presence of anthropogenic detractors (informall settlements, the existing road N9 and associated facilities, abandoned quarries, waste dumps etc.).
- Higher value judgements are assigned to areas with well organised elements (Agricultural landscape on wavy terrain) or those with tendency to naturalness (Landscape of hilly thermophilous broadleaved forests).
- The esthetic experience of the travelles and their overall visual impression is also taken into account: positive esthetic experience is expected when the views extend from the highway to the natural and seminatural landscape units and the scenery towards the Drini I Bardhe River.

Fragility of landscapes is associated with their susceptibility to introducing the motorway alignment in the present pattern. The most fragile landscapes along the planned motorway are those formed onto the forested hilly and rolling terrains because of the alignment`s cuts/fills and structures (drainage, viaducts etc.) as well as induced erosion, all being out of scale with the surroundings.

In developing the score to be assigned to each landscape unit, visual quality and visual fragility have been evaluated separately using in both cases the following scoring scale:

- Negligible (1)
- Low (2)
- Medium (3)
- High (4)
- Very high (5)

The sensitivity is being assigned to different landscape units in line with the scoring presented in table 19 below.

Table 20: Assessment of Sensitivity of Landscapes in the Study Area

Landscape scenery unit	Visual quality	Fragility	Total Score	Sensitivity
Agricultural landscape on floodplain	1	2	3	Negligible
Agricultural landscape on wavy terrain	2	3	5	Low
Landscape of hilly thermophiles broadleaf forest.	3	4	7	Moderate

It can be concluded that the landscapes within the Study Area are without any outstanding values / sensitivity due to the evident landscape modification by anthropogenic influence. The outcome of the assessment is the following:

- The natural and semi-natural landscapes have greater value comapared to the anthropogenic landscapes.
- The agricultural landscape on wavy terrain has certain higher values that distinct it from the agricultural landscape in the floodplain, due to its greater visual quality and fragility.

The overall sensitivity of the receptor is medium. This evaluation of landscapes` sensitivity will be taken forward as a premise for the assessment of the significance of impacts originating from the Project.

5.1.3. Geology, Hydrogeology and Soils

5.1.3.1. Study Area

The study area covers a strip of land along the motorway corridor of approximately 1 km at each side of the Alignment.

5.1.3.2. Data Sources

For the desk study on geology Synoptic Geological mapping in a scale M=1:100000 was used to identify the existing materials in the Study Area; information was cross-checked during the “walk-over” survey in early 2016 which was conducted for the purpose of advancing the Project Conceptual Design.

Data on hydrogeology and soils were obtained from the desk study analysing the Municipal Development Plans of Pejë and Klinë, the State of Water Report for Kosovo[35], information and maps generated under various EU supported projects in Kosovo, as well as the Hydrogeological maps of the area with scale 1:25000 and 1:100000. Aerial photographs (Google Earth) and the habitat mapping provided input to the soil baseline analyses.

[35] http://www.ammk-rks.net/repository/docs/raporti_ujerave_2010-angl.pdf

5.1.3.3. Baseline Data Collection Methodology

The Baseline data has been retrieved from specific desk studies and field fisits, as described above.

5.1.3.4. Baseline Assumptions & Limitations

The description of the geology along the motorway Alignment was based on a Walk-Through and visual inspection of existing open cuts.

The detailed geo-mechanical surveys will be performed during the next stages of the Design as follows:

- During the Preliminary Design Stage, geo-mechanical investigations will enable setting more firmly the longitudinal section of the Alignment, identifying in greater detail water table levels as well as setting locations of borrow pits and excess material disposal sites,
- At the level of Detailed Design, detailed geo-mechanical investigations will derive the final design of main motorway structures – bridge, viaducts, interchanges etc.

Accordingly, the Baseline will have to be updated. The mitigation measures formulated in this ESIA intended to minimise impacts originating from the newly opened borrow pits (if any) and/or the excess material disposal sites, will have to be updated as well. This update will also facilitate minimising the existing legal gap and insufficient practice with regard to managing excess material disposal sites.

5.1.3.5. Geology, Hidro-Geology, Soil and Erosion Baseline Conditions

Geology

Overview of geological formations in Kosovo

The geology of Kosovo ranges in age from the Neo-Proterozoic to the Holocene. A summary of the stratigraphic sequence is presented in the Table below.

Table 21: Stratigraphy of Kosovo

Age	Description of Representative Rock Types
Holocene	Scree formed from weathering of mountains and alluvium deposited by rivers.
Pliocene	Andersitic chert.
Upper Miocene-Pliocene	Formation of lignite from the accumulation and subsequent decay of vegetation in sedimentary basins.
Oligo-Miocene	Conglomerates, clays and limestone accompanied by acidic to intermediate magmatism.
Late Cretaceous	Molasse: shallow-water carbonates and clastic.
Upper Cretaceous	Flysch: marl limestone, sandstones and conglomerates.
Early Cretaceous	Conglomerates, sandstones and silts.
Late Jurassic	Massive limestone.

Age	Description of Representative Rock Types
Triassic-Jurassic	Basic and acidic magmatism, and associated ophiolitic crustal rifting and obduction of ultrabasic rocks.
Triassic	Clastic with volcanic giving way to carbonate platforms that grade up into dolomites, some of which have been metamorphosed to marble.
Permo-Triassic	Carbonates, clastic, phyllite, schists and quartzite that have been invaded by acidic magmatism (quartz porphyries).
Late Palaeozoic	Schists.
Neo-Proterozoic-Paleozoic	Basement of schists, gneisses and amphibolite that have been invaded by granitic plutons.

Overview of geological formations in the Project Area

The Project belongs to the western Kosovo geomorphological plain unit. The East lowland is spread to Mitrovica (Podujevo) - Pristina - Ferizaj, while the western one is stretched through Pejë - Gjakova - Prizren. Western Lowland relates to watershed basin fields and hills of the Drini I Bardhe River. These lowland territory of Kosovo represents the surface of the lake deposits which have filled two large structural and tectonic areas with geological age before Pliocene era (N2). The Project area is built of Quaternary, Neogene and Cretaceous formations.

The following lytological units are presented along the Project Alignment:

- *Clay and gravel layers with alluvial origin (QF)*

These layers are found in riverbeds and streams. The alluvial sediments (approximately 1-3 m thick) cover the lower terraces of Drini I Bardhe and Rugova Bistrica. They are well consolidated and represent a good ground for the road construction.

- *The sub-Argil type deluvial- alluvial (Q/hal)*

The Argil deluvial - alluvial sediments are present in the ravines created by temporary water courses which intersect the hilly terrain.

- *The sub-Argil and sandy type - alluvial (Qf^{l})*

These sediments are found in the terrain located northeast of Rugova Bistrica e Pejs. They decent from the Pliocene geological age (*N2*).

- *Gravel and sandy deposits, alevrite and argil type from Pliocene era (N2)*

These sediments have been formed in the new geological age and belong to the lake deposits that build the Dukadjini Plain. They are with sub horizontal stratification.

- *The limestone Cretaceous Rock* (Cr)

This formation is found in the hills nearby the Gjakova intersection. It has little impact on the implementation of the road.

The geological map of the terrain is presented at the Figure below.

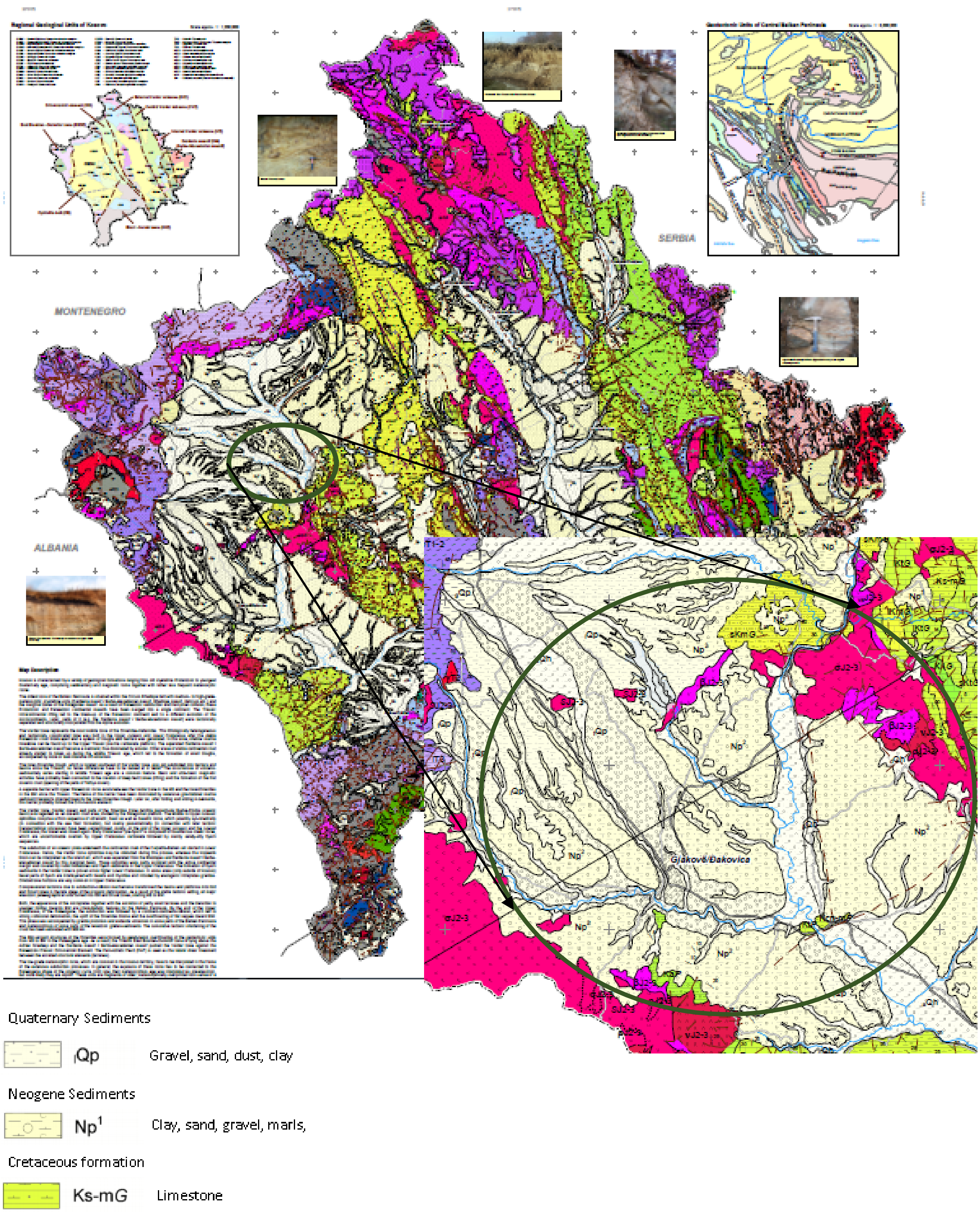


Figure 35: Geological Map, 1: 200,000

Morphological conditions (the configuration and evolution of the land forms), geological setting (stratigraphy which refers to the spatial ordering of geological layers) and geotechnical properties of the present lithological units have been analysed to derive basic Lenders` Environmental Advisoring parameters for the Conceptual Design. The outcomes of these analyses show that the geological, geo-mechanical and hydro-geological peroperties in the Study Area are favourable for the Project. Also, there aren't any natural geomorphological phenomena within the Study Area.

These properties are described in greater detail for sections of the Alignment distinguished on the basis of landform and litological homogenity.

Km 0+000 - km 4+100:

Geological strata: At the beginning of the Alignment the ground consists of young and cohessionless Quaternary sediments such as gravel and sand, not very compacted with appropriate geotechnical properties, with expected thickness to 12m. Below the Quaternary sediments are Pliocene sediments represented by sandy silt and clay with thickness greater than 50m.

The foundation depth of the structures on these sediments would be at 3-4m below the ground surface and the expected bearing capacity is in the range of 300-350 kPa. The slope inclination of the cuttings should be between 1:1 and 1:2, with berm height of 4-6 m and berm width of 3 m, so generally greater instabilities are not expected for the cut slopes. The material from the cuttings could be appropriate for embankment construction.

Ground water is not expected to occur above the level of bridge/structural foundations, but it is assumed to be 5 m below the ground surface.

Km 4+100 - km 5+500:

Geological strata: There are flysch sediments consisting of marl, aleurolite and sandstone well layered with favourable foliation orientation of 30-350 with respect to the orientation of the Alignment, with convenient geotechnical properties. These sediments are expected to be present to depth greater than 50m.

The foundation depth of the structures on these sediments would be at 3-5 m below the ground surface and the expected bearing capacity is in the range of 300-450 kPa. The slope inclination of the cuttings should be between 1:1 and 1:2, with berm height of 4-6 m and berm width of 3 m. Generally, significant instabilities are not expected for the cut slopes along this distance. The appropriate material from the cuttings could be selected for embankment construction.

Ground water is not expected above the sub-base course of the motorway.

Km 5+500 - km 10+000:

Geological strata: The ground is built of flysch sediments consisting of marl, sandstone, marl limestone and massive to blocky limestone. The limestone is mostly the surface layer along this distance. These sediments have significant layering with orientation of 20-300 which is favourable with respect to the orientation of the Alignment and have good geotechnical properties. These materials can be expected to a depth greater than 100m.

The foundation depth of the structures on these sediments would be at 2-3 m below the ground surface and the expected bearing capacity is in the range of 450-600 kPa. The slope inclination of the cuttings should be between 2:1 and 3:1, with berm height of 4-6 m and berm width of 3 m. Generally, significant instabilities are not expected for the cut slopes. The material from the cuttings could be appropriate for embankment construction.

Ground water is not expected to occur above the level of bridge/structural foundations.

Figure 36: ***Shows layering of sedimentary deposits***

Km 10+000 - km 12+100

Geological strata: The materials consist of young, cohesionless and low cemented Pliocene sediments, present as clay, marl clay and marl, not very diagenesed and having unfavourable geotechnical properties. Their thickness is estimated to be greater than 10m. The foundation depth of the structures on these sediments would be at 3-4 m below the ground surface and the expected bearing capacity is in the range of 150-250 kPa, therefore the ground will need improvement / strengthening to support embankments and structures. The slope inclination of the cuttings should be between 1:1 and 2:1, with berm height of 4-6 m and berm width of 3 m to avoid major instabilities of cut slopes. The material from the cuttings is not appropriate for embankment construction.

Ground water is not expected to occur above the level of bridge/structural foundations.

Km 12+100 - km 15+050:

Geological strata: At this part the material consists of young, cohesionless and low to moderately compacted alluvial-terrace Quaternary sediments, such as silty gravel and sand, enabling aquifer formation. These sediments have good geotechnical properties. The thickness of these sediments is expected to be up to 10m.The foundation depth of the structures on these sediments would be at 3-4 m below the ground surface and the expected bearing capacity is in the range of 350-450 kPa. The material from the excavation for the foundations of the structures could be appropriate for embankment construction. For this section no major cuttings and embankments are foreseen.

The groundwater level is expected to be 2-5m below the ground surface.

Km 15+050- km 23+000:

Geological strata: The present materials are young, cohesionless and low cemented Pliocene sediments, consisting of clay, marl clay and marl. They have been low diagenesed and have unfavourable geotechnical properties. The thickness of these sediments is expected to be greater than 10m. The foundation depth of the structures on these sediments would be at 3-4 m below the ground surface and the expected bearing capacity is in the range of 150-250 kPa, therefore the ground will need improvement/ strengthening to support embankments and structures. The slope inclination of the cuttings should be between 1:1 and 2:1, with berm height of 4-6 m and berm width of 3 m to avoid major instabilities of cut slopes. The material from the cuttings is not appropriate for embankment construction.

Significant ground water appearance is not likely.

Km 23+000 - km 31+000:

Geological strata: The ground consists of young, cohesionless, low to moderately compacted alluvial-terrace Quaternary sediments, such as silty gravel and sand, prone to aquifer formation. These sediments have good geotechnical properties and their thickness is predicted to be up to 10m. The foundation depth of the structures on these sediments would be at 3-4 m below the ground surface and the expected bearing capacity is in the range of 350-450 kPa. The material from the cuttings is appropriate for embankment construction. No major cuttings and embankments are foreseen for this section.

The groundwater level is expected to be 2-5m below the ground.

Hidro-Geology

In the project area dominate predominantly rocks with inter-granular porosity which are actually water bearing strata. Rocks of Inter-Granular Porosity includes all deposits of Pliocene and Quaternary. Such sediments are more easily observed in the Drini I Bardhe River or in the south of Dukagjini valley. They are formed of sands, clays and gravels. All of them lie on top of cretaceous sediments. Quaternary sediments – are represented by the lake sediments and sediments of river terraces of Pleistocene and by the prolluvial deposits Terra Rosa and alluvials of Holocene. These sediments are spread in length and are known to be collectors of groundwaters.

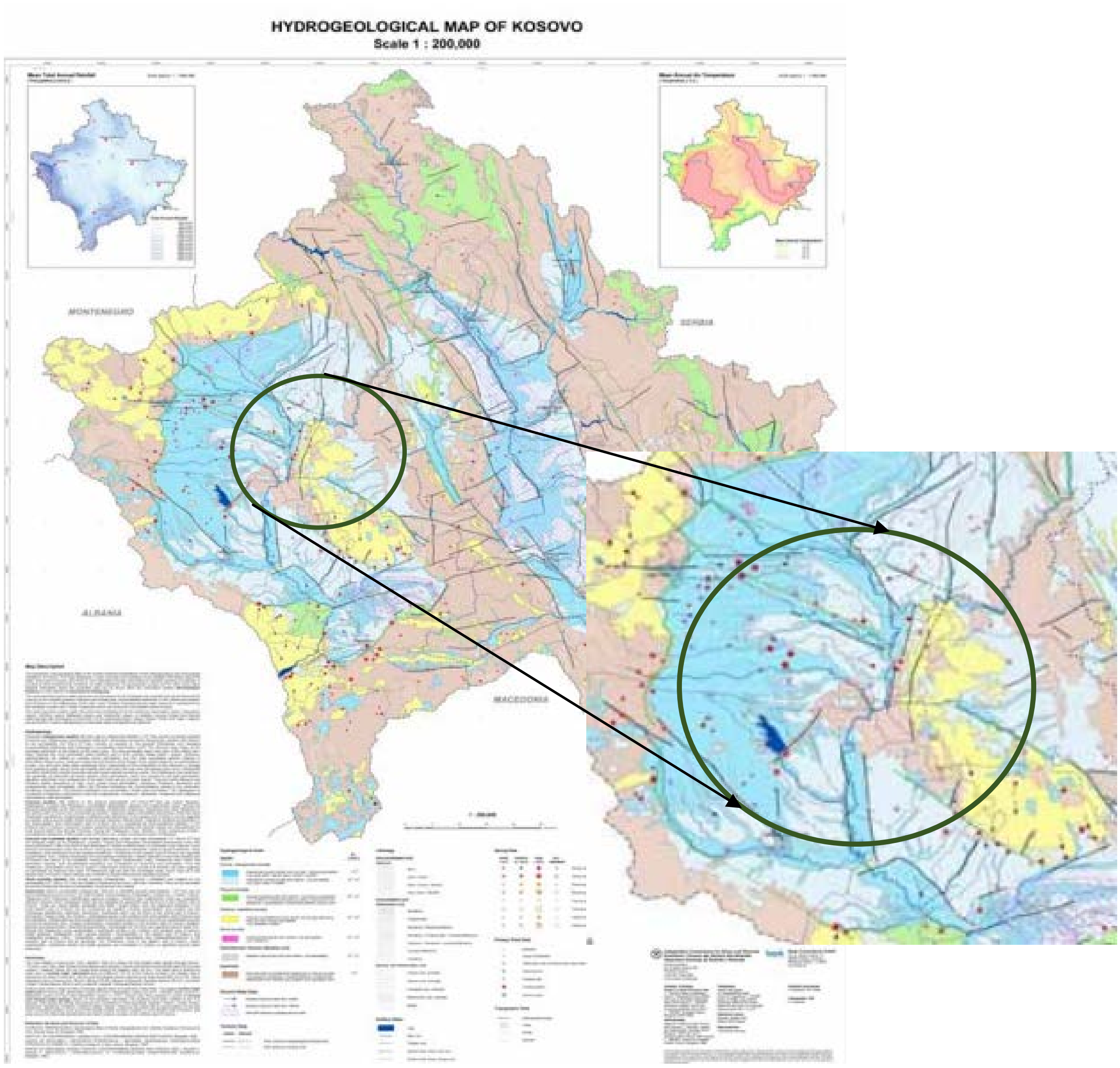


Figure 37 :Hydrogeological Map of Kosovo and Highlight of the Project Area

The highest water table in the Study Area is expected at 2-5m below the ground.

Soils

General soil classification

Soils in the corridor area were identified during the field work and on the basis of general soil maps of Europe (European Soil Database v2.0). Unfortunately, there is no recent pedologic map of soils of Kosovo. The European Soil Database identifies only the general soil types and their distribution is only indicative, as presented in the following figure.

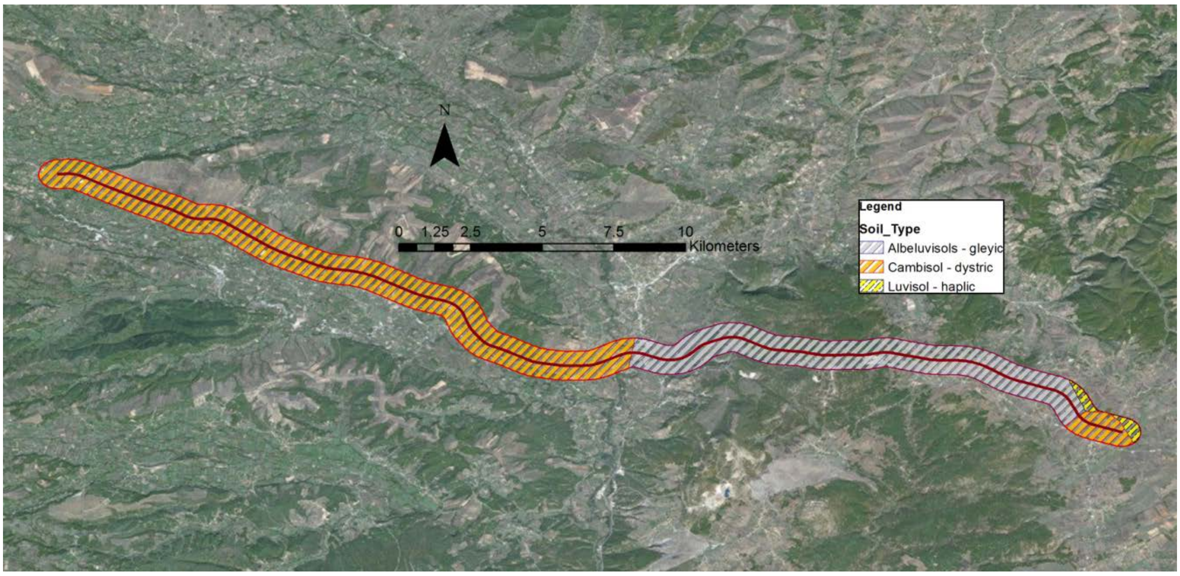


Figure 38: *General soil map of the Study Area (soil type according to the European Soil Database v2.0)*

Soil types

The identification of soil types is based on observations performed during the field work intended to derive habitat mapping along with vegetation types and associated soil diversity. The common relationship between soil types and emergin vegetation has been assumed: meadows develop on humofluvisols, termophilous oak forests develop on chromic cambisols, humid oak forests develop on eutryc/dystric cambisols etc. One should also bear in mind that the long-lasting human activity in the area has modified the "natural" soil types. Thus, it can be expected the different anthroposols have been formed (rigosols, hortisols, flotisols, deposols, etc.).

However, during the field observations there weren`t encountered any soil types of particular interest for conservation. Therefore, it is assumed that no further studies are needed to upgrade the Baseline on soils and erosion.

Chromic cambisols

Cinnamon soils have richer clay horizon (B) that lies between horizon A and C. These soils appear is areas with high temperatures and low humidity. Cinnamon soils in the Study Area occur up to 900 m a.s.l. mainly in the xerophilous and thermophilous oak vegetation (forest communities of Quercus pubescens and Carpinus orientalis in the area between Glareva and Dërsniku). The climatic-vegetation factors are dominant; however, others facors (such as relief, parent material, time and human influence) have a big importance for their genesis, evolution and features. Cinnamon soils are formed on the different types of parent material. The basic rock determines their characteristics and their subtypes. Cinnamon soils covered by agricultural vegetation are altered by the anthropogenic influence.

Cambisols (brown forest soils)

Cambisols (brown forest soils) have profile type A-(B)v-c; they are moderately developed in mild and humid climate in the mountain regions. In Kosovo these soils may be found in forests of *Quercus petraea, Fagus sylvatica*, Coniferous forests or mixed beech- coniferous forests. Concerning the vertical distribution, cambisols are occupying elevations between 900 m and the timberline.

Cambisols are developing on quartz and silicate compact rocks. In the road corridor cambisols are present in the plant association Quercetum frainetto-cerris (Italian and Turkey oak forests). The European Soil Database points to the presence of *dystric* cambisols, however this is unlikely. We believe that pedologic analysis might prove the presence of eutryc form of the cambisols that have pH slightly acidic (dystric cambisols are acidic and should form on higher elevations).

Fluvisols (Alluvial soils)

Alluvial soils may be found in the middle lowest part of the Drini I Bardhe Valley. The layers of these soils are well sorted. They are water permeable i.e. have well expressed capillary ability for the water ascending. Alluvial soils are poor with humus (under 1 %). There are many varieties of alluvial soils in dependence of some specific features. Such varieties are alluvial fine sorted carbonates, alluvial shallow soils on gravel materials, alluvial covered soils etc. The most distributed is the alluvial fine-sorted soil.

Fluviative-meadow soils (Humofluvisols)

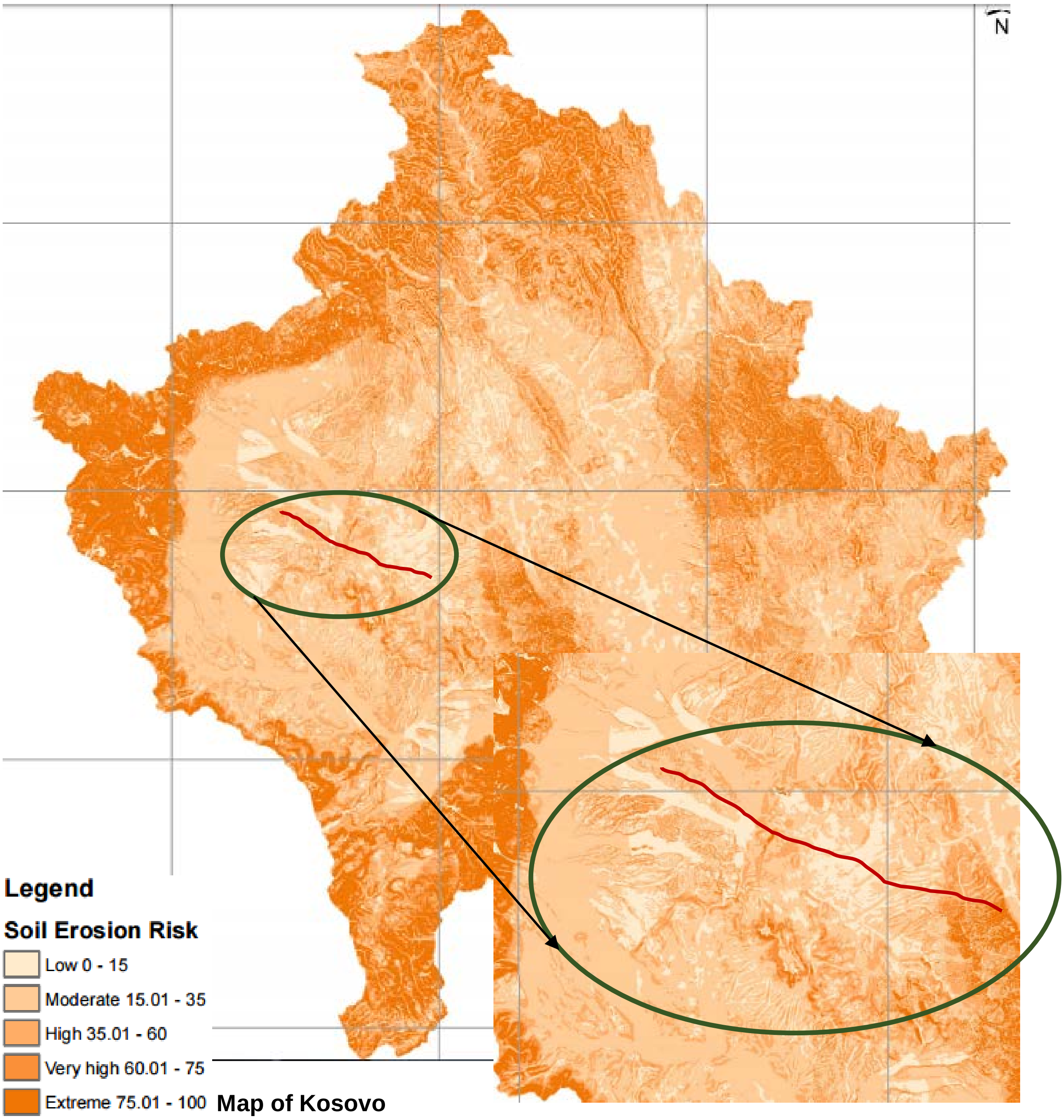
These soils appear in flood plains with A-C-G profile type. They have terrestrial mollic humus accumulative horizon, under which lies part of the non-clay parent material C that consists of recent river or lake sediments. They cover a significantly smaller surface than the alluvial soils, and are frequently characterized by high fertility. Humofluvisols have heterogeneous texture. Their macro-aggregates and micro-aggregates are stable. These soils have higher content of clay and humus than alluvial soils. Some spots of such soils can be found in the floodplain of Bistrica E Pejë s as well as in the vicinity of Zahaq, especially in the areas where meadows are present.

Eugley (Eutric gleysols)

These are soils in which the process of hydrogenation dominates. The profile is A-Gso-Gr or A/Gso-Gso-Gr. The accumulation of organic matter is in the upper zone, oxido-reduction in the middle zone (horizon Gso), and the process of reduction in the lower zone (horizon Gr). The texture is heterogeneous and micro-aggregates in non-carbonate clay soils are less stable. These soils are rich in humus (an average of 5.8%) and the humus horizon is 20-40 cm deep. In the investigated corridor are present *eutric gleysols*. In the Study Area this type of soil can be found in the floodplain of Pecka Bistrica river under marsh, meadow and forest vegetation.

Erosion

Erosion is present in the hilly terrain, especially in the formations and the top cover composed of deluvial – proluvial sediments. According to the Erosion Map of Kosovo (Figure 39) the intensity of erosion is classified from low to medium.



Map of Kosovo

In the Study Area the erosion is classified as low, while moderate and high erosion are present for a very limited section of the motorway.

In addition, no visible signs of the existence of instabilities in the rock stratas, such as landslides, rockfalls, etc., were observed. However, at some locations in the cohesionless sediments the presence of some surface wash off and gullies were observed, these occurred mainly in the Pliocene sediments and soil debris between km 16+000 and km 21+000.

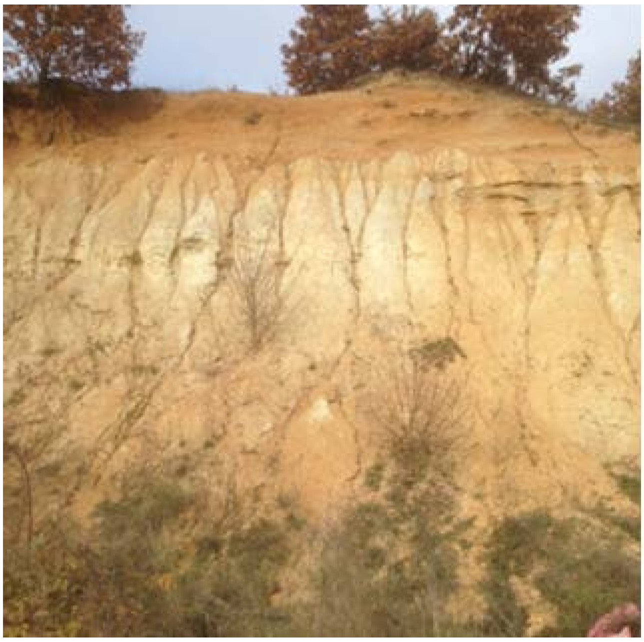


Figure 40***: Surface wash-off in cohesionless sediments occurring at section Km 16+000 – Km 21+000***

Due attention will be paid to this Alignment section with regard to designing the cuts and the anti-erosion mitigation measures.

5.1.3.6. Assessment of Soil Sensitivity

The main criteria used for the sensitivity assessment of encountered natural and semi-natural soil types are their ecological functions, including their capacity to:

- produce biomass, ensure food, fodder, and raw materials;
- participate in water cycles – accumulate water, filter and clean percolated waters as well as act as a buffer for contaminant effects;
- facilitate gas exchange between terrestrial and atmospheric systems as well as participate in biotransformation of organic carbon;
- serve a habitat for specialized biocenosis of a large variety of small animals and micro-organisms.

The sensitivity of soils is evaluated from the stand point of the potential loss of their ecological functions as follows:

Type of soil	Sensitivity
• Natural and semi-natural soils, prone to erosion	Very high
• Natural and semi-natural soils occurring in flat areas	High

- Anthropogenically altered soils with natural soil functions	Medium
- Contaminated natural and semi-natural soils	Low
- Totally converted and destroyed soils like infill soils	Negligible

The above sensitivity levels assigned to the soil types encountered in the Study Area are further reflected to the specific sections of the Alignment.

Table 22: Assessment of Sensitivity of Soils in the Study Area

Section	Predominant type of soil in motorway corridor	Sensitivity
Km 0+000 - km 4+100	Agricultural and pasture on flat terrain	Medium
Km 4+100 - km 5+500	Natural soil on gently hilly and forested areas	High
Km 5+500 - km 10+000	Natural soil on hilly and forested areas	High
Km 10+000 – km 12+100	Agricultural and pasture on hilly terrain	Medium
Km 12+100 - km 15+050	Agricultural on flat terrain	Medium
Km 15+050- km 23+000	Agricultural and pasture on rolling terrain	Medium
Km 23+000 - km 31+000	Agricultural and pasture on rolling terrain	Medium

The information on soil sensitivity in conjunction with the data on erosion will feed into determining the significance of the impacts from the Project and setting suitable mitigation measures.

5.1.4. Climate

By virtue of its geographical position and relief, its distance from the sea, the influence of the Mediterranean climate penetrating through the Drini I Bardhe valley, etc., Kosovo's climate is transitional between an average continental climate and Mediterranean climate[36]. Mediterranean climatic influences can be observed in the lower regions and up to nearly 800 m a.s.l.

The average annual rainfall in Kosovo is 716.4 mm. The average annual temperature is 11°C, with the minimum temperature reaching -27.2°C and maximum 39.2°C. The main climatic indicators for Kosovo are highlighted in the Table 22 below.

Table 23: ***Main climatic indicators for Kosovo***

Parameter	2002	2003	2004	2005	2006	Average
T max °C	14.7	16.5	16	15.6	16.4	**15.8**
T min °C	5.2	6.1	5.6	5.6	5.2	**5.5**
T Avg °C	10.6	11.2	11	11.1	11	**11.0**
Humidity, %	86	72	73.7	72.7	73.7	**75.6**
Wind m/sec	1.7	1.7	1.4	1.3	1.4	**1.5**
Precipitation, mm	722.7	667.5	762.6	739.1	689.9	**716.4**

The hydro-meteorological station in Pejë is representative for the route. The average monthly precipitation (period 1971-2014) is presented in Table below.

[36] (Rexhepi 1978: 8)

Table 24: ***The average monthly value of precipitation in the meteorological station in Pejë , the period 1971-2014***

year 1971-2014	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Average
Average (mm)	72.5	62.76	61.35	65.9	66.15	56.29	53.35	48.26	62.4	83.19	92.54	85.36	810.03

It can be seen that in the region of Pejë (Dukagjini Plain), the amount of rainfall is higher than the average in Kosovo.

The average monthly temperature for Pejë region (period 2002-2014) is presented in the Table below.

Table 25: ***The average monthly value of the average temperature in the meteorological station in Pejë , the period 2002-2014***

Year 2002-2014	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Average
Average(C°)	-0.2	2.9	6.9	11.26	16.1	20.6	23.1	23.1	15.7	11.2	6.1	2.2	12.6

It can be observed that the temperature values are also higher than the average for Kosovo.

The precipitation is important input to the design of the drainage system; the precipitation and temperature related data will influence the planning of the construction schedule; the temperature and humidity is an indicator for the absorption of traffic noise by the surrounding terrain.

5.1.4.1. Wind Conditions

Baseline on Wind Conditions in the Study Area is based on the findings of the Wind Resource Assessment Report[37] for Kosovo and the information available at the weather forecast website platform Meteoblue[38].

The Wind Resource Assessment Report provides information on wind speed and directions at 10 measurement points[39], including Klinë. The measured average wind speed at the Klinë location has been in the range of 3-4.5m/sec. The average weighted wind speeds for the wider area have been extrapolated from 8 measurement points and shown on a wind resources` map. This map and the location of the motorway Alignment is presented in the Figure 41 below.

[37] http://www.repic.ch/files/9413/7544/1755/SB_NEK_KosovoI_web.pdf

[38] https://www.meteoblue.com/en/weather/archive/windrose/pristina_kosovo_786714

[39] The measurement took place in a period of 13 months.

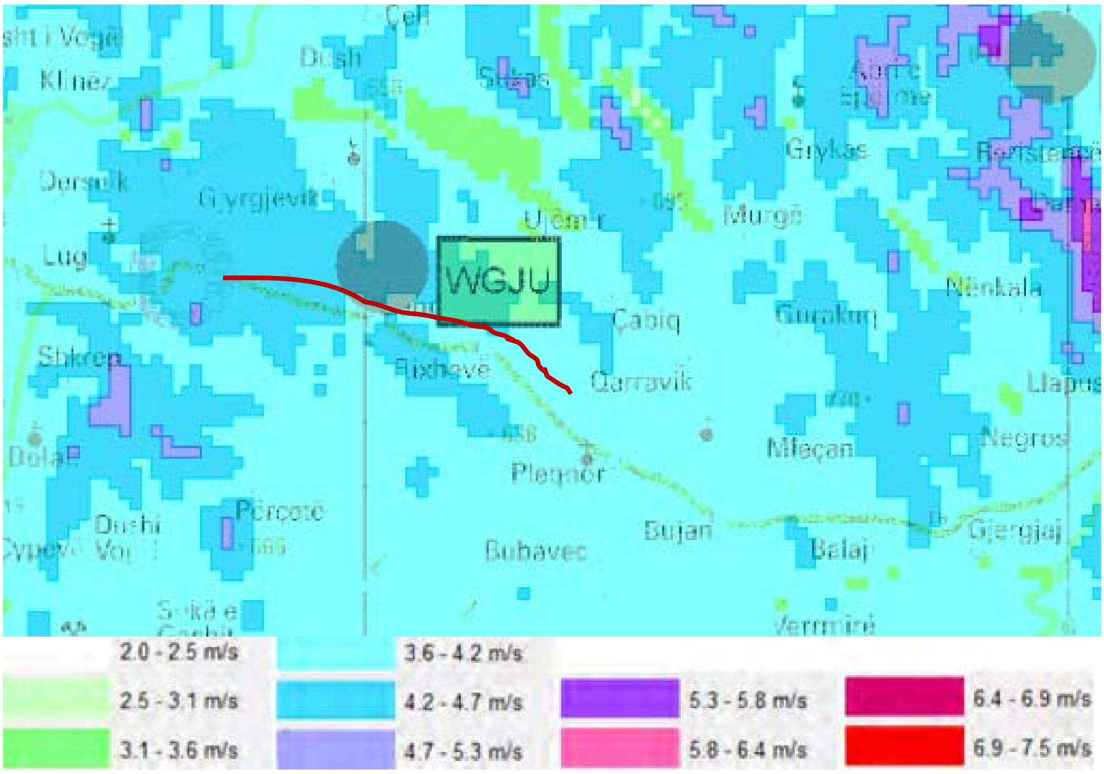


Figure 41 Wind Resource Map

As it can be seen, the average weighted wind speeds in the Study Area are in the ranges 3.6-4.2 m/s (for the section exiting the area of Klinë) and 4.2-4.7 m/s until the end of the Alignment.

The wind direction for the Klinë measurement point is shown in the figure below.

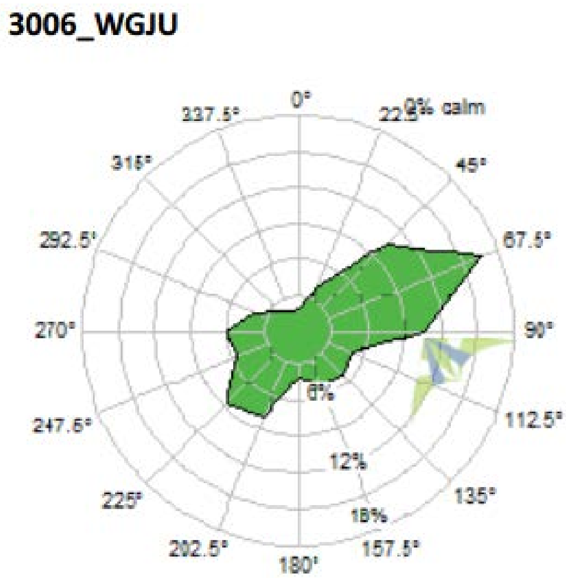


Figure 42 Wind Rose for the Klinë Measurement Point

The wind direction for Klinë may not be representative for the entire Alignment as the morphology of the terrain and altitudes change for specific sections. Therefore, the information on the predominant wind directions for three main towns fund in the wider Project area (Pristina, Klinë and Pejë) which is available on the weather forecast platform Meteoblue was used (Figure 43).

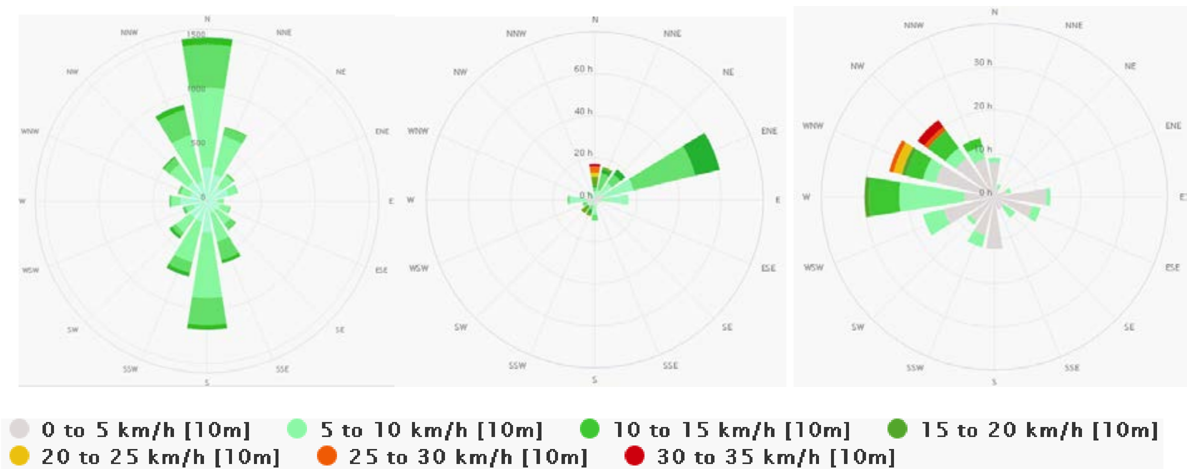


Figure 43 Wind Roses for Pristina, Klinë and Pejë

Although the wind roses above are limited to 2 recent weeks` analyses, there is a clear correlation between the results obtained throughout the 13 months' analysed period and the short-term evaluation. It can be seen that in the first section of the planned motorway the wind directions are in the north and south quadrants; the predominant wind direction for the middle section is in the South East quadrant; the wind direction for the last section is in the West and North-West quadrant to a lesser extent.

The wind speeds and direction are important factors that influence the propagation of noise and distribution of air pollution. Wind related parameters should also be taken into account upon planning and executing dust suppression measures during the construction of the Project.

5.1.5. Water Resources

5.1.5.1. Study Area

The analysis of water resources covers the catchment area of Drini I Bardhe River and its tributaries, more specifically the sub-catchment formed between the hydrometric stations Grykë (Bistrica e Pejë s River), Kilna (Drini I Bardhe/Klinë River) and Kpuzë (Drini I Bardhe River) (Figure 44 below).

5.1.5.2. Data Sources

Relevant information has been obtained from national documents, a tailored survey and from observations performed during the site visits.

National strategies developed under the auspices of the Ministry of Environment and Spatial Planning[40],[41] have been analysed to gather information on the State of Waters in Kosovo.

A questionnaire seeking information on the hydrological regime and water quality of the rivers in the Study Area has been prepared and submitted to the Kosovo Environmental Protection Agency (KEPA). All requested information has been made available; it is presented in respective sections below.

The data on the flood risks were obtained from the Preliminary Flood Risk in the Drini I Bardhe Catchment[42].

The situation with regard to water management activities (irrigation, drinking water supply and waste water discharge) in Kosovo was analysed from literature; the information for the Study Area was complemented by the results of the survey of municipalities. In addition, municipal services` related information (water supply and wastewater discharge) has been obtained from the preliminary Social Survey of affected municipalities. Throughout the stakeholder engagement activities in 2015/16, additional information on municipal water management services was collected.

5.1.5.3. Baseline Data Collection Methodology

A desktop study, visual monitoring on site and a review of available relevant literature was undertaken to obtain information on the hydrology in the area of the route. Valuable information was extracted from the Report on Hydrology of the Drini I Bardhe River developed under the project "*Institutional support to the Ministry of Environment and Spatial Planning (MESP) and River Basin Authorities*", which has been undertaken in 2009.

The baseline data collection was structured along the following main topics:

- Hydrological Regime of Drini I Bardhe River and its main tributaries,
- Identification of water courses potentially affected by the Alignment and associated drainage solution;
- Flood risks;
- Groundwater;

[40] *Report on the state of water in Kosovo*, Pristina 2015, Ministry of Environment and Physical Planning;

[41] *Report on Hydrology of the Drini I Bardhe River*, 2009, developed under the project "*Institutional support to the Ministry of Environment and Spatial Planning (MESP) and River Basin Authorities*"

[42] Kosovo Flood Risk Management Framework, http://www.kryeministri-ks.net/tfu/repository/docs/110421_Kosovo_Flood_Management_Framework.pdf

- Water supply, Wastewater discharge and Irrigation;
- Water and groundwater quality;
- Sensitivity of water courses;
- Sensitivity of groundwater.

5.1.5.4. Baseline Assumptions & Limitations

The most critical limitations originating from the present data gaps are as follows:

- There is a lack of secondary legislation required to fully transpose the Water Framework Directive.
- The following information for the Study area is lacking at the Conceptual Design stage and is considered to be insufficient for an informed assessment of groundwater resources:
    - detailed hydrogeology assessment
    - detailed flood risk assessment
    - information on groundwater vulnerability and groundwater table
- The data on water supply and sewerage systems is not available for all affected settlements;
- All settlements using private wells for water supply are not known due to the insufficient responsiveness of interviewees during various surveys; in addition, the information on drinking water quality taken from these wells is not known;
- Information on irrigation systems is not available;

The data gaps will be addressed at the next Design stages:

- **Geo-mechanical, hydro-geological and hydraulic investigations will be carried out at the Preliminary Design stage to provide information on the hydrology, flood risk, groundwater vulnerability, groundwater table and groundwater quality;**
- **Identification and sampling of drinking water from wells in villages located on the south to the alignment will be performed at the Preliminary Design stage;**
- **Data on existing water supply and sewerage systems will be gathered during the Preliminary Design phase;**
- **Details on the existing irrigation systems will be obtained at the Detailed Design stage**

5.1.5.5. Hydrology (Surface Water) Baseline Conditions

Hydrological Regime of Drini I Bardhe River and main tributaries

Drini I Bardhe River springs north of Pejë near by Radavc village at the edge of Rusoli Mountain. It is formed by two springs, of which the western spring has a more constant flow and is not so dependent of precipitation, whereas the eastern branch dries out during summer, but during the intensive precipitation period it is full of water. These branches are united nearby the waterfall of Drini I Bardhe, which is 25 m high.

The main sub-basins are:

- Bistrica Pëjë (503 km^2), Bistrica Deçani (273 km^2) and Erenik (516 km^2) in the west,
- Istog (447 km^2) in the north
- Klinë (439 km^2) in the north-east,
- Mirusha (335 km^2) and Toplluha (500 km^2) in the east
- Bistrica e Prizren (266 km^2) and Plavës (309 km^2) in the south-east

Klinë River basin - total surface of this river basin is 439.0 km^2 and during the year the average of rainfalls is around 292.5 m^{3}x10^6. The maximum rainfalls occur in November (31.9 m^{3}x10^6) while minimum in March (17.8 m^{3}x10^6). The feeding coefficient from underground waters is 13.9% and the coefficient of evaporation is 79.7%. In the Klinë River basin, the average of rainfalls is around 666.5 mm per year.

Bistrica i Pejës River basin - total surface of this river basin is 503.5 km^2 and during the year the average of rainfalls is around 1011.5 mm. The maximum rainfalls occur in November (64 m^3 x10^6) while minimum in August (29.6 m^3 x10^6). 614.4 mm (60.7%) is evaporated throughout a year. In the Bistrica i Pejës River basin the average of rainfalls is around 1011.5 mm per year, of which 614.4 mm evaporates[43]..Maximum evaporation occurs in August (81.4%) while the minimum is in May (14.6%). Maximum feeding coefficient from groundwater is in March and April respectively (approximately 59.1and the minimum is in October (5.7%); the coefficient of evaporation is the highest on October (94.3%) while it is lowest in April (49.3%).

The sub-basins of Drini I Bardhe River are given in the Figure below.

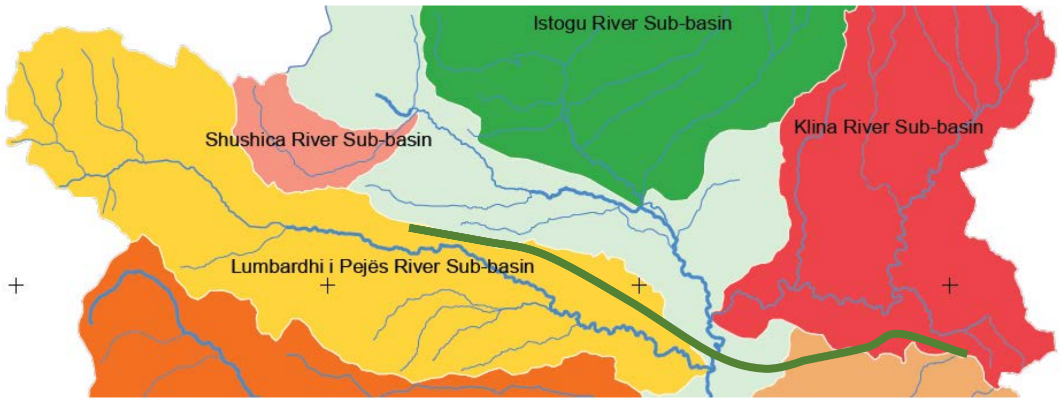


Figure 44: Sub - Basins of the Drini I Bardhe River

Alignment

[43] *International Journal of Natural and Lenders` Environmental Advisoring Sciences 2 (3): 105-109, 2008, Sabri AVDULLAHI* Islam FEJZA Ahmet TMAVA Arfim SYLA.*

The total surface of the Drini I Bardhe basin, controlled by the hydrometric station at Vermicë (near the border with Albania), is 4320 km², which represents about 40% of Kosovo's territory.

The hydrometric stations are listed in following Table 26 and located in the map (Figure 45).

Table 26: Hydrometric Stations Relevant for the Alignment

River	Station	X	Y	Surface master plan (km²)	Surface GIS (km²)
Bistrica E Pejë s	Grykë	438634	4723526	264	254.2
Klinë	Klinë	465254	4718136	423	430.1
Drini I Bardhe	Kpuzë	463233.6	4707269	2116	2050

Source: Institutional support to the Ministry of Environment and Spatial Planning (MESP) and River Basin Authorities; An EU funded project managed by the European Commission Liaison Office (ECLO)

Figure 45: Hydrometric Stations

The average yearly flow of Drini I Bardhe at the Ura e Fshejte is 5 – 7 m^3/sec. From its source 567 m above sea level to Vermica 270 m over sea level, Drini I Bardhe has a 2.7 m/km slope and has many meanders during the flow. Details about the annual discharges (low, high and verge water regime) of Drini I Bardhe River at the Grykë e Rugovës Hydrometric Station are presented in the Table below.

Table 27: Annual Discharges of Drini I Bardhe River

River	Location	Annual Discharges (m^3/s)								
		Low water regime			Average water regime			High water regime		
		min	mean	Max	min	mean	max	min	mean	max
Drini I Bardhe	Grykë e Rugovës	0.46	0.9	1.5	3.9	5.8	8.8	20.8	55.0	194

Source: Kosovo Environmental Protection Agency (KEPA)

Discharges of Drini I Bardhe, Bistrica e Pejë s and Klinë River for the period 1975 -1985 are given in the Table below.

Table 28: Discharges of Drini I Bardhe, Bistrica e Pejë s and Klin River for the period 1975 - 1985

Discharge for 10 years, period 1975-1985				
River	Station	Min /Q	Mes /Q	Max /Q
Drini I Bardhe	Kepuz	1.29	24.5	289
Bistrica e Pejë s	Gryka e Rugoves	0.56	5.8	194
Klin	Klinë	0.04	1.61	49.2

Source: Kosovo Environmental Protection Agency

Flood Risk

A number of more recent specific and localised assessments of flood risk for Kosovo and the Drini I Bardhe Catchment area have been made:

- Vulnerability Risk Analysis and Mapping (VRAM), Flash Flood Risk Assessment over Kosovo, November 2012, World Health Organization, Luxembourg Government Funds;
- Rapid assessment report, Identification of municipalities/ communes in need of support for flood risk management and drought risk management in Albania and Kosova, REC, GIZ, August 2013;
- Climate Change Adaptation in Western Balkans, Establishment of a Flood Early Warning System in the Drin-Buna Basin (DEWS), Assessment Study for Gaps and Needs in Establishing a DEWS, May 2013, GIZ;
- Beneficiary Needs Assessment UNDP WMO 2011 (EU supported);
- River Basin Management – MESP, EU;
- Indicative Flood Risk Management Plan for Drini River Basin.

According to the Indicative Flood Risk Management Plan for Drini River Basin, flooding episodes occur normally in spring under conditions of rapid snow melt and intense rainfall. Floods are aggravated in the absence of any upstream regulation of the Drini I Bardhe River. The indicative flood risk has been obtained through analysing a combination of various components of 'risk' i.e. the hazard:

- the extent (layout) of the floodplains,
- the frequency of flooding since 2004 (thereby giving an indication of low, medium or high probability of flooding),
- the impacts and consequences of the flood hazards across the river basin

As shown in the Figure 46 below, the crossing point over the Drini I Bardhe River and the Alignment has been identified as risky to flooding.

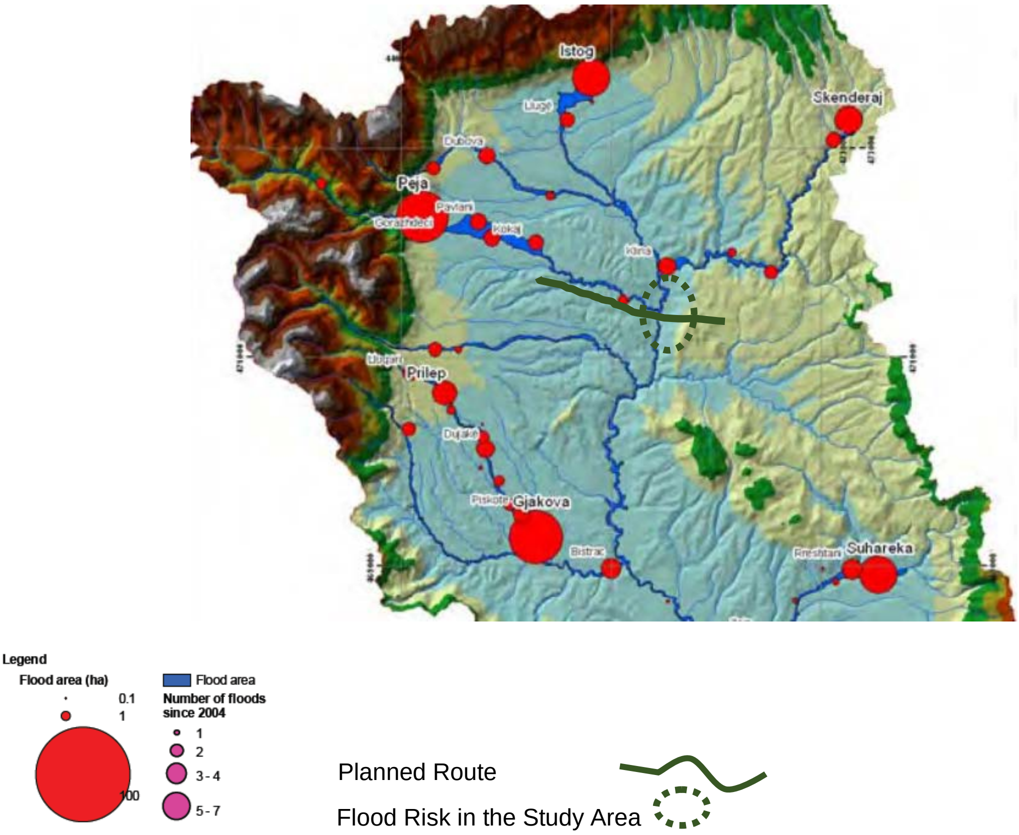


Figure 46: Preliminary Flood Risk in the Drini I Bardhe Catchment[44]

The flood risk shall be analysed in detail at the Preliminary Design stage. Based on the detailed flood risk analyses, the Detailed Design will define the structures of the motorway (bridge, carriageway, drainage etc.) in such a way as to sustain flood and protect downstream properties from it.

Water Courses Potentially Affected by the Alignment

The rivers Drini I Bardhe River and Bistrica e Pejë s will be potentially affected by the Project. Drini I Bardhe River is crossed at Km 13+550 by a bridge. Bistrica e Pejë s River runs to the south and follows the Alignment at an average distance of 1-2km and the existing road N9 at an average distance of 50-100m. The drainage of the surrounding terrain and the discharge of run-off from the motorway surface will potentially reach the Bistrica e Pejë s River, thus, it is indirectly affected by the Project.

[44] Kosovo Flood Risk Management Framework, http://www.kryeministri-ks.net/tfu/repository/docs/110421_Kosovo_Flood_Management_Framework.pdf

Apart from these two rivers, no other constant surface water courses exist in the Study Area. Two seasonal water streams with comparably larger catchments will be crossed and a number of unnamed gullies.

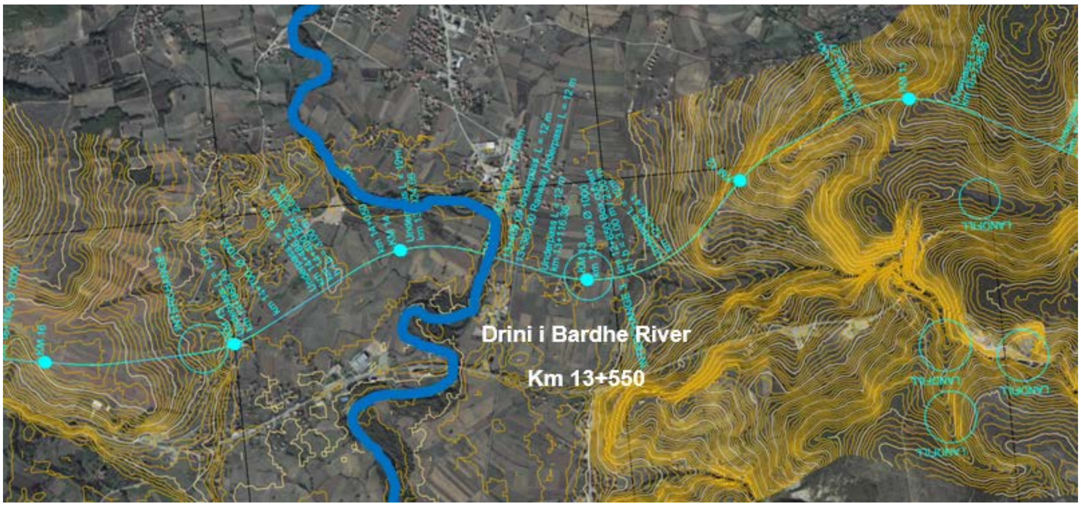


Figure 47: Drini I Bardhe river vs motorway Alignment at km 13+550

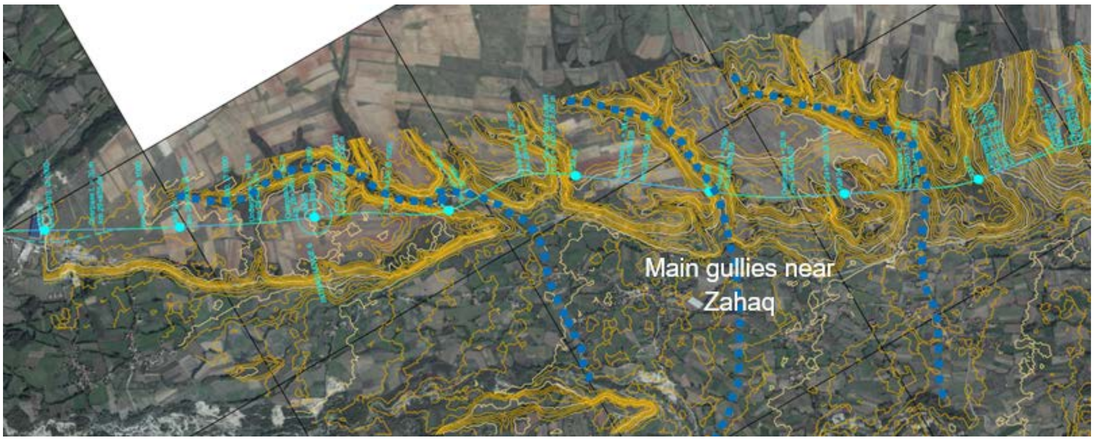


Figure 48: Main gullies vs motorway Alignment near Zahaq

Table below presents a list of major water courses along the Alignment and the chainages at which they are crossed by the Alignment.

Table 29: Water courses crossed by the Alignment

Name of the surface water course	Type of the surface water course	Running km at which the surface water course is crossed
Drini I Bardhe	Medium flow river	Km 13+550
Unnamed gully	Seasonal stream	Km 24+900
Unnamed gully	Seasonal stream	Km 26+850

In Table 30 all gullies that will drain under the planned motorway are shown.

Mott MacDonald

Table 30: Temporary Water Courses Crossed by the Motorway

No.	Water Course	Chainage
1.	Unnamed gully	Km 0+850
2.	Unnamed gully	km 1+300
3.	Unnamed gully	km 2+200
4.	Unnamed gully	km 2+600
5.	Unnamed gully	km 4+400
6.	Unnamed gully	km 5+130
7.	Unnamed gully	km 5+650
8.	Unnamed gully	km 5+900
9.	Unnamed gully	km 6+600
10.	Unnamed gully	km 6+920
11.	Unnamed gully	km 8+520
12.	Unnamed gully	km 12+650
13.	Unnamed gully	km 12+900
14.	Unnamed gully	km 13+550
15.	Unnamed gully	km 14+050
16.	Unnamed gully	km 14+400
17.	Unnamed gully	km 14+700
18.	Unnamed gully	km 16+180
19.	Unnamed gully	km 16+730
20.	Unnamed gully	km 17+200
21.	Unnamed gully	km 17+670
22.	Unnamed gully	km 17+940
23.	Unnamed gully	km 18+150
24.	Unnamed gully	km 18+320
25.	Unnamed gully	km 18+830
26.	Unnamed gully	km 19+170
27.	Unnamed gully	km 20+070
28.	Unnamed gully	km 20+650
29.	Unnamed gully	km 21+050
30.	Unnamed gully	km 21+700
31.	Unnamed gully	km 21+970
32.	Unnamed gully	km 22+670
33.	Unnamed gully	km 22+800
34.	Unnamed gully	km 23+450
35.	Unnamed gully	km 24+150
36.	Unnamed gully	km 24+900
37.	Unnamed gully	km 25+430
38.	Unnamed gully	km 26+130
39.	Unnamed gully	km 26+850
40.	Unnamed gully	km 27+430

No.	Water Course	Chainage
41.	Unnamed gully	km 27+770
42.	Unnamed gully	km 28+000
43.	Unnamed gully	km 28+600
44.	Unnamed gully	km 28+900
45.	Unnamed gully	km 29+200
46.	Unnamed gully	km 29+970

5.1.5.6. Groundwater

Aquifers, Groundwater Accumulation and Groundwater Vulnerability

According to the Report on Hydrology of the **Drini I Bardhe River**, 2009, the Alluvium of the Drini i has a thickness of 10 - 35 m; the water horizon is 3-15 m thick and water flow is 50-20 l/sec.

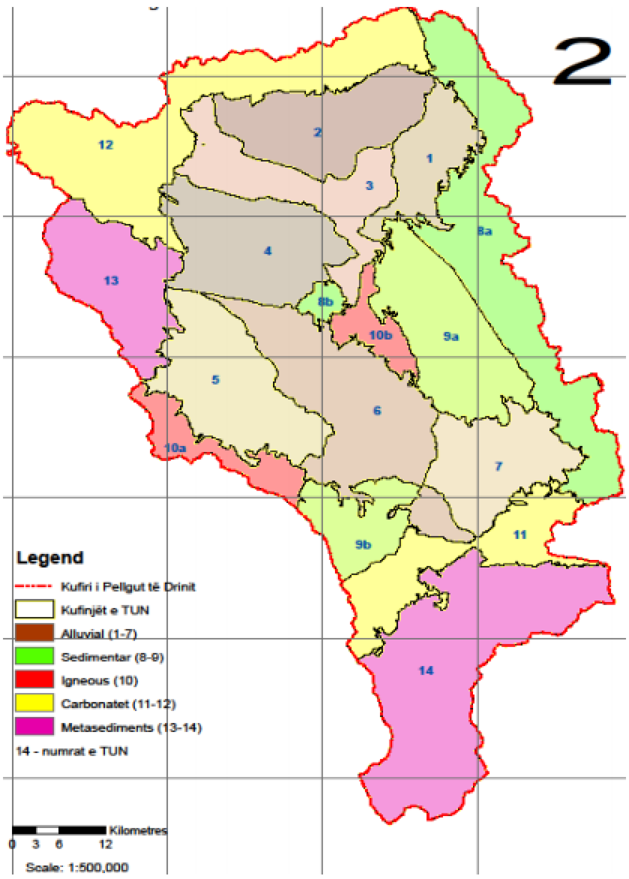


Figure 49 Groundwater Aquifers of Drini I Bardhe River Sub-Basin

The following table shows data on groundwater accumulation in the **Drini i Bardhe River** basin.

Table 31: Ground water accumulations, surface, volume and capacity in the area of Drini i Bardhe River basin

Nr	Groundwater accumulation	Basin (km^2)	Usable volume (m^3)	Estimated capacity	
				m^3 /sec	Total (m^3)
1	Istog	76	$12x10^6$	2.80	$89x10^6$
2	Vrellë	28	$14x10^6$	0.60	$19x10^6$
3	Drini i Bardhë	90	$14x10^6$	3,23	$102x10^6$
4	Lubizhdë	42	$45x10^6$	4,2(150)	$55x10^6$
5	Pejë	300	$37,5x10^6$	4,0(150)	$52x10^6$
6	Deçan	144	$33x10^6$	3,5(150)	$45x10^6$
7	Lloqan	39	$12x10^6$	1.2(150)	$15x10^6$
8	Krk Bunar	81	$10x10^6$	1.6	$50x10^6$
9	Korishë	18	$3,6x10^6$	0.38	$12x10^6$
10	Fusha e Therandës	50	$75x10^6$	2	$63x10^6$

There is limited data available on groundwater table in the bedrock strata in the **Study Area**. The walk-over performed in 2016 showed that superficial Quaternary deposits are present predominantly in river valley areas. It is expected that the highest water table is at the crossing point with the Drini I Bardhe River, as well as for the sections of the Alignment which are placed onto the upper terrace of the Bistrica e Pejë s. The groundwater table is expected at 2 - 5m below the surface. The highest water table was found at 3.04 m.

A vulnerability map for Kosovo has been prepared under the project “Further Support to Land Use" (2010 - 2012)[45]. It is made by subdividing the area of Kosovo into several hydrogeological units with different levels of vulnerability. The map shows the distribution of highly vulnerable areas, in which pollution is very common because contaminants can reach the groundwater within a very short time.

[45] http://www.bvvg.de/internet/internet.nsf/htmlst/iprojects16

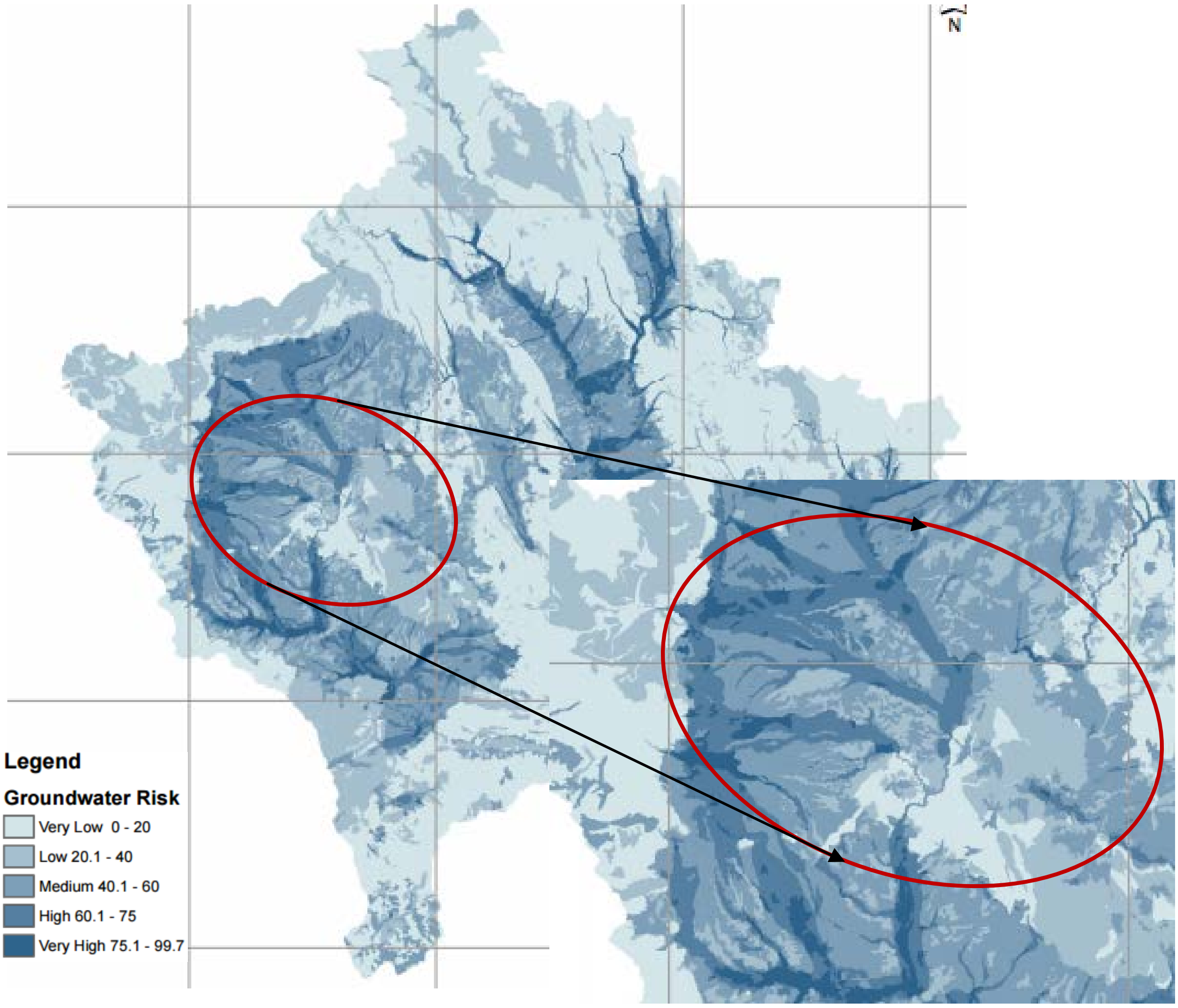


Figure 50: Groundwater Vulnerability in Kosovo and the Study Area

5.1.5.7. Water Supply and Wastewater Discharge

Water Supply

The drinking water supply in Kosovo is organized through seven licensed Regional Water Companies (RWCs). The Regional Water Companies pay taxes to MESP for water abstraction and utilisation of water from artificial reservoirs, and they supply the households, businesses and institutions with water; collect wastewater, and transfer it to treatment plants, when available. There is a large variation between the level of connection to public supply systems in urban areas (almost 99%) and rural areas (61%). Many of the properties not connected to public supply systems are relatively remote. About 18% of population have their own individual supplies.

WastewaterCollection and Discharge

Based on the Kosovo Statistics Agency census of population, households and dwellings, about 53% of population discharges wastewater into the public sewerage network, 16% into sewerage systems not managed by public companies, 27% use other discharge forms (canals, septic holes, etc.), while 4% does not have access to the sewerage network. Public service coverage of wastewater collection provided by regional water companies in 2013 was 60%, which marked an increase of 4% compared to 2012. The region of Pejë has the lowest public network coverage with 41.2%.

There isn`t any wastewater treatment plant (WWTP) in Kosovo. There is an ongoing Feasibility Study for the construction of a WWTP for Pejë.

Water Supply and Sewerage in the Study Area

The regional companies "Ujësjellësi" and "Ujëvara" supply with potable water the population of municipalities Pejë and Klinë respectively. In sume villages located in the Project footprint drinking water is supplied from private wells; the information on the water supply of population residing in the Study Area is not known.

Sanitary protection zones for private wells are not defined yet. **Villages located to the south of the Alignment may potentially be affected by the discharge of run-off from the motorway surface.**

In the Study Area, population discharges wastewater either in the ground (septic tanks) or in Bistrica e Pejë s and Drini I Bardhe Rivers, where sewage systems exist. In the Study Area wastewater is collected in sewers only in Drenoc and partially in Zajm (30& of population is connected to sewerage).

Available information on water supply and wastewater discharge in the Study Area is shown in the table below:

Table 32: Overview of the water supply systems/ sewer systems

Settlement	Overview of the water supply systems/ sewer systems
DRSNIK, Mnc. Klinë, Population: 1,770	Water supply system is in place whereas sewage system does not cover all Residential properties.
DOLC, Mnc: Klinë m Population: 276	Water supply system is old, deteriorated, hence the water is not drinkable. There is no sewer network
ZAJM, Mncp: Klinë, Population: 1,267	There is water supply system and only 30% of the village is connected in sewer system
DRENOC, Mnc: Klinë, Population: 440	No water supply system. Sewage system is present.
PJETËRQ I EPËRM, Mnc: Klinë, Population: 563	Partial (some parts) connection to water supply system which was constructed by self-contribution of the villagers (not financed by the public budget). There is only partial sewage system.
PJETËRQ I POSHTËM, Mnc: Klinë, Population: 160	Does not have water supply and sewage system; population is supplied with water from own wells. Water quality of the wells is not regularly monitored.
JABLLANICË, Mnc: Pejë, Population: 573	No available data.

Settlement	Overview of the water supply systems/ sewer systems
KLIÇINË, Mnc: Pejë, Population: 833	No available data.
LESHAN, Mnc: Pejë, Population: 354	No available data.
LUGAGJI, Mnc: Pejë, Population: 702	No available data.
GLLAVIQICË, Mnc: Pejë, Population: 193	No available data.
RAMUN, Mnc: Pejë, Population: 492	No available data.
ZAHAQ, Mcp. Pejë, Population: 1,120	No available data.

Detailed information on the water supply systems, where available, is provided in the Section 5.1.18.1 on the Social Baseline.

5.1.5.8. Irrigation

There are two regional irrigation companies in Kosovo - Irrigation Company Drini i Bardhe J.S.C. and Irrigation Company Radoniqi - Dukagjini J.S.C. Approximately 12.300 hectares of land were irrigated during 2012.

The irrigation systems in Kosovo are facing the problem of aging infrastructure and declining revenues to maintain and repair irrigation structures. The other serious problem the Irrigation companies are facing is the large number of small illegal irrigation systems. Irrigation companies have little information about such schemes. An exceptional case is when individual farmers or groups, take initiative and approach the legal scheme seeking support. There isn`t any information available on irrigation in the Study Area. Further study is required to identify:

- the existing and planned irrigation systems
- illegal individual irrigation systems

The data on irrigation shall feed into the Project Detailed Design (i.e. Design for reallocation or reconstruction of damaged irrigation systems in the area). In addition, sensitivity of and impact on open - row irrigation channels, along with mitigation of the impact (if needed) will have to be assessed.

5.1.5.9. Water Quality

Surface Water Quality

Drini I Bardhe River is of good quality at the source, but it deteriorates in the downstream sections. At the confluence of Klinë River, which is located 1km upstream of the crossing points of the motorway and the Drini I Bardhe River, the water quality has already worsened. This situation continues down to Vllashnje at the point of flow into Bistrica i Prizrenit[46]. The main polluting sources are the urban wastewater, discharges from industries and diffuse pollution from agriculture.

[46] Report on the state of water in Kosovo, Pristina 2015, Ministry of Environment and Physical Planning

The Water Quality of the Drini I Bardhe River within the Study Area is Class II and III, as per Kosovo Environmental Database. This can be seen in the Figure below.

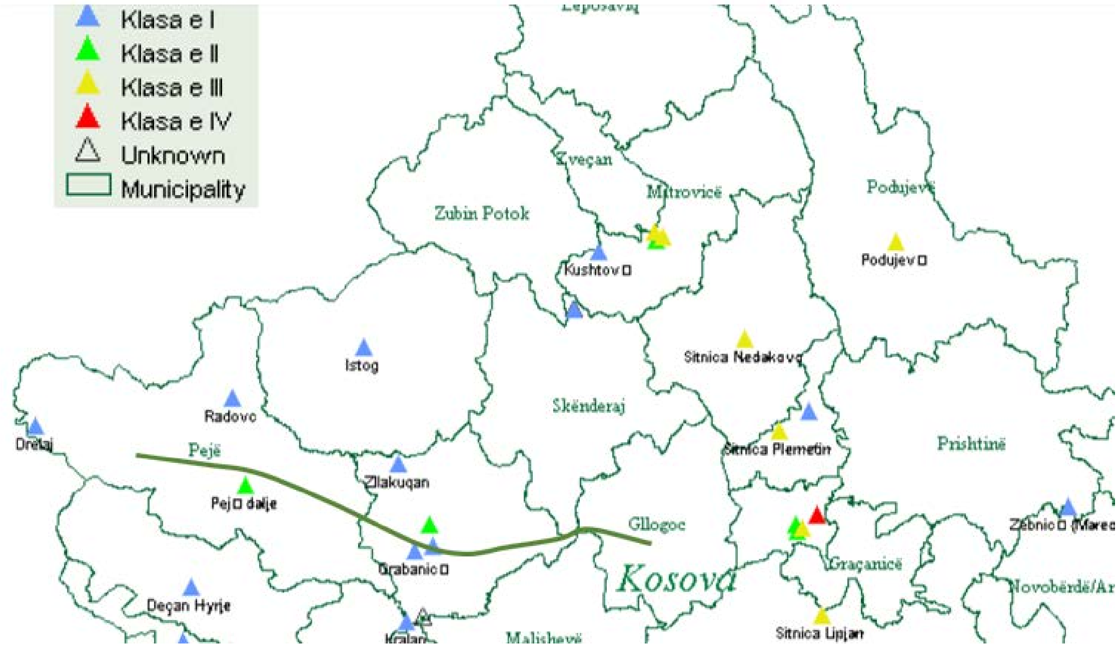


Figure 51: River Water Quality – Kosovo Environmental Database

Water quality is measured at the following stations:

Table 33: Water Quality Measurement Stations

Station code	Name	Longitude	Latitude	River	Catchment Area	Population Density	Altitude
RV01_011	Radavc	20.30632585	42.73798134	Drini i Badhë	1.25	0	590
RV01_012	Drini në Klinë	20.5741498	42.59406602	Drini i Badhë	1187.16	135.2	390
RV01_013	Gjonaj	20.64833261	42.25470665	Drini i Bardhë	3842.84	173.25	290
RV01_014	Vernice	20.55647915	42.17078719	Drini i Badhë	4232.33	188.5	289
RV01_032	Klinë	20.57114834	42.61404745	Lumi Klinë	424.04	121.26	375
RV01_041	Drelaj	20.15864744	42.69742162	Lumbardhi i Pejës	124.03	12.84	924
RV01_042	Pejë Dalje	20.32438649	42.65087976	Lumbardhi i Pejës	248.57	299.45	496
RV01_043	Grabani cë	20.55170418	42.58812671	Lumbardhi i Pejës	430.54	243.28	383

Source: Kosovo Environmental Protection Agency

The measured parameters and measurement frequency is provided in the Table below.

Table 34: Measured Parameters and Measurement Frequency

Sets of Parameters	Parameter	Unit	Frequency (per year)
PHYSICO-CHEMICAL	pH		11
	Turbidity	NTU	11
	Temperature	^{o}C	11
	Conductivity	uS/cm	11
OXYGEN REGIME	O_2	mg O_2/l	11
	BOD	mg O_2/l	11
	COD	mg O_2/l	11
			11
NUTRIENTS	NO_3	mg/l NO_3	11
	NO_2	mg/l NO_2	11
	PO_4	mg/l PO_4	11
	NO_4 (NH_4^+)	mg/l NO_4	11
	SO_4	mg/l SO_4	11
HEAVY METALES	As	ug/l	
	Fe	ug/l	2
	Mn	ug/l	2
	Zn	ug/l	2
	Cd	ug/l	2
	Pb	ug/l	2
	Hg	ug/l	
	Ni	ug/l	2
HAZARDOUS SUBSTANCES	PAH	ug/l	
	Phthalates	ug/l	
	NP Pesticides	ug/l	
	PCB	ug/l	
	OC Pesticides	ug/l	
	OC Components	ug/l	
MICROBIOLOGICAL			
BIOLOGICAL P-B			

Source: Kosovo Environmental Protection Agency

The hazardous substances, microbiological and biological parameters are not measured.

There isn`t any regulation on classifying the surface waters according to the quality in Kosovo yet. Instead, **Surface Water Quality Index (SWQI)** is used for assessments. The SWQI at the station Gjonaj (Drini I Bardhe) varies from 66 to 73. Some decrease was observed in 2010, 2006 and 2007. According to the SWQI categorization the water quality in this station belongs to the **medium category**.

The SWQI of the River Klinë (station Klinë varies from 66-78 SWQI; in 2011, there was a decrease of the SWQI at 66. In the period 2005-2009 the SWQI is in the range of 74 - 78. According to the SWQI categorization the water quality is **fairly good**. In addition, the physic-chemical indicators recommended by the UNECE are used as follows:

Table 35: Limit values per class I-V

Indicator	Unit	Class				
		I	II	III	IV	V
		Class limit values				
Oxygen/Nutrient regime						
Dissolved oxygen *	mg/L	>7	7.0-6.0	6.0-4.0	4.0-3.0	<3
BOD_5	mg/L	<3	3.0-5.0	5.0-9.0	9.0-15.0	>15
COD-Cr	mg/L	<3	3.0-10.0	10.0-20.0	20.0-30.0	>30
pH	-					
Ammonium – NH_4	mg/L	<0.1	0.1-0.5	0.5-2.0	2.0-8.0	>8
Nitrite-NO_2	mg/L					
Nitrate-NO_3	mg/L	<5	5.0-25.0	25.0-50.0	50.0-80.0	>80
Total Phosphorus	mg/L	<0.01	0.01-0.025	0.025-0.05	0.05-0.125	>0.125

An overview of measured parameters at the stations relevant for the motorway route and corresponding classes (according to the UNECE instructions) are presented in the following Tables below:

Table 36: Values of pH at the stations in year 2013 and 2014

Code	Location		Min	Mean	Max	Class
RV01_011	Drini I Bardhe-Rdavc	2013	8.02	8.18	8.35	I
		2014	7.51	7.76	8.01	I
RV01_012	Drini I Bardhe-Klinë	2013	7.82	8.16	8.42	I
		2014	7.64	7.92	8.48	I
RV01_013	Drini I Bardhe-Gjonaj	2013	7.34	7.99	8.45	I
		2014	7.58	7.96	8.34	I

Source: Kosovo Environmental Protection Agency

The pH values show that the quality of the Drini I Bardhe River is within the I class.

Table 37*: Values of suspended solids at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	< 0.1	2.58	5.00	I
		2014	< 0.1	4.48	8.80	I
RV01_012	Drini I Bardhe-Klinë	2013	< 0.1	10.5	22.4	I
		2014	< 0.1	5.97	22.0	I
RV01_013	Drini I Bardhe-Gjonaj	2013	7.7	17.8	26.0	I

Code	Location		Min	Mean	Max	Class
		2014	< 0.1	3.98	24.4	I

Source: Kosovo Environmental Protection Agency

The suspended solids are also within the limits for I class.

Table 38*: Values of dissolved oxygen at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	6.45	8.08	9.70	I
		2014	6.82	7.73	8.65	I
RV01_012	Drini I Bardhe-Klinë	2013	6.15	7.93	9.90	I
		2014	7.70	9.21	10.8	I
RV01_013	Drini I Bardhe-Gjonaj	2013	5.08	6.98	10.8	I
		2014	6.60	9.19	11.3	I

Source: Kosovo Environmental Protection Agency

The measured parameters of dissolved oxygen show good quality (I class).

Table 39*: Values of BOD_5 at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	< 0.1	< 0.1	< 0.1	II
		2014	< 0.1	5.00	9.00	II
RV01_012	Drini I Bardhe-Klinë	2013	< 0.1	4.12	11.6	IV
		2014	< 0.1	2.58	13.5	III
RV01_013	Drini I Bardhe-Gjonaj	2013	< 0.1	3.59	15.4	V
		2014	< 0.1	4.47	15.0	II

Source: Kosovo Environmental Protection Agency

There has been exceeding of the allowed limits of BOD_5 for IV and V class at the Drini I Bardhe-Klinë (2013) and Drini I Bardhe Gjonaj (2013 and 2014) stations respectively (Table 39).

Table 40*: Values of COD-Cr (UV) at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	0.8	1.1	1.4	I
		2014	1.6	2.8	2.9	I
RV01_012	Drini I Bardhe-Klinë	2013	2.4	9.0	28.4	II
		2014	0.5	5.8	28.8	II
RV01_013	Drini I Bardhe-Gjonaj	2013	1.9	17.8	54.0	III
		2014	1.2	10.9	32.2	III

Source: Kosovo Environmental Protection Agency

Allowed limits for IV class for COD-Cr values have been exceeded at Drini I Bardhe-Klinë (2013 and 2014) and Drini I Bardhe Gjonaj (2013 and 2014) stations (Table 40).

Table 41*: Values of Ammonium (NH4-N) at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	0.007	0.007	0.007	I
		2014	0.006	0.006	0.006	I
RV01_012	Drini I Bardhe-Klinë	2013	0.07	1.458	2.817	II
		2014	0.07	0.836	3.549	IV
RV01_013	Drini I Bardhe-Gjonaj	2013	0.07	0.874	2.918	IV
		2014	0.07	0.623	2.880	IV

Source: Kosovo Environmental Protection Agency

At the station Drini I Bardhe – Klinë (in 2013 and 2014) and the Drini I Bardhe-Gjonaj, the values of the Ammonium NH4-N have been in the range of IV class (Table 41).

Table 42*: Values of Ammonium (NO2-N) at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	0.003	0.004	0.005	I
		2014	0.003	0.003	0.003	I
RV01_012	Drini I Bardhe-Klinë	2013	0.015	0.039	0.054	II
		2014	0.022	0.042	0.071	II
RV01_013	Drini I Bardhe-Gjonaj	2013	0.011	0.050	0.093	II
		2014	0.016	0.060	0.146	II

Source: Kosovo Environmental Protection Agency

There haven`t been any exceeding of the limit values of Ammonium NO2-N (Table 42).

Table 43*: Values of Ammonium (NO3-N) at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	< 0.1	< 0.1	< 0.1	I
		2014	< 0.1	< 0.1	< 0.1	I
RV01_012	Drini I Bardhe-Klinë	2013	0.43	1.58	2.87	II
		2014	< 0.1	0.88	1.42	II
RV01_013	Drini I Bardhe-Gjonaj	2013	< 0.1	0.82	2.24	II
		2014	0.20	0.93	1.67	II

Source: Kosovo Environmental Protection Agency

There haven`t been any exceeding of the limit values of Ammonium NO3-N as well (Table 44).

Table 44*: Values of Orthophosphate (PO4-P) at the stations in year 2013 and 2014*

Code	Location		Min	Mean	Max	Class
			mg/l			
RV01_011	Drini I Bardhe-Rdavc	2013	0.003	0.003	0.004	I
		2014	0.002	0.002	0.002	I
RV01_012	Drini I Bardhe-Klinë	2013	0.006	0.072	0.133	IV
		2014	0.003	0.072	0.204	V
RV01_013	Drini I Bardhe-Gjonaj	2013	0.030	0.060	0.163	V
		2014	0.024	0.037	0.115	IV

Source: Kosovo Environmental Protection Agency

At Drini I Bardhe-Klinë in 2014 an extreme situation was evidenced by measuring 0.204 mg/l of Orthophosphate which is almost double the limit for IV class; at Gjonaj in 2013 there have been 0.164 mg/L measured: this is also (slightly) exceeding the limits for IV class.

The exceedance of Ammonium NH4-N and Orthophosphate comes mostly from sewage, rather than agricultural fertilizers.

There haven`t been any measurements of hazardous substances (including heavy metals). Incidental measurements[47] showed that heavy metals were present in water and sediments of Drini Bardhë River. In water, only the amounts of arsenic and iron were higher than recommended limit values based on Directives 75/440/EEC and 2008/105/EC for surface waters.

Discharges of untreated road runoff can further impair water quality and pose a risk to aquatic organisms.

Groundwater Quality

There isn`t any information on the groundwater quality in the Study Area. It is an important gap, given the fact that a significant share of the affected population is supplied with potable water from private wells.

A survey will be executed at the Preliminary Design stage to identify the population using private wells for water supply in the southern part of the Project footprint. It shall be coupled by sampling of drinking water and the samples will be checked against the parameters set in the Adminsitrative Instruction of Kosovo for the quality of drinking water.

[47] https://www.researchgate.net/publication/280802482_Occurrence_of_Heavy_Metals_in_Drini_Bardhe_River

5.1.6. Sensitivity of Water Resources

Sensitivity of Surface Water

The sensitivity of the surface water resources has been assigned based on the following:

- The surface water sensitivity criteria (Table 45),
- The presence of permanent rivers in the Project corridor and their quality.

Table 45: Surface Water Sensitivity Criteria

Sensitivity value	Assessment Criteria
Very high	Natural rivers with unlimited retention capacity and constant water flow
High	Natural streams with unlimited retention capacity and constant natural flow
Medium	Natural rivers and streams with unlimited retention capacity and periodic water flow Limited natural rivers and streams with and without retention and constant water flow. These are water courses that have partially lost their naturalness (e.g. in urban areas)
Low	Natural rivulets with unlimited retention capacity and periodic water flow.
Negligible	Unnatural water channels without retention capacity

Apart from the Drini I Bardhe River and its tributary Bistrica e Pejë s, there aren`t any permanent surface water courses in the alignment corridor.

The **assigned sensitivity values** to the surface water courses are as follows:

Table 46: Assessment of Sensitivity of Surface Water in the Project Corridor

Name of the water course	Type of the Water Course	Chainage at which the water stream is crossed / approached (Km)	Sensitivity value assigned
Drini I Bardhe River	River with constant flow	13+550	High
Bistrica e Pejë s	River with constant flow	13+550 – 31+000[48]	Medium
Unnamed gully	Seasonal small stream	24+900	Low
Unnamed gully	Seasonal small stream	26+850	Low

The highly sensitive area is shown on the following Figure.

[48] Between the chainages 13+500-31+000 the Alignment is situated onto the upper terrace of the Bistrica e Pejes River at a minimum distance of 200m from it. The existing road N9 runs in parallel to the Alignment and the river. Run-off from the surrounding terrain and the motorway surface will be drained below both roads and will eventually reach the Bistrica e Pejes River.

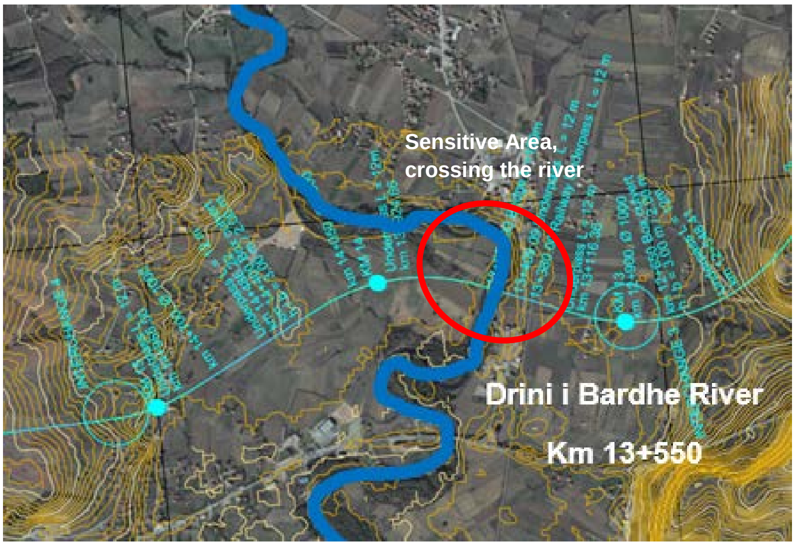


Figure 52: **Highly sensitive surface water area at km 13+550 of the alignment**

The sensitive surface water resources are shown in the Figure below.

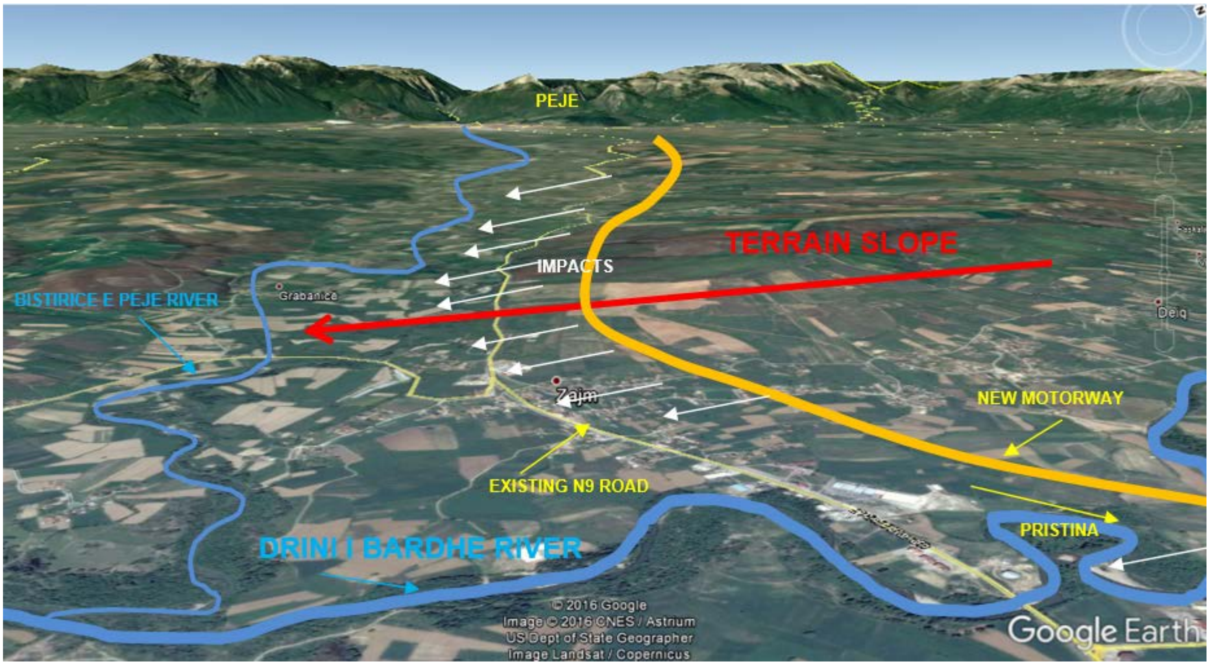


Figure 53: **Sensitive Surface Water Resources**

Sensitivity of Groundwater

The sensitivity of the groundwater resources along the motorway corridor has been assigned according to the different types of geological formations over which the alignment runs, taking into account their capacity to store and yield water. The following rating scale has been utilized:

Table 47: Groundwater Sensitivity Rating

Hydrogeological Unit	Sensitivity rate
Quaternary formations: alluvium	High
Quaternary formations: river terraces	High
Pliocene series (mostly) and proluvium	Medium
Flysch sediments	Negligible

Geological formations potentially affected by the Project have been identified and sensitivity values in line with the criteria above have been assigned to them (Table 47).

Table 48: Groundwater Sensitivity along the motorway alignment

Chainage (km)	Geomorphology	Sensitivity value
0+000 - 4+100	Quaternary sediments such as gravel and sand (groundwater level is expected to be 5m below the ground surface)	medium
	Pliocene sediments (below Quaternary sediments)	low
10+000 – 12+100	Pliocene sediments, present as clay, marl clay and marl, not very diagenesed (groundwater is not expected)	low
12+100 – 15+050	Alluvial-terrace Quaternary sediments (groundwater level is expected to be 2-5m below the ground surface)	high
15+050 – 23+000	Pliocene sediments, consisting of clay, marl clay and marl (groundwater appearance is not probable)	low
23+000 – 31+000	Alluvial-terrace Quaternary sediments, such as silty gravel and sand, prone to aquifer formation (groundwater level is expected to be 2-5m below the ground surface)	high

Groundwater sensitivity has been further studied in view of the risk of adversely impacting the drinking water quality of private wells located on the south f the Alignment. Such wells can be fund in villages Iglarevo, Pjetërq i Epërm, Pjetërq I Poshtëm, Jabllanicë, Kliçinë, Leshan, Gllaviqicë, Ramun and Zahaq. The potential sensitive receptors are private wells located on the south to the alignment. These villages are shown in position of the alignment in the following Figure.

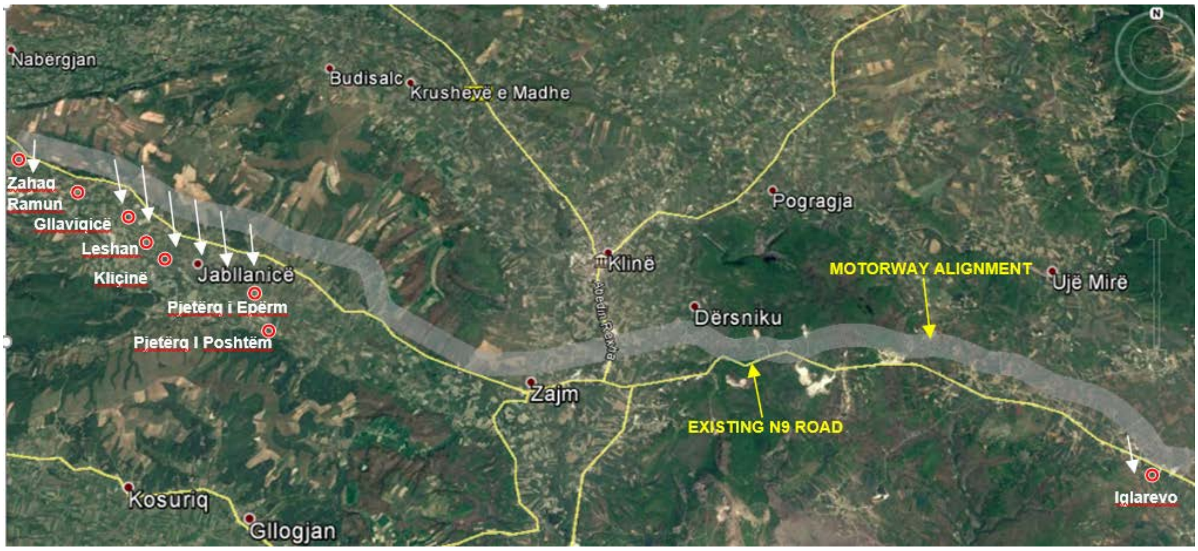


Figure 54: **Sensitive Groundwater Receptors**

5.1.7. Air Quality and Climate Change

5.1.7.1. Study Area

Delineation of the Study Area for the Air Quality and Climate Change encompasses a buffer zone of approximate 1 km (500m. on each side from the axis of the Alignment). The width of the buffer is set to include sensitive receptors (mainly Residential Properties).

5.1.7.2. Data Sources

The official data Report on the State of Environment (2011-2012) and the Strategy and Action Plan on Air Quality[49] and information on air quality monitoring[50] and field measurements performed along the existing road N9 were analysed in this ESIA.

5.1.7.3. Baseline Data Collection Methodology

An initial desk study was executed to review available literature. It pointed out that the closest air quality monitoring station representative for the air pollution from the traffic is located in Pristina (in the yard of Ministry of Finance). The analyses showed that:

- The allowed limit for PM10 was exceeded for 99 days in 2010 and for 68 days;
- values of PM2.5 exceeded the allowed average annual emission in 2010 and 2011;

[49] Ministry of Environment and Spatial Planning, 2011
[50] Ait Quality measurements in Kosovo are performed by the National Institute of Public Health (NIPH)

- the limit value for SO2 emission for vegetation protection has been exceeded repeatedly in winter in both 2010 and 2011;

Having in mind that in the urban area of Pristina, the air quality is affected by the fuel combustion processes from industry, commercial and domestic premises, (which are not all present in the Study Area), a field measurement was undertaken at three measurement points located along the existing road N9. The purpose of the measurement was to assess whether the allowed limit values for PM_{10}, SO_2, NO_x, CO are exceeded due to the existing traffic or not. The results are presented in the Report No. 123-BI/15, as of November 2014, prepared by Farmahem Dooel, Environmental laboratory. The sampling results, coupled by the ImmProg2000[51] dispersion model[52], were presented in the Pre-Feasibility Report as part of the preliminary Environmental and Social Impact Assessment, serving a basis for the analyses of alternative Alignments.

After the selection of the preferred alternative, which runs offline of the existing road N9, no further measurements were performed.

5.1.7.4. Baseline Assumptions & Limitations

The Baseline on Air Quality for the Study Area is based on the results of the Pre-Feasibility Study analyses described above. The measurements performed along the existing road N9 showed that the existing traffic flows do not cause any exceedance of air quality limit values.

According to the traffic flow modelling performed at the Pre-Feasibility Study stage, the Average Annual Daily Traffic (AADT) for the planned motorway will increase significantly in the future; in addition, the speeds will be higher compared to the current traffic velocity along the existing road N9, as well as the fuel consumption by vehicles. Consequently, there is a risk of exceedance of air quality limits.

Therefore, air quality situation and the effects on sensitive receptors in the Study Area will have to be studied further. During the Preliminary Design stage the air quality measurements will have to be executed at selected sites and the Baseline information for the Study Area will have to be updated.

5.1.7.5. Air Pollution in the Study Area

Air quality measurements have not been performed for the Study Area as it is assumed the air quality is within the set limits in the absence of any traffic. Instead, the software *ImmProg2000* has been

[51] http://www.airinfo.ch/ImmProg2000E.htm

[52] the software *ImmProg2000* has been deployed to develop the dispersion model as well as derive the emissions of dust, NO_x and SO_2, based on the average speed, traffic flows for 2014, 2020 and 2030 and the actual length of the route (31 km).

deployed to develop the dispersion model as well as derive the emissions of dust, NO_x, SO_2 based on the average speed, traffic flows along the existing road N9 for 2014, 2020 and 2030 and the actual length of the route (31 km). The model also considers topographic conditions and wind characteristics.

The dispersion model is not a substitute for the Air Quality Baseline of the Study Area; it is used to anticipate the increase of emissions of air pollutants in relation to raising traffic flows over time, distribution of pollution in the Affected Settlements and derive most sensitive receptors. Further studies are needed to assess more closely the Air Quality Baseline, including measuring of specific parameters.

The total annual emissions of the considered air polluters from the traffic have been computed. The model determined the following results:

Table 49: *Total Emissions of Pollutants from the Traffic along the Projects in 2012, 2020 and 2030 (t/year/31km)*

Emissions	2012		2020		2030	
Pollutant (t/year/31km)	AADT	100km/h	AADT	100km/h	AADT	100km/h
NO_x	**15,000**	27	**30,000**	32	**46,000**	44
SO_2		1		1		2
CO_2		9		12		17
CO		210		215		222
Dust		33,918		42,864		59,344

The outcome of the model was of assistance for the definition of sensitivity of receptors.

5.1.7.6. Air Quality Sensitive Receptors

The assessment of sensitivity of air pollution receptors

The criteria used for the assignment of sensitivity values to air pollution receptors are as follows:

- Health facilities, nurseries, schools, retirement homes and special institutions for handicapped children or adult are always assigned a very high sensitivity value; one should note that there aren`t any facilities of this type present in the Study Area;
- Residential, recreational and commercial areas are assigned a low to high sensibility value, while the sensibility increases with the density of population and the approximate distance of properties to the Alignment; the density of residential areas in the project footprint is medium to low, however at certain sections there are rresidential properties present in the right-of-way of 20 m;
- Industrial areas are assigned a negligible to low sensibility value. The sensibility increases with the degree of pollution and the degree of industrialization. One should note that there are no large stationary sources in the Study Area.

Table 50: Settlements along the project corridor and their assigned sensitive values

Sensitive settlements to the impaired air quality	Position on alignment Km (RHS/LHS)	Density of residential area	Distance to the Alignment	Sensitivity	Source of air pollution
Gllareva (Iglarevo)	0+000 - 5+650 (0,5km LHS)	Low density populated residential area with scattered properties; Some residential properties are present within the right-of-way of 20 meters	70	Low	CP: Diesel powered transportation and construction machinery OP: Dust/PM10/Fuel combustion gases/GHGs
Drsnik	11+300 (0,6km LHS/RHS)		3-5	High	
Dollc	12+900 (1,5km LHS)		70	High	
Zajm	15+000 (RHS/LHS)	Meduim density populated residential area with scattered properties Some residential properties are present within the right-of-way of 20 meters	70	High	
Drenoc	19+000 (RHS/LHS)		5-15		
Pjetërq i Poshtëm	21+300 (0,5km LHS/RHS)		60	Medium	
Pjetërq i Epërm	21+300 (1,6km LHS)	Medium density populated residential area with scattered properties	10	High	
Jabllanicë	23+100 (1,1km LHS)	Low density populated residential area with scattered properties	100-150	Low	
Kliçinë	24+400 (0,9km LHS)	Medium density populated residential area with scattered properties	80	Medium	
Leshan	25+400 (0,8km LHS)		80	Medium	
Lugagji	26+350 (0,8km LHS)	Low density populated residential area with scattered properties	80	Low	
Gllaviqicë	27+700 (0,85km LHS)		100-150	Low	
Ramun	29+200 (1,1km LHS)		80	Low	
Zahaq	30+850 (RHS/LHS)	Medium density populated residential area with scattered housing objects. Some commercial properties also exist.		High	

The dominant wind direction for the start section is North-South and settlements Drsnik, Dollc, Zajm will be equally affected. For the middle section (Pjetërq I Epërm, Pjetërq I Poshtëm, Jabllanicë), the frequency of winds is highest for the North-East quadrant; therefore, the properties located on the Left Hand Side of the Alignment will be most affected (parts of Kliçinë, Leshan and Lugagji).

These sensitivities will have to be updated with regard to the fact that the Alignment might change at the next design stages.

5.1.8. Climate Change

Gases released by the traffic of the N9 road will include carbon monoxide (CO), carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NO_x), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), silicon tetraflouride (SF6), benzene and volatile components (BTX), heavy metals (zinc, chrome, copper and cadmium) and particulate matters (ash, dust).

Transport sector GHG emissions in Kosovo are growing due to the increasing number of cars and also increasing fuel consumption. As the incomes of people increase and the road system becomes more developed so this category will certainly grow in importance. Transport is currently the second source of CO2 emissions in Kosovo; the major contributor is energy generation from lignite (Figure 55).

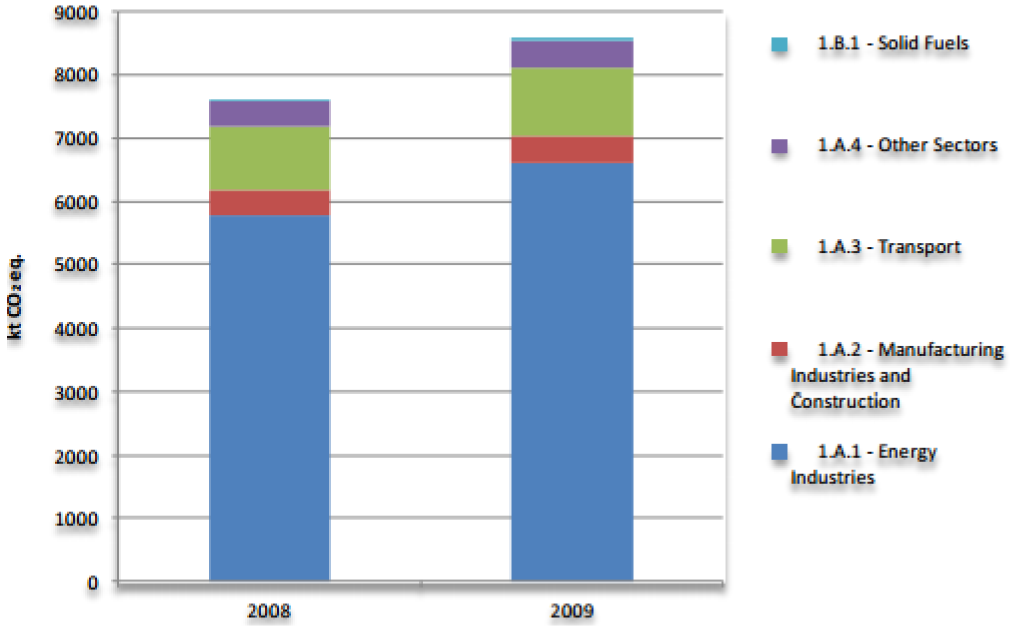


Figure 55: GHG Emissions in the Energy Sector

Estinations show that there are 5.5 million tonnes of CO2 produced annually by motor vehicles in Kosovo as a result of outdated emission reduction technologies[53].

The total annual CO2 emissions of the considered air polluters from the traffic have been computed for the Project area. The model determined the following results:

Table 51: CO2 emissions along the Project Corridor

Emissions	2012		2020		2030	
Pollutant	AADT	Tonnes/year	AADT	Tonnes/year	AADT	Tonnes/year
CO2	**15,000**	9	**30,000**	12	**46,000**	17

[53] Kosovo and Climate Change Report, file:///C:/Users/Rec/Downloads/Climate%20Change%20Report.pdf

From the analyses it can be concluded that the CO_2 emissions will due to the Project will contribute negligibly to the overall CO_2 emissions from the transport in Kosovo.

5.1.9. Noise and Vibration

5.1.9.1. Study Area

Delineation of the Study Area for Traffic Noise and Vibration encompasses a buffer zone of approximate 200 m (100 m. on each side from the axis of the Alignment). The width of the buffer is set to include sensitive receptors (mainly Residential Properties).

5.1.9.2. Data Sources

Data for the existing road N9 was obtained from site noise measurements.

The Traffic Noise Screening (TNS) procedure, that is based on the computerized Federal Highway Administration's (FHWA) STAMINA2.0 noise prediction model[54], was applied in the Study Area to assign Noise Levels at various distances from the new motorway Alignment.

5.1.9.3. Baseline Data Collection Methodology

The approach determining Baseline Noise Levels in the Study Area was similar to the one which applied to the definition of Baseline of Air Quality. Namely, a field measurement was undertaken at three measurement points located along the existing road N9. The purpose of the measurement was to assess whether the allowed noise limits are exceeded due to the existing traffic or not. The results are presented in the Report No. 123-BI/15, as of November 2014, prepared by Farmahem Dooel, Environmental laboratory. The sampling results, were presented in the Pre-Feasibility Report as part of the preliminary Environmental and Social Impact Assessment, serving a basis for the analyses of alternative Alignments.

After the selection of the preferred alternative, which runs offline of the existing road N9, no further measurements of noise levels were performed.

In the absence of measured data, the Traffic Noise Screening (TNS) procedure was used to assign Noise Levels acting upon sensitive receptors found in the Study Area. It utilises graphical representations for various scenarios of traffic volume, vehicle speed and roadway geometry from which Noise Levels can be obtained. By selecting the Project Case scenario, the Noise Levels at varios distances from the Alignment can be read from the graph. More details on the TNS procedure and results are presented in section 5.1.9.5 below.

---

[54] Federal Highway Administration. *Noise Barrier Cost Reduction Procedures: STAMINA2.0/OPTIMA User's Manual,* 1982; U.S. Department ofTransportation, Demonstration Products Division, Arlington, Virginia, FHWA-DP-58-1.

5.1.9.4. Baseline Assumptions & Limitations

Noise Levels in affected villages nearby the motorway Alignment are not known due to the fact that there aren`t any official or project related measurements. The used TNS screening procedure described above is very rough and the assigned Noise Values acting upon sensitive receptors situated at different centreline distances from the Alignment are indicative.

At the Preliminary Design stage it is recommended to measure noise levels in the Study Area at selected points where the prospects of changing the Alignment are minimal. These measurement points can be selected jointly by the ESIA team and the Designer. In addition, a more sophisticated noise prediction technique will have to be employed to validate the Noise Levels at respective distances from the Alignment, the width of the buffer in which the noise limits will be exceeded and identify all sensitive receptors within this buffer.

A **Detailed Motorway Noise and Vibration Study** shall be completed during the development of the **Detailed Design** to identify and predict noise levels at all sensitive receptors along the Alignment. The Study will determine specific and optimum noise abatement measures according the national and EU/WHO standards.

5.1.9.5. Nose Levels in the Study Area

The limit values set by the World Health Organization guideline[55] have been used as a reference to the TNS screened and predicted noise levels, (Table 53):

Table 52: ***Permissible Noise Levels in Areas with Different Sensitivity Scales***

Designation	Day LAeq,T(dB)	Evening LAeq,T (dB)	Night LAeq,T (dB)
A	50	45	40
B	55	50	45
C	60	55	50

Where the designation means:

A = Sensitive – These areas are designated quiet areas as they hold value in terms of them being places of worship, important tourist attractions, recreational park land and those areas surrounding hospitals, schools and noise sensitive natural habitats.

- B = Mixed – Areas designated in this category will typically be dominated by Residential Properties and may range from sparse population densities to suburban districts of cities.
- C = Non-sensitive – This designation applies to mixed areas, often within cities where there is a mix of residential and commercial activities. This designation will also apply to retail and financial districts.

[55] http://www.who.int/docstore/peh/noise/Commnoise4.htm

The limit values for B = Mixed areas have been used for the comparison.

Assigning noise levels was facilitated by using the Traffic Noise Screening (TNS) approach; it has been selected due to its simplicity and also because the motorway alignment is not finalised yet.

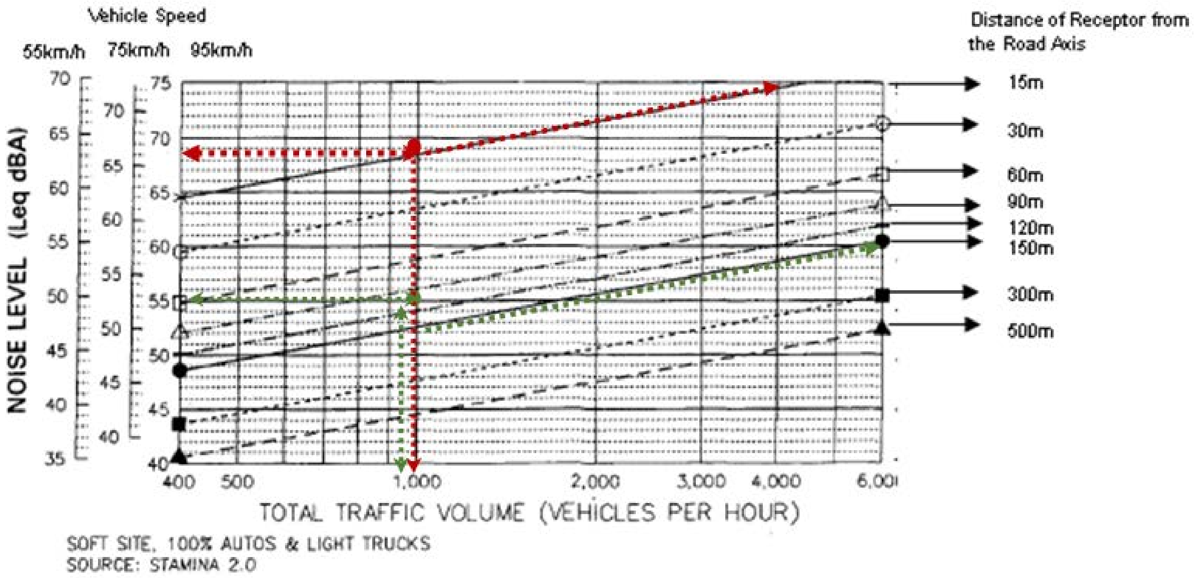
The TNS consists of a series of traffic noise level prediction graphs developed for different roadway configurations. The graphs reflect statistical data obtained in the course of utilising the Federal Highway Administration (FHWA) STAMINA2.0 computerized noise prediction model for various scenarios.

Scenarios of the TNS approach include different ***roadway geometries, traffic volumes, vehicle travel speed, and centerline distance to the receptors***. It does not include, however, any shielding (trees, buildings, etc., between roadway and receptors); the prediction technique assumes a flat terrain and a level roadway (no uphill/downhill grade).

In order to assign predicted ***Noise Levels*** acting upon sensitive receptors identified along the Alignment, the following specific inputs reflecting the **Project Case Scenario** have been selected from the TNS tool (Figure 56 below):

- With regard to ***Roadway Geometry***, **we have selected the graph for a dual line motorway**.
- With regard to ***Traffic Volume***, among the pre-defined traffic volume scales displayed on the X-axis of the TNS noise prediction graph (400, 500, 1000, 2000, 3000, 4000 and 6000 vehicles per hour), **we have selected 1,000 vehicles per hour (or 24,000 AADT** corresponding to the traffic model in year 2020).
- With regard to ***Vehicle Travel Speed***, among the pre-defined speed scales displayed on the Y-axis of the TNS noise prediction graph (55, 75 and 95 kph), **we have selected the speed of 95 kph**. This speed is considered to be constant and the same for each travel lane.
- With regard to ***Receptor Distance***, among the pre-defined centreline distances of receptor points from the alignment, displayed on the Y-axis of the TNS prediction graph (15, 20, 60, 90, 120, 150, 300 and 500 m), **we have selected 15 m**. The receptor point is at 1.5 meters above the motoway elevation, to represent the typical position of a human ear.

The TNS graph given in Figure 56 below presents fitted lines of ***Noise Levels*** which are in direct proportion to the traffic volume (X-axis) and vehicle speed (Y axis) and in inverse proportion to the centreline distance of the receptor.



Noise level (68-70 Leq dBA) acting upon a receptor positioned at distance of 15m from the Alignment

Permissible Noise Level (55 Leq dBA) acting upon a receptor positioned at distance of 300m from the Alignment

Figure 56: Traffic Noise Levels (Leq dBbA) for a Dual Line Carriageway

The **Noise Levels** (the fitted lines) are obtained at the intersections of the project Case Scenario values assigned to the X and Y axes. The **Noise Level** acting upon a receptor situated at a centreline distance from the Alignment of 15 m and generated under conditions of 1,000 vehicles per hour and vehicle velocity of 95kph, equals to **68-70 Leq dBA**[56].

The **Noise Level** acting upon a receptor under same conditions, will fall within the limit values (**55 Leq dBA)** at a centreline distance from the Alignment of **80 m**.

5.1.9.6. Sensitive Receptors in the Study Area

The majority of properties potentially affected by traffic noise are residential and therefore the sensitivity of receptors identified along the motorway route has been assessed as HIGH (please see the designated sensitivity levels in Table 56 above).

The identification of ***noise sensitive receptors*** has been based on:

- The number of properties affected and minimum proximity to the Alignment of the first row of houses (Table 53); these were determined using the ortophoto maps and Google Earth satellite imagery. The minimum distance of the first row of Residential Properties was found to vary from 3 to 80 m on the left hand side (direction Kijevo to Zahaq) and 5 to 80 m on the right hand side.

[56] The margin of 2 **Leq dBA** reflects the margin of error of this simple tool.

- The number of rows and approximate length of the row of residential properties potentially affected by noise and vibration was also assessed.
- The buffer of 80 meters originating from the TNS technique has been established as to reflect the maximum distance of receptors upon which the acting Noise levels will be exceeded.

The number of sensitive receptors, their approximate location and the distance between the first row of properties and the motorway Alignment is shown in Table 53 below.

Table 53: Number of Sensitive Receptors, their Location and Distance from the Motorway

No. of sensitive properties / receptors	Chainage (km)	Distance between the first row of properties and the Alignment
6 Residential Properties	5+500	1-3
30 Residential Properties	12+800 – 13+000	5 – 15
Interchange is planned – the no. of Residential properties cannot be determined	15+000	1-3
Overpass is planned, the no. of Residential properties cannot be determined	19+500	10
Overpass is planned, the no. of Residential properties cannot be determined	20+000	3 – 5
3 Non-Residential properties (businesses)	30+000	Currently intended for demolition; changes are possible at the stage of the Detailed Design

In the following Figures 57, 58 and 59, the identified sensitive receptors from the table 54 above are shown, indicating their proximity to the Motorway and the length of at least first two rows of properties.

Figure 57: Distances of Receptors from the Motorway and Lenght of the Rows of Sensitive Receptors

Figure 58: Distances of Receptors from the Motorway and Lenght of the Rows of Sensitive Receptors

Figure 59: Distances of Receptors from the Motorway and Lenght of the Rows of Sensitive Receptors

The minimum centreline distance of a receptor from the Alignment, as defined in the TNS tool, is 15 meters. Therefore, regardless of the actual distance, we have applied a **distance of 15** m to all sensitive receptors identified at this stage and had obtained Noise Level of **68-70 Leq dBA**. (Table 54).

Table 54: Prediction of Noise Levels acting upon sensitive receptors in 2020

Chainage (km)	Distance of the Receptor from the road axis (m)	Noise level (Leq dBA)
5+500	15	68-70
12+800	15	68-70
15+000	15	68-70
19+500	15	68-70
20+000	15	68-70
30+000	15	68-70

The 15 minimum distance of a receptor coincides with the prescribed Right-Of-Way of 20 m by the national legislation. Consequently, the sensitive receptors (mostly residential properties) located within this buffer, to which noise abatement measures will not apply, will have to be cleared, if the Alignment will not change during the Preliminary and Detailed Design stages.

The **Noise Level** will drop to permissible limits (**55 Leq dBA)** at receptors` centreline distance from the Alignment of **80 m**. In line with this, **all properties located within a buffer of 80 meters on either side of the Alignment are found to be sensitive**. Suitable mitigation measures (i.e. noise barriers) will have to be applied to abate traffic noise.

At the Preliminary Design stage, a more sophisticated nose prediction technique will have to be employed to:

- **Verify the accuracy of projected noise levels at respective distances from the motorway Alignment,**
- **Check the width of the buffer in which the Noise Levels exceed the limits and identify all sensitive receptors located within this buffer,**
- **Validate the length of rows of sensitive receptors located in the buffer.**

5.1.10. Waste Management

5.1.10.1. Study Area

The investigation area for the existing waste management practice is the territory of affected municipalities (Klinë and Pejë).

5.1.10.2. Data Sources

The key information and data were collected from official strategic documents[57] adopted at national[58] and municipal levels. This information was complemented by a survey of the relevant municipal administration.

[57] http://mmph-rks.org/repository/docs/Strategy_fo__Republic_Kosova_for_WM_2013-2022__eng._945753.pdf

[58] Spatial Plan of Kosovo, 2011 (available at http://mmph.rks-gov.net/repository/docs/Spatial_Plan_of_Kosova_2010_2020.pdf); Revising and Updating the Kosovo Environmental Strategy (KES) and National Environmental Action Plan (NEAP) 2011- 2015 (available at http://www.kryeministri-ks.net/repository/docs/REVISING_and_UPDATING_the_KOSOVO_ENVIRONMENTAL_STRATEGY_(KES).pdf)

5.1.10.3. Baseline Data Collection Methodology

The data collection method includes a desk research of available literature for Kosovo and Study Area, site visits and surveying the municipal administration in the Study Area. The information on the present management practice of municipal, commercial and construction & demolition waste has been retrieved from the waste Management Strategy. The situation in the Study Area with respect to the locations of illegal dumpsites along with the types of wastes deposited on them is analysed based on the information available at the web portal of the Initiative "Let`s Do It the World"[59] For the purpose of the survey a questionnaire has been developed and distributed to municipal focal points, which have been identified during previous stakeholder engagement activities.

5.1.10.4. Baseline Assumptions & Limitations

Precise data on the waste generation, waste collection coverage and locations of all illegal dumps is not available for the Study Area. **The data gap does not constitute an obstacle to assessing the impacts from the Project related waste management activities or to defining tailored mitigation measures.**

5.1.10.5. Waste Management Baseline Conditions

The report on state of waste 2008/2009 based on the data of Kosovo Environmental Protection Agency contains the following data on waste generation:

Table 55: Waste Generation in Kosovo per Waste Streams

Waste Streams	Daily average (kg / capita)	Annual generation (kg/ capita)	Generation (tons/year)
Household waste	0.277	101	232,541
Commercial waste	0.25	91.25	209,875
Medical waste	0.0024	0.876	2,014.5
Ash and dross waste	0.907	331	761,426.5
Construction/demolition waste	0.2	73	167,900
Other waste[60]	0.36	131.4	302,220
Total	**2,0**	**729**	**1,675,977**

The collection of municipal waste is carried out by seven (7) regional public enterprises, which are organized into the 37 Municipalities of Kosovo through operational units. All the old landfills for municipal waste have been closed and rehabilitated. About 90-95% of the urban population have joined the waste collection system. In the rural areas approximately 20% of the population is is covered by an organized waste collection service. Numerous illegal dumps proliferate in the rural areas as a result of the failure of waste management operators to provide waste collection services to all citizens.

[59] https://www.letsdoitworld.org/country/kosovo/

[60] Other waste comprises of packaging, plastics, tires, pesticides, electronics, wood etc.

During 2013, KEPA has made identifying of all illegal landfills in the territory of Kosovo. Identification was made in 34 Kosovo municipalities, excluding Leposaviq, Zubin Potok and Zveçan. In total there were identified 400 illegal landfills, with a total area of 301.18 hectares. These are usualy formed along the roads and riverbanks. Municipal wastes are mixed with construction waste and a small portion of hazardous waste. The leachate generated from these dumpsites is a threat to the soil, water and groundwater quality.

5.1.10.6. Waste Management Baseline Conditions in the Study Area

The waste which is generated in the Study Area (municipalities Klinë and Pejë) is collected, transported and deposited to the **regional landfill in Pejë** by the Regional Public Company "Ambijenti". (Table 56).

Table 56: Landfills used for the disposal of wastes collected in the Affected Municipalities

Landfill	Region	Landfill type	Area (ha)	Residents	Void space (years)
Prizren	Prizren, Suha reka **Malisheva**, Rahovec, Gjakova	Regional	24	316.728	15
Pejë	**Pejë** , Deçan, **Klinë** , Istog	Regional	3.6	250.000	

Source: Revising and Updating the Kosovo Environmental Strategy (KES) and National Environmental Action Plan (NEAP) 2011-2015

The location of the regional landfill in Pejë in relation to the study area and the motorway Alignment is shown in Figure 60 below.

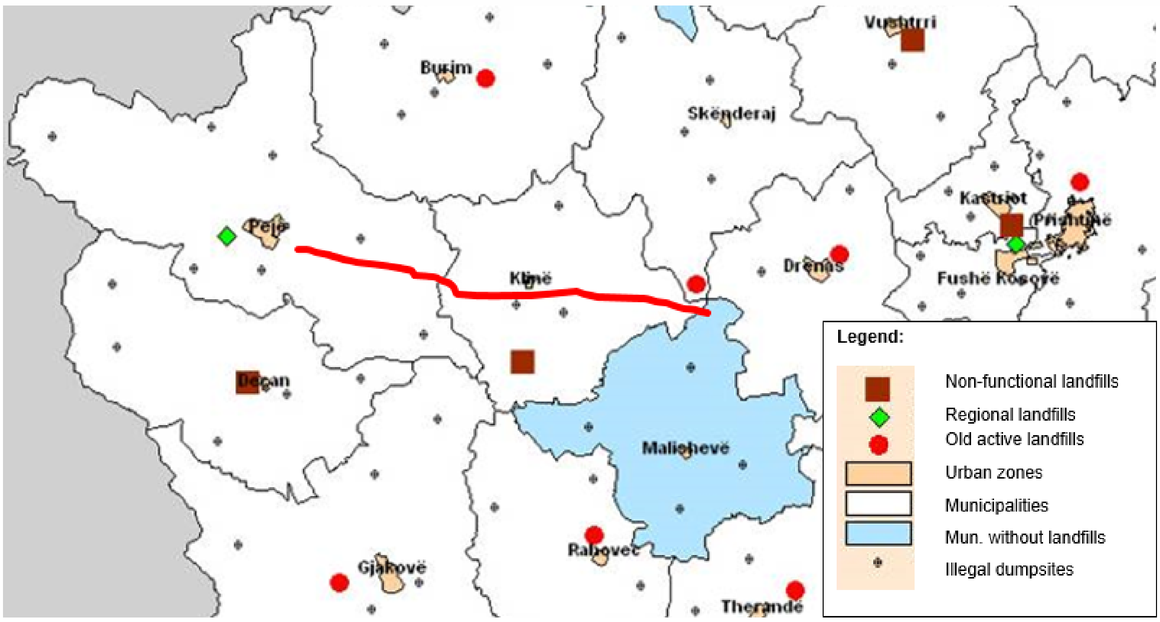


Figure 60: Municipal landfills and illegal dumpsites along the motorway corridor

Source: Spatial Plan of Kosovo, 2010-2020+

According to the results of the surveyed municipalities, the service coverage is in the range of 70% of the total population. As stated above, the citizens not receiving an organised waste collection service dump their wastes to illegal sites – near the roads and riverbanks.

In the survey of KEPA (2013), over 30 illegal landfill were identified in the Municipalities of Pejë and Klinë. The locations of the illegal dumps are shown in the following figure, which provides an indication of their proximity to the motorway Alignment.

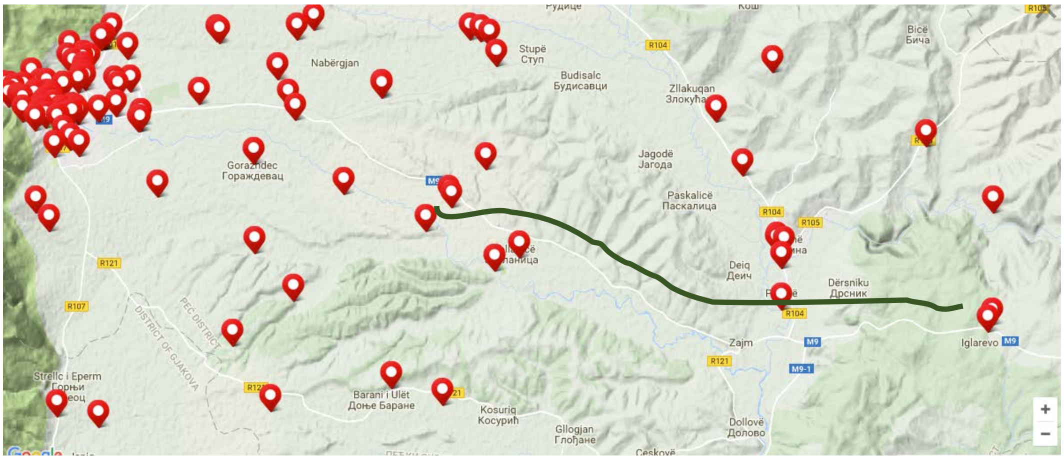


Figure 61: Illegal dumpsites spoted along the Alignment

The leachate originating from the illegal dumpsites worsenes the quality of water streams and groundwater. In some villages private wells, which are not subject to monitoring, are used for water supply. The existence of illegal dumpsites may aggravate the quality of groundwater used for water supply of these citizens.

5.1.11. Biodiversity Assessment

This section addresses the study of the biotic environment and encompasses the baseline conditions for Protected & Designated Areas, Habitats, Flora and Fauna.

5.1.11.1. Study Area

For Habitats, Flora and Fauna, a strip of land 1.0km wide along the corridor (500 m at both sides of the motorway Alignment axis) has been considered as sufficient to assess the potential effects the project may have on these variables, both during construction works and operation.

5.1.11.2. Data Sources

Data collection for the baseline of nature conservation and biodiversity was obtained through:

- Literature review;

- Personal experience of the experts in different fields that contributed to the study from previous investigations;
- Interpretation of topographic maps, satellite images (Google Earth) and aerial photographs (orto-photo images).
- Targeted fieldwork conducted in spring 2015.

5.1.11.3. Baseline Data Collection Methodology

For the description of habitats, a map of habitats along the motorway corridor was prepared for this ESIA. All natural and man-made habitats with size large enough to be presented on a map of a 1:25.000 scale were mapped. The habitat units that were mapped correspond to the finest level of EUNIS Habitat Classification that the team was able to distinguish.

The natural environment is presented by the composition and characteristics of the ecosystems i.e. the living component of the ecosystems. In this chapter, the natural and anthropogenic ecosystems as well as agricultural land and human settlements are described in the sense of biotopes. The habitats in this study are divided in two groups: natural and anthropogenic habitats. All of the habitats were analysed from several aspects:

- physiognomy and degree of degradation;
- characteristics of the plant association (community) and its global distribution.

Mapping of habitats in the analysed buffer of Kijevo-Pejë motorway corridor was done based on identification of habitats during the field work, recording of ground truth data by GPS and mapping in ArcGIS software. The produced map is presented in scale 1:25.000 (see Habitat map) although the topographic map has scale (1:50.000). In general, the number of identified and mapped habitats was relatively low. The first section (Kijevo-Klinë) is characterized by dominance of agricultural land with scattered patches of Italian and Turkey oak forests and one larger forest of Oriental hornbeam and White oak. The second section (Klinë -Pejë) is again dominated by agricultural land with Italian and Turkey oak forest patches and poplar and willow woodlands in the Plain of Bistrica River (Bistrica e Pejës). Human settlements and non-residential properties are present in both sections.

Inventories of plants, animals and fungi species were prepared by the experts (see Annex 2).

5.1.11.4. Baseline Assumptions & Limitations

Most of the information, has been newly generated by the experts in the various biology fields participating in the study, through interpretation of cartography, satellite images and aerial photographs, and field surveys. Moreover, the determination of sensitive plant and animal species that are potentially present along the corridor has been limited by the fact that no Red Data Books and Red Lists for Kosovo flora, fauna and fungi have been prepared yet at a national or regional/local level. Thus, the establishment of the presence of sensitive species in the corridor area had to be done on the basis of the most relevant international conventions and treaties (Bern Convention, IUCN red list, Habitats Directive, etc.).

5.1.11.5. Habitat Baseline Conditions

This Project Alignment runs through complexed of habitats that can be divided into four sections:

- First section (Kijevë-Iglarevo): Agricultural area presented by fields and acres in the Italian and Turkey forest patches are scattered in this section.
- The second section: there is presence of Oriental hornbeam forests and number of quarries (Iglarevo-Dërsniku).
- The area between Dërsniku and Zajm: the agricultural and other man-made habitats are predominant.
- The fourth section characterized by the domination of fields and acres with significant presence of Italian and Turkey oak forests and patches and hill pasture.
- The last section of ~ 1.3km (before Zahaq): agricultural and other man-made habitats are predominant.

Natural and Semi Natural Habitats

Forests and woodlands

Thermophyllous forests of Oriental hornbeam and White oak

Reference to EUNIS Habitats: G1.737 Eastern sub-Mediterranean white oak - **G1.7372** Moesian white oak woods

Reference to EU HD Annex I: Eastern white oak woods 91AA

Reference to CoE BC Res. No. 4 1996: 41.7 Thermophilous and supra-Mediterranean oak woods

Thermophilous forests of Oriental hornbeam and White oak are characterized by the forest community **Querco-Carpinetum orientalis**. This thermophilous and xerophilous community is developing under regional climatic influence on skeletal soils. The edifier species is *Quercus pubescens*, and very abundant and frequent is *Carpinus orientalis*. Beside these tree species *Fraxinus ornus*, *Cotinus coggygria, Acer monspessulanum*, *A. tataricum, A. campestre, Quercus cerris, Crataegus monogyna, Ulmus minor* are common in the tree and shrub layers. The herb layer is reprensted by and *Cyclamen neapolitanum*, *Lathyrus venetus, Carex sp., Anemone apenina, Lithospermum purpureoviolaceum, Hypericum perforatum*.

Figure 62: Thermophilous forests of Oriental hornbeam and White oak

This forest is degraded due to timber exploitation. The tree layer is consisted of smaller trees with height of no more than 5 m. The community is very dense and resembles a thicket, rather than a typical forest. There are also several quarries within the forest which have caused additional degradation. Nevertheless, the Oriental hornbeam and White oak way forest shows highest degree of naturalness in the highway corridor area.

This association is widespread and distributed in Adriatic and Aegean sub Mediterranean region. In the motorway corridor it is represented by large area on carbonaceous ground on the east of Dollc (See Habitat Map).

Italian and Turkey oak forests

Reference to EUNIS Habitats: G1.76 Balkano-Anatolian thermophilous [*Quercus*] forests - G1.762 Helleno-Moesian [*Quercus frainetto*] forests

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: 41.7 Thermophilous and supra-Mediterranean oak woods

The Italian and Turkey oak forests in the analyzed highway corridor are represented by the plant association **Quercetum frainetto-cerris.** This community usually develops in the higher altitudinal belt i.e. above the thermophilous forests of Oriental hornbeam and White oak. However, in the analyzed highway corridor the Italian and Turkey oak forests occupy lower vegetation due to the climatic conditions and geology. Italian and Turkey oak forests develop in more humid conditions on soils with higher water capacity compared to the undeveloped soils of Oriental hornbeam and White oak habitat.

The edifier species are Italian oak (*Quercus frainetto)* and Turkey oak (*Quercus* cerris). Beside these tree species, *Thelycranis sanguinea, Cornus mas, Pyrus amygdaliformis, Pyrus pyraster, Crataegus monogyna, Acer tataricum, Fraxinus ornus, Rosa arvensis* etc. represent the subdominant tree layer and shrub layer. The habitat resembles to a true forest with oak trees of considerable height. However, these forest are severely exploited by the local inhabitants and consequently the forest is degraded, with lower canopy cover, intensively developed herb and shrub layers.

Figure 63: Italian and Turkey oak forest patch near Kijeve

The Italian and Turkey oak forests in the highway corridor are represented by small patches of woodlands surrounded by agricultural land. Most of these patches are not well connected by forest vegetation. However, larger forests were noted in the immediate surroundings of the highway corridor. The patches of Italian and Turkey oak forests have obviously lower biodiversity value compared to the continuous forests. Larger forests have potential to sustain viable population of birds and mammals. Isolated forest patches are used occasionally for foraging of larger vertebrates. Thus, the Italian and Turkey oak forests in the highway corridor are represented by two different types on the Habitat Map:

- Italian and Turkey oak patches
- Italian and Turkey oak forests

Italian and Turkey oak patches are used by local population for wood and they use other not-timber forest products. They also have a wind-protective function in the dominantly agricultural landscape.

Italian and Turkey oak community, which comprises the largest part of oak forests, is a climazonal community in the Balkans. This habitat in the highway corridor is present along the whole Alignment. However, better preserved are the habitats in the section Kijevë – Klinë (except in the area of Oriental hornbeam and White oak forest).

Riparian willow and poplar woodlands

Reference to EUNIS: G1.11 Riverine [Salix] woodland - G1.112 Mediterranean tall [Salix] galleries (G1.1121 Mediterranean white willow galleries)

Reference to EU Habitat Directive Annex I: 92A0 Salix alba and Populus alba galleries

The willow-poplar woodlands in the highway corridor develop on alluvial sandy soils on the riverbanks of river Bistrica e Pejë s. The ground is flooded regularly during the wet period. The biotope is characterised by permanent humidity, light structure and texture of the soil. This woodland type belongs to the Salicetum albae-fragilis Issler 1926 association. The most typical tree species are *Salix alba* accompanied by *Populus nigra, Salix triandra, S. Amplexicaule, Sambucus nigra, Viburnum opulus, Cornus sanguinea, Rhamnus frangula,* etc. In some stands, poplar trees (*Populus nigra, Populus tremula* and *Populus alba*) prevail and the stand resembles typical poplar community. At some places the Alder trees (*Alnus glutinosa*) dominate and form small patches. In the herb layer the most characteristic species are: *Poa trivialis, Poa palustris, Carex vulpina, Polygonum lapatifolium, Polygonum hidropiper, Rumex sanguineum, Veronica anagalis-aquatica, Scirpus lacustris* etc.

Figure 64: Riparian willow and poplar woodlands along Bistrica e Pejë s

The willow-poplar woodlands are represented by smaller patches intersected by meadows and agricultural land. Thus, it does not form continuous forest vegetation which lowers the value of this habitat.

This biotope is common for almost all lowland rivers in Kosovo and Balkans. In the motorway corridor it is distributed in the section from Klinë to Zahaq, in the plain along Bistrica e Pejës.

Riparian willow and poplar belts

Reference to EUNIS Habitats: G1.11 Riverine [Salix] woodland - **G1.112 Mediterranean tall [*Salix*] galleries** (G1.1121 Mediterranean white willow galleries)

Reference to EU HD Annex I: **92A0 *Salix alba* and *Populus alba* galleries**

Reference to CoE BC Res. No. 4 1996: 44.1 Riparian willow formations

Different from the previous habitat type, the current one represents a very narrow belt along the rivers. The flora of riparian belts is very similar to the one of riparian woodlands. However, presence of introduced (invasive) species (*Amorpha fruticosa, Populus X hybridus)* can be noted in the riparian belts.

Well-developed riparian willow-poplar belts are present along river Drini I Bardhe as well as along Bistrica e Pejës.

Figure 65: Riparian willow and poplar belts along Drini I Bardhe

Grasslands and Meadows

Hill pastures

Reference to EUNIS Habitats: E1.33 East Mediterranean xeric grassland

Reference to EU HD Annex I: 6220 Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea

Reference to CoE BC Res. No. 4 1996: 34.5 Mediterranean xeric grasslands

Hill pastures are secondary formations. They are represented by very small patches in the highway corridor. The community develops in the areas distinguished by an influence of the warmer climate. This habitat is rich in plant species: *Erysimum cuspidatum, Teucrium chamadrys, Tragopogon* sp.*, Euphorbia cyparissias, Nigella damascena, Fumana procumbens, Teucrium polium, Tunica* sp.*, Helleborus odorus, Sedum album, Hypericum perforatum*, etc. Some shrubs of *Ulmus minor* and *Rosa canina* are scattered in the habitat.

Figure 66: Hill pasture

The hill pastures biotope is distributed in the central and southern parts of the Balkan Peninsula. Hill pastures in the highway corridor are represented by few very small patches.

Meadows

Reference to EUNIS Habitats: E2.238 Southwestern Moesian submontane hay meadows

Reference to EU HD Annex I: 6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

Reference to CoE BC Res. No. 4 1996: none

Most of the meadows in the studied corridor are regularly managed. Dependent on the intensity of mowing, meadows can have a specific structure of plant and animal species, or species from the neighboring grassland and forest habitats may prevail in the floristic and fauna structure. The plant community characteristic for this habitat type belongs to the alliance **Trifolion resupinati**. However, in the floristic composition of this mesophilic habitat sedges are not represented with high abundance and cover like in the wet meadows. Clover species (*Trifolim resupinatum*, *T. balansae*, *T. filiforme* and others) have higher abundance and coverage. Some grass species (*Alopecurus utriculatus*, *Agrostis alba*,) are also common.

Most of the meadows can be found in the area between Klinë and Zahaq. Some of them are significant in size, but they are usually surrounded by fields and acres.

Figure 67: Meadows

Aquatic Habitats

Large rivers

Reference to Habitat Directive: No specific reference

Reference to Palaearctic Habitats: 24. Rivers and streams

Reference to Water Framework Directive (EEC 60/2000): lowland medium/small river type

The largest river is the studies motorway corridor is Drini I Bardhe. It is crossed by the existing road N9 by a bridge near Klinë. The stretch of the river in the analyzed corridor is characterized by slow-running water. The riverbanks are covered by willow and poplar riparian belts. However, large boulders (from construction) have been dropped at some places of the river bank. Small sandy habitats were also formed during the time of the field work (summer in July 2015). Obviously, these sandy islets are covered by water in other seasons of the year. There are 18 fish species that inhabit the waters of Drini I Bardhe. Two of them, European eel (Anguilla anguilla) - CR (critically endangered) and Common carp (Cyprinus carpio) - VU (vulnerable) are considered as species with high conservation importance (IUCN 2015.2).

Figure 68: River Drini I Bardhe

Part of Bistrica e Pejë s is also in the analyzed highway corridor. The exiting road does not cross Bistrica e Pejë s, but approaches this river at 50m in one spot. This part of the river is characterized by very low water flow. The banks of the river are covered by willow belt. Some stands of the reed community (Phragmitetum australis) can also be found. Most dominant species are *Typha latifolia* and *Phragmites australis*.

Figure 69: River Bistrica e Pejë s

Intermittent streams

Reference to EUNIS Habitats: C2.5 Temporary running waters

Reference to EU HD Annex I: HD Annex I: 3290 Intermittently flowing Mediterranean rivers of the Paspalo-Agrostidion

Reference to CoE BC Res. No. 4 1996: none

During the field investigation along the route corridor, several intermittent streams were found. The water flow exists only during the humid period of the year. They have high water level after snow melting in early spring, and a half of the year (more or less) these streams are characterized by a dry bed. That is the reason why these streams do not have great importance as water ecosystems.

Anthropogenic Habitats

Agricultural land

Fields and acres

Reference to EUNIS: I1.3 Arable land with unmixed crops grown by low-intensity agricultural methods

Reference to EU Habitat Directive Annex I: none

Fields, acres and plantations in the area of the projected highway corridor are represented mostly by weed and corn culture. Industrial plants are very seldom cultivated. The agricultural land creates recognizable landscape which is dominated by fields and acres. Some of the fields are separated by tree hedges or stony fences.

Figure 70: Agricultural land near Kijeve

Many birds are feeding on agricultural lands, either on animals and cultivated plants living there such as warms, insects' larvae etc. The most common are *Melanocorypha calandra, Miliaria calandra, Corvus cornix, Coloeus monedula, Pica pica, Passer domesticus* and many others. Birds of prey are constantly overflying this landscapes looking for invertebrates, birds or hares (*Buteo buteo, Falco tinnunculus*).

Field and acres are dominant habitat type in the investigated motorway corridor. Vast areas of agricultural land are characteristic for the first part of the projected motorway (west of Kijeve).

Abandoned Arable Land

Reference to EUNIS Habitats: I1.53 Fallow un-inundated fields with annual and perennial weed communities

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

Abandoning the arable land has created separate habitat type. The presence of many ruderal specie is characteristic for this habitat. However, the shrub species growing here (*Rosa spp*., *Prunus spinosa* etc.) define its physiognomy. The presence of shrubs offers niches for many animal species, especially for food and shelter.

Figure 71: Abandoned arable land

Ruderal Vegetation

Reference to EUNIS Habitats: E5.1 Anthropogenic herb stands, including: E5.11 Lowland habitats colonized by tall nitrophilous herbs; E5.12 Weed communities of recently abandoned urban and suburban constructions; E5.13 Weed communities of recently abandoned rural constructions; E5.14 Weed communities of recently abandoned extractive industrial sites

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

Concerning the floral composition, the most significant feature of this biotope is the domination of weedy and ruderal plant species over herb species typical of grassland communities. The vegetation cover is more or less closed, thus indicating that the fields have been abandoned for many years. Most common species are Urtica dioica, *Cynodon dactilon*, *Lolium spp*., *Arctium lappa*, *Hyosciamus niger*, *Datura stramonium*, *Cichorium intybus, Xantium spinosum, Onopordon sp., Cirsium spp*.

Figure 72: Ruderal vegetation along the motorway (Kijeve)

Orchards

Reference to EUNIS Habitats: G1. D4 Fruit orchards and FB.31 Shrub and low-stem tree orchards

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

The most abundant fruit trees in orchards are apples, pears and plums. The presence of understorey herb vegetation is a specific characteristic for these particular orchards. However, these habitats occupy small areas and thus they have very low biodiversity values. Most of them are established within the settlements, close to Residential Properties, and thus they are not mapped separately.

Black Locust's (Robinia pseudoacacia) stands

Reference to EUNIS Habitats: G1.C3 [Robinia] plantations

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

The forest-like stands of this biotope are common for the area around Kijeve but the belts of black locust along the existing motorway are even more common. In some places black locust's stands are very open and ground vegetation is well-developed. Many ruderal elements are present here on account of their proximity to the roads and settlements.

Black locust's forests and woodlands are widespread in Kosovo since they were used for soil stabilization and against erosion. In terms of biodiversity they have very low value.

Mixed stands of native and introduced tree species

Reference to EUNIS Habitats:

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

The mixed stands of native species (*Prunus spinosa, Ulmus minor*) and introduced species (*Robinia pseudoacacia, Lycium* sp.) are characteristic for the first section of the highway Alignment. These stands are scattered in the matrix of agricultural land. They have certain biodiversity value since some birds nest in them and we can assume that mammals and reptiles also seek refuge in them.

Such combination of plant species is characteristic for the hedgerows in the agricultural land in the same area.

Figure 73: Mixed stands of native and introduced tree species

Lines of trees

Reference to EUNIS Habitats: G5.1 Lines of trees

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

Tree lines along the roads may not create a specific plant community or separate habitat. The importance of such vegetation, together with the tree lines on the edges of fields, acres and gardens is great because they may serve as corridors for spreading of many species. Black locust (*Robinia pseudoacacia*) is the most common tree species in these anthropogenic tree belts. Some native tree species are also part of the tree lines (*Prunus spinosa, Ulmus minor*, *Populus* spp., *Salix alba*, etc.).

Figure 74: Tree lines of Black locust

Settlements and industrial sites

Rural settlements

Reference to EUNIS Habitats: J1.2 Residential buildings of villages and urban peripheries; I1.22 Small-scale market gardens and horticulture, including allotments

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

Villages along the route corridor are characterized by real rural features. As a rule, the Residential Properties in these villages are surrounded by small gardens and fruit trees even in their central part. In such conditions, many wild animal species are adapted to living close to human presence.

The peripheral parts of the villages in the area of the highway corridor are characterized by sparsely distributed Residential Properties with small meadows, grasslands and sparse trees around.

Figure 75: Settlement in the matrix of agricultural land

Villages are suitable bird and mammal habitats. Variety of vegetable, livestock and poultry offer food supply for both, herbivores and carnivores.

In summary, the biodiversity value of rural settlements is low. The presence of local varieties of plants and animal races (if investigated) might increase the value of agrobiodiversity.

Industrial, commercial and other man-made sites

Reference to EUNIS: J1.4 Urban and suburban industrial and commercial sites still in active use

This includes a variety of industrial facilities, gas-stations, monuments, glasshouses, quarries, dumps, sand exploitation localities etc. Such facilities occur in a number of locations in the corridor area, most often in the settlements or in their vicinity. These structures have low importance from biodiversity point of view which is lower than the one of the rural settlements.

Figure 76: Gas station along the existing motorway

Quarries

Reference to EUNIS: J3.2 Active opencast mineral extraction sites, including quarries; J3.3 Recently abandoned above-ground spaces of extractive industrial sites;

Reference to EU Habitat Directive Annex I: none

There are several quarries in the area of the termophyllous Oriental hornbeam and White oak forest. The quarries are inhospitable areas for plants and animals. Thus, they have very low biodiversity value.

Figure 77: Quarry

Roads

Reference to EUNIS Habitats: J4.2 Road networks; J4.6 Pavements, and recreation areas

Reference to EU HD Annex I: none

Reference to CoE BC Res. No. 4 1996: none

The distinctive quality of this biotope is the common presence of a special type of natural vegetation dictated by the anthropogenic influence. The presence of certain neophytes coupled by native plants is also common. Some of ruderal plant communities are strictly adapted to development along roads. Similar plants develop along the motorway slignement from Klinë to Pejë. The biodiversity value of roads is very low.

The analysed habitats are presented in the Figure overleaf.

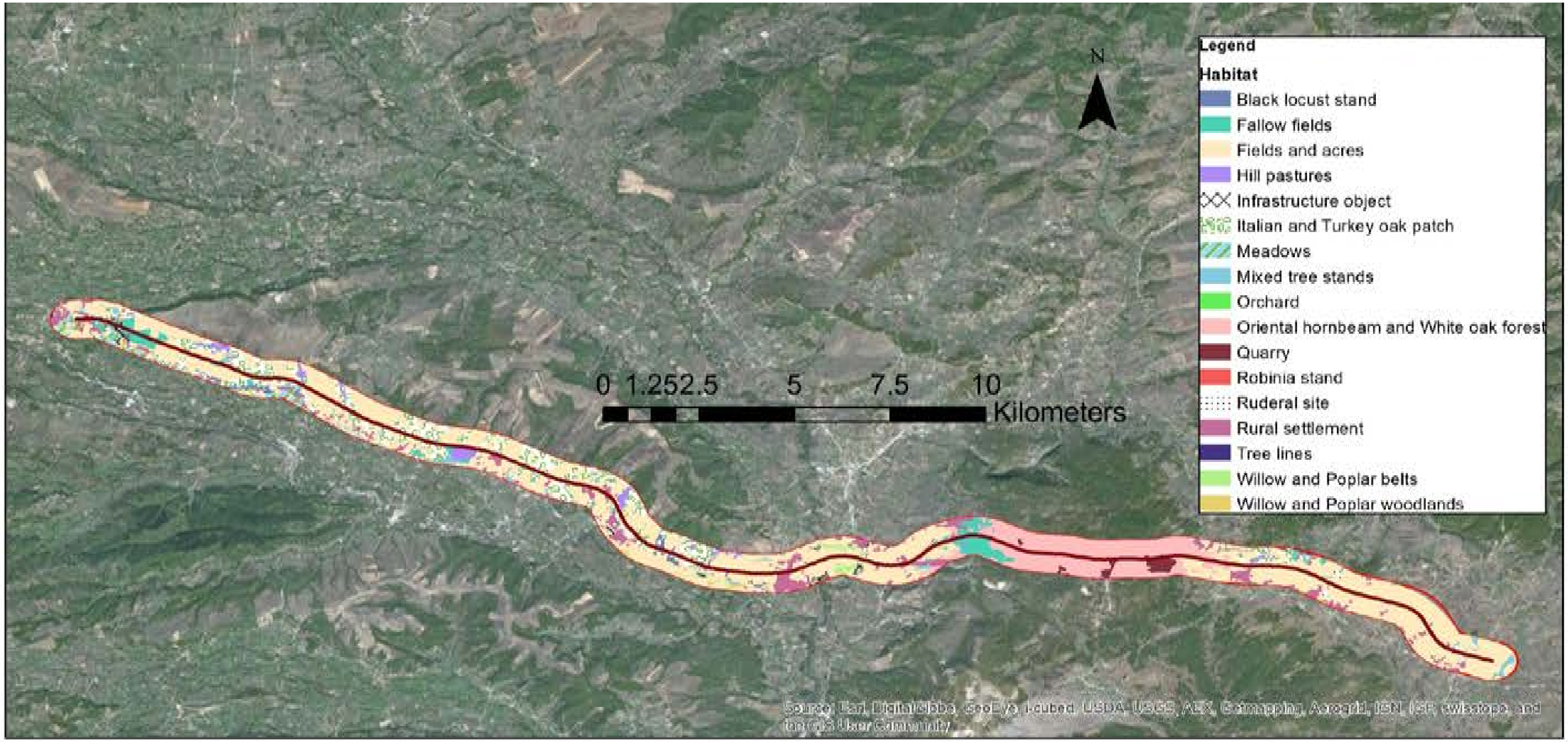


Figure 78 Overview of habitats within the Project Corridor

The breakdown of habitats present in a buffer of 2x500 meters along the motorway is shown in the table below:

Table 57: Habitats in the Project Corridor

Habitats	Area (ha)
Oriental hornbeam & White oak forest	402.12
Italian and Turkey oak forests and patches	400.79
Willow and Poplar belts	20.31
Willow and Poplar woodlands	14.23
Robinia stand	2.13
Black locust stand	28.88
Mixed tree stands	48.99
Tree lines	5.02
Hill pastures	50.03
Meadows	41.19
Fields and acres	1716.36
Orchard	2.16
Fallow fields	123.96
Ruderal site	16.63
Rural settlement	200.09
Non-Residential Properties	34.71
Quarry	30.68

5.1.11.1. Protected & Designated Areas

The nature protection through protected areas is an important legal tool that enables protecting the alues of natural heritage and biodiversity. The network of protected areas of Kosovo is consisted by 75 nature areas with the total surface 46.437 ha (4.25 % of Kosovo territory).

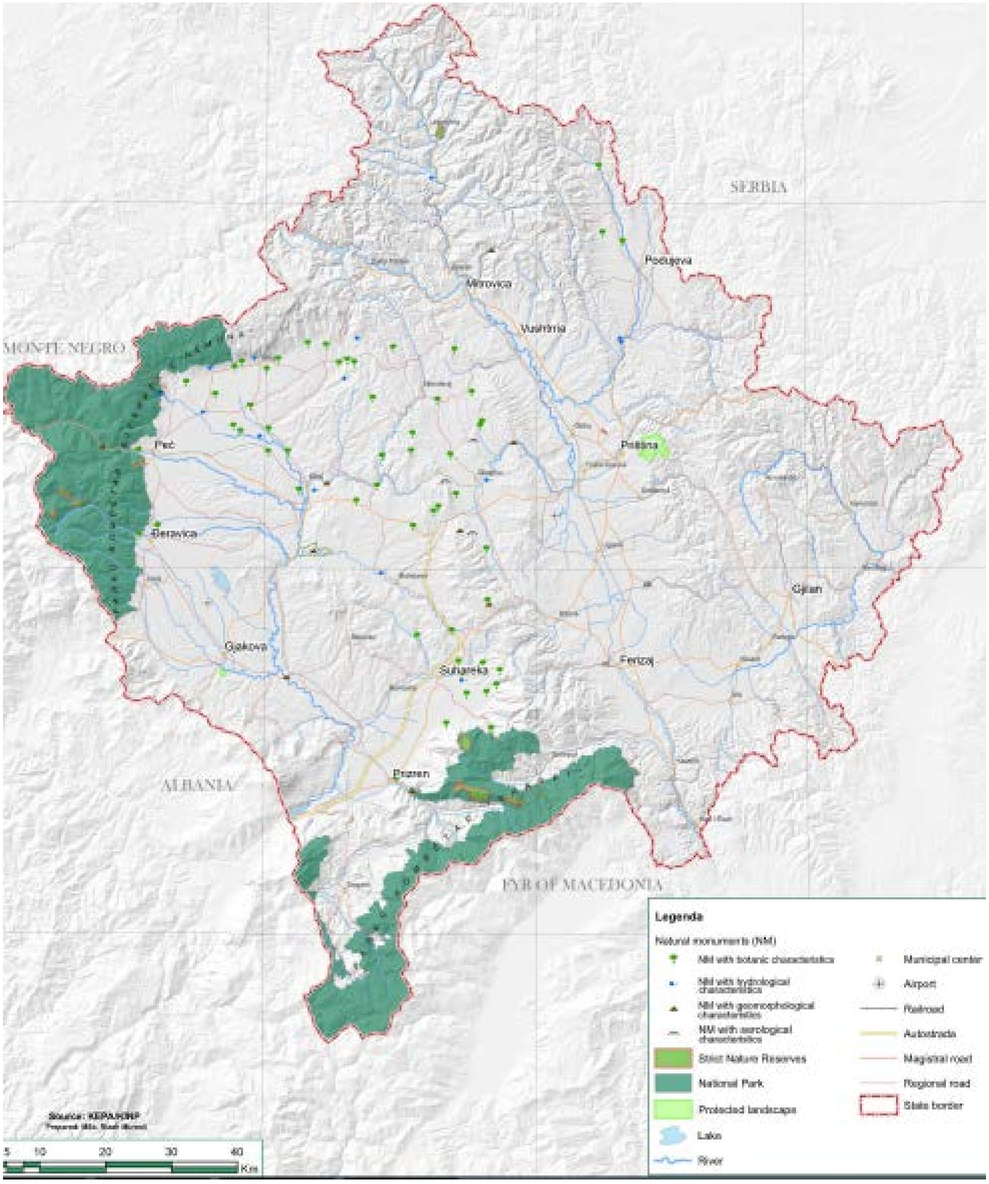


Figure 79: *Protected areas in Kosovo*

Source: Overview of Nature Protection Progress in Kosovo[61]

There are eight protected areas in the municipalities of Klinë and Malisheve:

Table 58: Protected areas in the municipalities of Klinë and Malisheve

No.	Name of the Protected Area	Village	Municipality
1.	Kompleksi i trungjeve te rrënjës	Gllarev	Klinë
2.	Trungjet e bungut	Llazic	Malishevë
3.	Burimi i ujit mineral	Dresnik	Klinë

[61] http://www.landscapeonline.de/wp-content/uploads/DOI103097-LO201545.pdf

No.	Name of the Protected Area	Village	Municipality
4.	Gryka e lumit Klinë	Klinë	Klinë
5.	Trungu i rrënjës ne	Deiq	Klinë
6.	Trungu i qarrit	Nagllavkë	Klinë
7.	Burimi i ujit mineral	Rudicë	Klinë
8.	Trungu i bungut	Ujëmire	Klinë

In the broader area of the Project there are several protected areas. Almost all of them represent isolated old trees or some small tree stands. Only one of them (Kompleksi i trungjeve tu rronjrs (*Quercus robur*) ne Gllarev) lies within the analysed buffer zone of 2x500 meters but it is not affected. It is classified in the category *monument of nature.* The protected area Kompleksi i trungjeve tu rronjrs (*Quercus robur*) ne Gllarev represents small stand of Pedunculate oak (*Quercus robur*) which is characteristic for riparian biotopes or flooded plains.

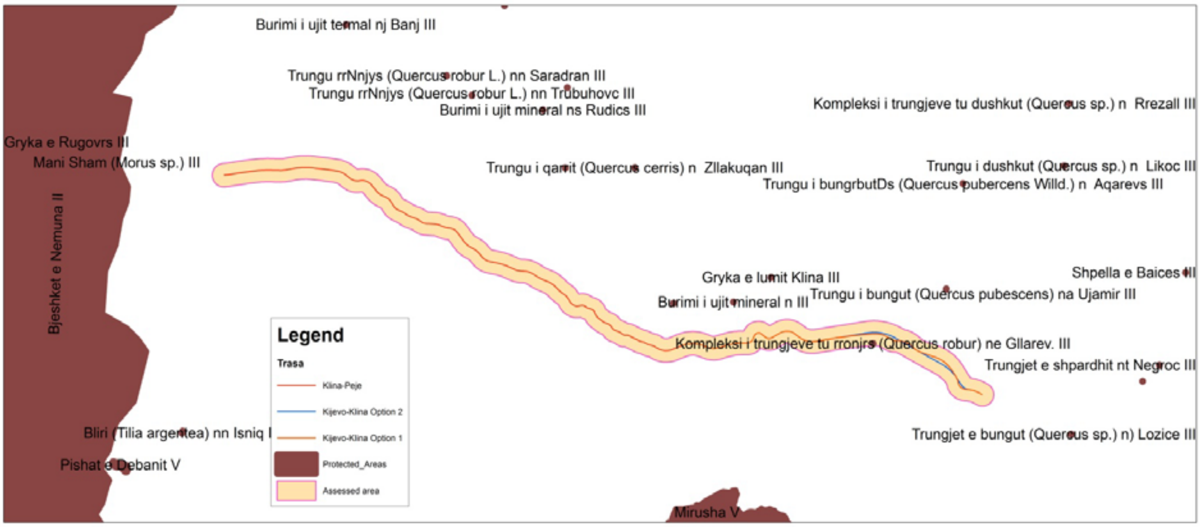


Figure 80: ***Map of protected areas in the area of motorway Kijevo-Pejë***

Larger protected areas (Bjeshket e Nemuna and Mirusha V) are far away from the projected motorway.

5.1.11.2. Assessment of Habitats` Sensitivity

Sensitivity was assessed using matrix that was specifically designed for this purpose. The matrix was used to evaluate the sensitivity of natural ecosystems and habitats exclusively.

The following ecosystems were evaluated:

- Thermophyllous forests of Oriental hornbeam and White oak
- Italian and Turkey oak forests
- Italian and Turkey oak patches

- Riparian willow and poplar woodlands
- Riparian willow and poplar belts
- Hill pastures
- Meadows
- Large rivers
- Intermittent streams
- Fields and acres
- Abandoned Arable Land
- Ruderal Vegetation
- Orchards
- Black Locust's (Robinia pseudoacacia) stands
- Mixed stands of native and introduced tree species
- Lines of trees
- Rural settlements
- Industrial, commercial and other man-made sites
- Quarries
- Roads

In total, eight different criteria were applied in order to evaluate sensitivity of the above mentioned ecosystems/habitats. Unfortunately, we were not able to apply specific criteria for threatened species of plants and animals derived from the national and international legislation/documents (red lists, Annexes II and IV of the Habitats Directive, Birds Directive, etc.).

- Habitat Directive
- Rare communities
- Well preserved natural communities
- Biocorridor function
- Landscape value
- Economic value
- Erosion prevention
- Pollution prevention value

The scoring in regard to each criterion was from 0 to 3. The meaning of these scores is the following:

- 0 - no occurrence/importance
- 1 - low occurrence/importance
- 2 - medium occurrence/importance
- 3 - high occurrence/importance

The sum of scores for a habitat determined its sensitivity. The highest possible score is 24. The rating of sensitivity was performed on the basis of the following criteria:

- 0 - 7 - low sensitivity (ls)

- 8-14 - medium sensitivity (ms)
- 14-19 - high sensitivity (hs)
- 20-24 - very high sensitivity (vhs)

The meaning of each degree of sensitivity is described as follows:

- ls – there are no special obstacles for construction works; however, the aesthetic value of the landscape should be protected and redundant destruction and excessive perturbation should be avoided; the impacts on these habitats will have lower significance.
- ms – the construction works are permitted but the work should be done with precaution measures; the destruction of these habitats or their parts should be avoided; if the destruction is inevitable than the recultivation measures should be undertaken; the impacts on these habitats will have medium significance.
- hs – such sites, biotopes or localities have great importance concerning natural, or economic value; any kind of construction work should be avoided; if no other solution is possible, maximum measures for protection of the site or locality should be undertaken; when natural sites are concerned, special construction regime should be applied (e.g. seasonal restrictions, strict territorial recommendations etc.); the damage done to these kinds of ecosystems should be revitalized and compensated in compliance with the Law on Nature Protection. Permanent monitoring during the construction work has to be organized by the Investor.
- vhs – any kind of construction work is forbidden; any kind of construction work close to such sites or localities should be restricted and measures should be undertaken as in the case with hs habitats/localities. Very high adverse impacts will cause irreversible changes in these habitats/localities i.e. they will be permanently lost. Permanent monitoring during the construction work has to be organized by the Investor as in the case of hs habitats/localities.

The results of the sensitivity matrix are presented in table below. None of the habitats was assessed as vhs. Only two (Riparian willow and poplar woodlands and belts) received **high sensitivity**. Five habitats were assessed as **ms**, while the rest of the habitats (13) were assessed as **ls**.

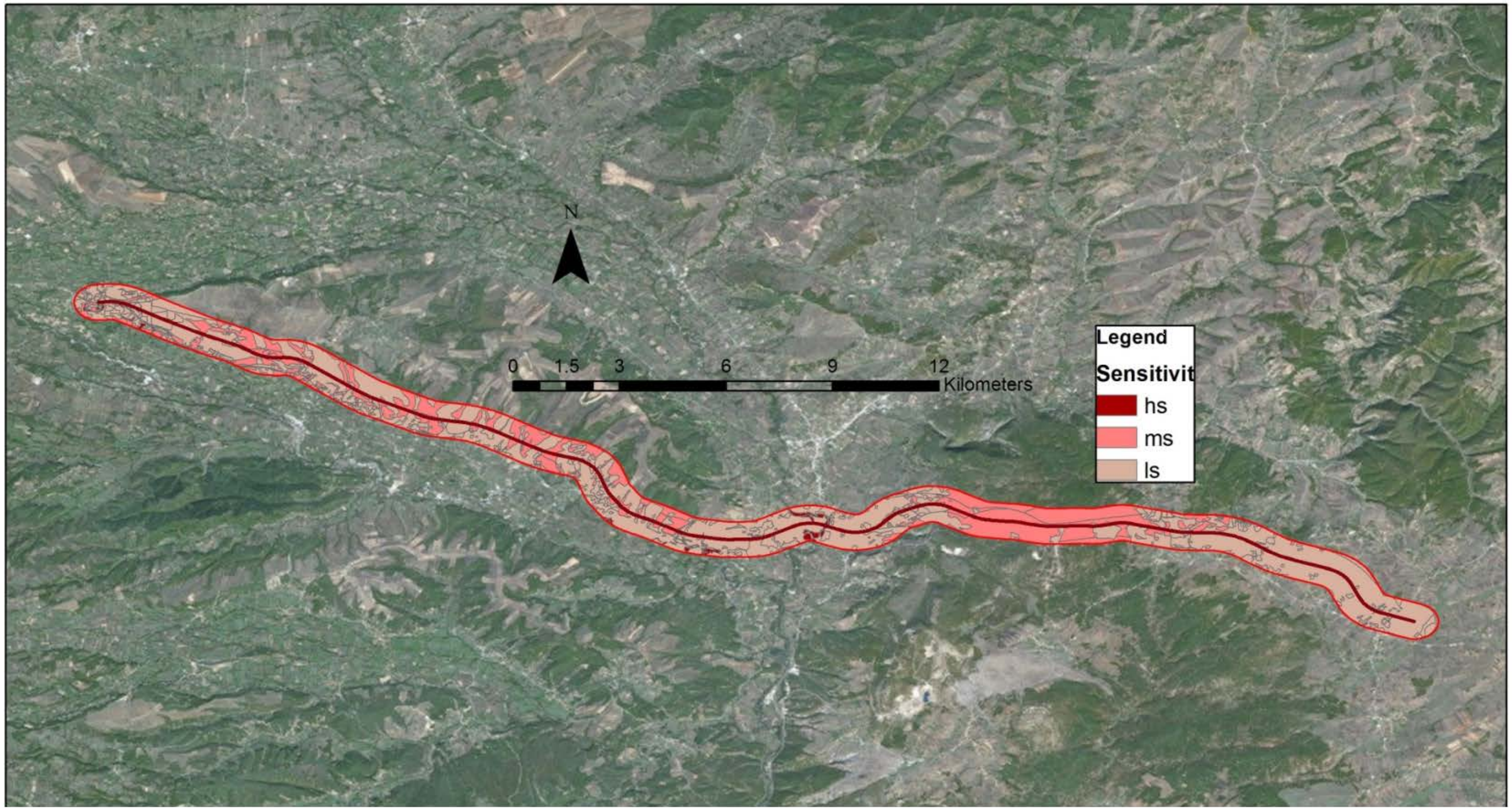
Table 59: Sensitivity estimation matrix for natural and anthropogenic habitats

HABITATS	Habitat Directive	Rare communities	Well preserved natural communities	Bio corridor function	Landscape value	Economic value	Erosion prevention	Pollution prevention value	SUM	Sensitivity
Thermophyllous forests of Oriental hornbeam and White oak	1	2	1	3	1	2	3	1	14	ms
Italian and Turkey oak forests	0	1	2	3	1	3	2	1	13	ms
Italian and Turkey oak patches	0	1	1	1	2	1	1	1	8	ms
Riparian willow and poplar woodlands	2	1	1	3	2	2	2	2	15	hs
Riparian willow and poplar belts	2	1	1	2	2	1	3	3	15	hs
Hill pastures	1	2	0	0	1	0	1	0	5	ls

HABITATS	Habitat Directive	Rare communities	Well preserved natural communities	Bio corridor function	Landscape value	Economic value	Erosion prevention	Pollution prevention value	SUM	Sensitivity
Meadows	1	1	1	0	2	3	1	0	9	**ms**
Large rivers	0	1	1	3	3	3	1	1	13	**ms**
Intermittent streams	0	0	1	1	1	0	1	0	4	**ls**
Fields and acres	0	0	1	1	1	3	1	0	7	**ls**
Abandoned Arable Land	0	0	1	1	0	0	1	0	3	**ls**
Ruderal Vegetation	0	0	1	1	0	0	1	0	3	**ls**
Orchards	0	0	0	1	2	1	1	0	5	**ls**
Black Locust's (*Robinia pseudoacacia*) stands	0	0	0	1	1	0	1	1	4	**ls**
Mixed stands of native and introduced tree species	0	0	0	1	1	1	2	1	6	**ls**
Lines of trees	0	0	0	2	2	0	1	2	7	**ls**
Rural settlements	0	0	1	1	2	3	0	0	7	**ls**
Industrial, commercial and other man-made sites	0	0	0	0	0	3	0	0	3	**ls**
Quarries	0	0	0	0	0	3	0	0	3	**ls**
Roads	0	0	0	0	0	2	0	0	2	**Ls**

The figure overleaf provides an overview of habitats according to their sensitivity which are present in the Project area.

Figure 81: Habitats in the Study Area and Assigned Sensitivity



5.1.12. Cultural Heritage and Archaeology

5.1.12.1. Study Area

The study area for the cultural heritage and archaeological aspects extends approximately 1 kilometre at each side of the motorway Alignment with a focus on 100 meters of the project footprint. This distance is considered sufficient for adequately defining and studying the cultural and archaeological setting of the project corridor.

5.1.12.2. Data Sources

Data source for cultural heritage and archaeological sites based on investigations carried out at several locations along the section during year 2015 considering the known sites along the alternatives considered. Information on cultural heritage was obtained from the Ministry of Culture, Youth and Sport (Archaeological Handbook of Kosovo), field visits have been performed in June and September 2015 in order to mark the locations (using GPS device) of social or cultural importance for the local population (cemeteries, UÇK Martyr's Memorials etc.), for which data in the Archaeological Handbook of Kosovo was not available.

5.1.12.3. Baseline Data Collection Methodology

The baseline data collection for the description of the cultural heritage and archaeological aspects has been based on a desk study using sources suggested by competent authorities and a field visits.

In addition, the Client has contacted the Administration for Protection of Cultural Heritage to obtain information on the presence of archaeological sites within the Study Area.

5.1.12.4. Baseline Assumptions & Limitations

No assumptions have been made or limitations encountered. The cultural heritage sites identified within the researched buffer of 100m on each side of the Alignment will guide the next design process and deviating the present Route. The Designers will make their best efforts to avoid all known cultural heritage sites during the Preliminary and Detailed Design stages.

5.1.12.5. Cultural Heritage and Archaeology in the Affected Municipalities

Municipality of Klinë: due to favorable geographical position this area was inhabited since the neolith. Because of this, there are many Cultural Heritage and archaeological remaining in the territory of municipality (Figure 85). Their exploration started in 1978 and the latest one took place in 2000.

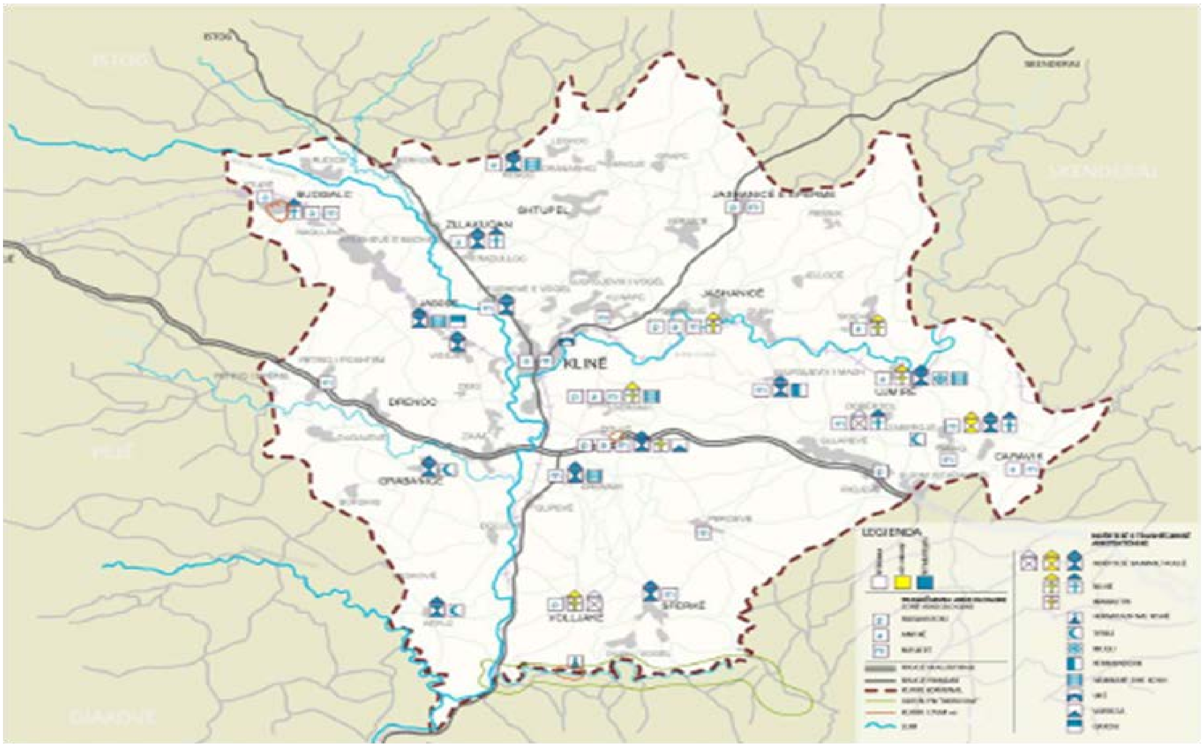


Figure 82: Archaeological Sites in the Municipality of Klinë
Data source: Institute for monument protection Prishtina

Most important Sites of Cultural and Archaeological importance are highlighted in the table below.

Table 60: Archaeological Sites in Municipality of Klinë

Settlement	Facility	Period
Gremnik	Tower	19 Century -1895
Gremnik	Tower	19 Century -1900
Qabiq	Tower	19 Century -1900
Qabiq	Church	16 Century
Grabanicë	Religious object/Turbe	17 Century
Grabanicë	Tower	19 Century
Dollc	Monastery	16 Century
Rigjevë – Gllarevë	Archaeological sites of the Bronze Age	/
Dollc	Cemetery Ilirian period	/

There are three cultural heritage sites indirectly affected by the Project. These are described under the section of cultural heritage in the Affected Settlements below.

Municipality of Pejë: Has rich Cultural Heritage background and Archaeological objects and remaining due to vivid development in past. The Pejë area development reached its highest point in the sphere of urban development in the period of Diokleun. Institutions responsible for Cultural monuments and Archaeological objects/sites in municipality are as follow:

- Institute for Protection of Cultural Monuments
- Ethnographic Museum
- Inter-municipality Archive

Municipality of Pejë has many important Cultural Heritage monuments and archeological sites in the territory of the municipality. The most important ones are 10 Archaeological sites, 102 Towers, 12 Churches, 12 Mosques, 2 fortresses.

On the figure below it is presented the map of archeological sites in municipality territory.

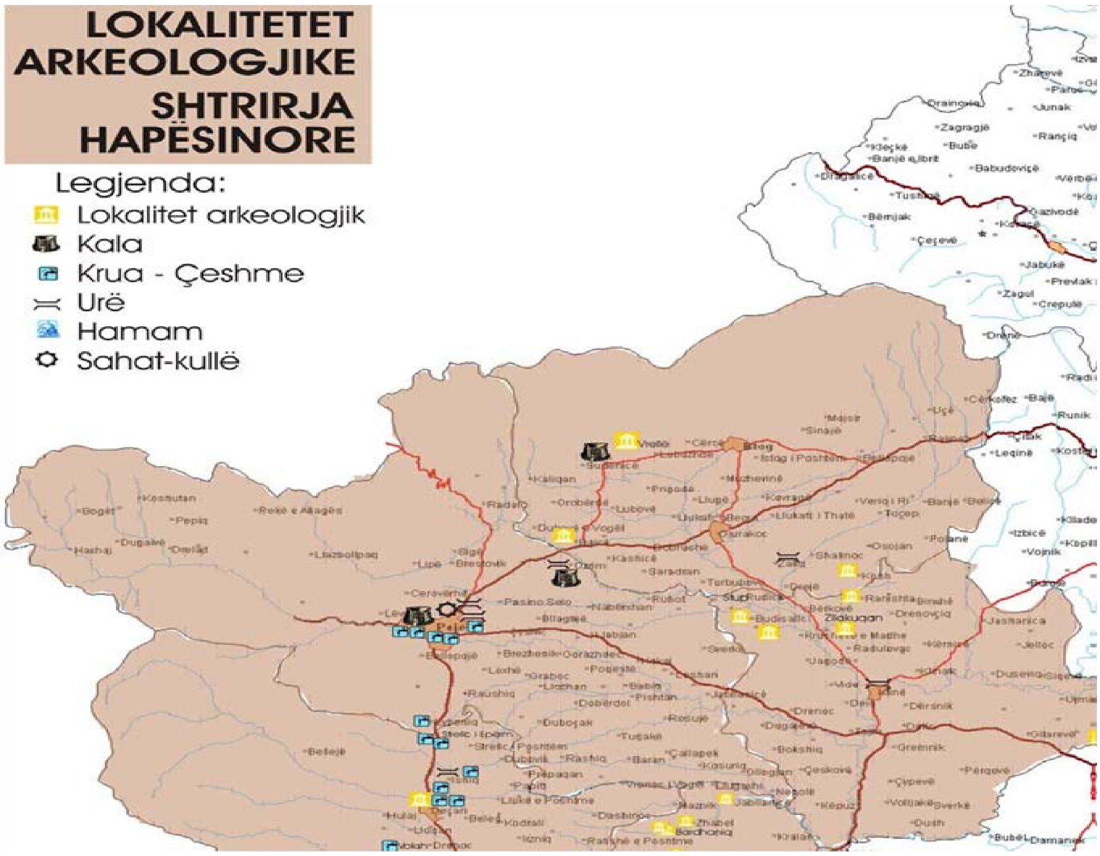


Figure 83: Archaeological Sites Location in Municipality of Pejë

Data source: Development Plan of Pejë

On the territory of the Municipality of Pejë there aren`t any important cultural and archeological sites within the Study Area. All existing cultural heritage sites are located aling the existing road N9. These are:

- Graves of Martyrs located on the right side of the road to Pejë is in village Grabanicë

- Graves of Martyrs: On the segment of Preja road, on the left side in the village Poterq, there is another cemetery belonging to the victims of the last war.

5.1.12.1. Cultural Heritage and Archaeology in the Affected Municipalities

In order to identify cultural heritage sites of interest for the Project, a walk over has been carried out with the assistance of an archaeologist. The sites have been mapped out on a Google Earth background map. 18 cultural heritage sites have been identified in total, out of which only four are located in the buffer of 1 km. Their location and distance to the motorway is shown in the figures below:

Figure 84: Cultural Heritage Sites in the Buffer of 1 km of the Motorway

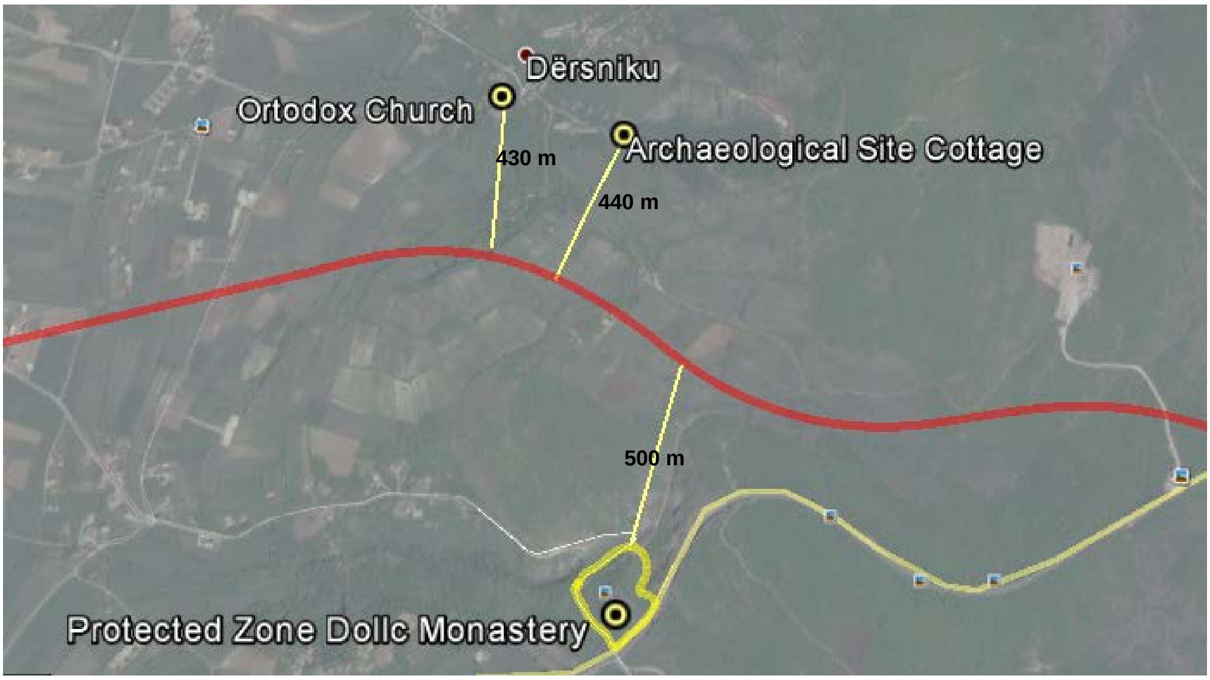


Figure 85: Cultural Heritage Sites in the Buffer of 1 km of the Motorway

Table 61: Cultural Heritage Sites Within a Buffer of 1 km Along the Motorway

No	Cultural Heritage Site	Location	Distanve to the Alignment (m)
1	Archaeological Site of Bronze Age	Rigjevë - Gllareve	330
2	Archaeological site – settlement from the period I-IV century; cottage from II_III century	Dersnik	440
3	Orthodox church old and renovated	Dersnik	430
4	Monastery	Dollc	500

500 meters away of of project corridor, in area of village Dollc, there is a protected zone of the Monastery of Dollc. The monastery is ruined. Its location is not protected and the access to the location is not controlled by any institution. The project activities should take into consideration the location of the protected zone during its planning and implementation. The protected zone is shown in the figure overleaf.

Figure 86: Protected Zone of Dollc Monastry.
Data source: Development Plan of Klinë

The Project corridor will not influence direcly any of the Cultural Heritage or Archaeological sites. However, within the corridor there is a high probability for discovery of historical remains during the construction works. In that case the implementer should follow legal procedure which is prescribed by the Law and provided in below sections of this document.

5.1.13. Social Baseline

This part of the ESIA describes the socio-economic and land use baseline conditions. The key objective of the social baseline is to identify existing social and economic condition of the households and Non-Residential Properties (businesses) within the project area.

It is also a central part of the planning and implementation process as it provides a key benchmark against which project performance and positive and negative impacts on people and communities can be assessed through periodic monitoring and evaluation during the life of the project.

5.1.13.1. Data source and Methodology.

Data for establishing the social baseline have been collected using the following methods:

- Secondary data gathering (May – October 2015) from the Office of Statistics, relevant studies / reports
- Collecting responses of municipal authorities to tailored questionnaires aimed to map out the social and cultural profile of the communities and businesses located within in the project footprint.
- Interviews with representatives of Ministry of Culture, Youth and Sport (May 2015) and subsequent data gathering on cultural heritage;
- Field visits (June and September 2015) in order to mark the locations (using GPS device) of sites attributed with social or cultural importance for the local population (cemeteries, UÇK Martyr's Memorials etc.), for which data in the Archeological Handbook of Kosovo was not available.
- Interviews with the representatives of the Employment Offices in Klinë and Pejë and with the Directorate for economic development (November 2015); the aim of these meetings was to complement the statistical information for affected settlements.
- Social Survey was designed and implemented (March-May 2016) in order to establish the livelihood / vulnerability status in the Affected Settlements located within the footprint of the considered alternatives - Existing, and North 1 & 2 Alignments.

This Social Survey has been conducted for representative samples of the following target groups:

- Households of the affected settlements for the two alternatives separately
- Non-Residential Properties (businesses) within the affected settlements for the two alternatives separately
- Representatives of the affected settlements

For each target group questionnaires have been developed. The questionnaire for households, among others, covers issues such as main sources of livelihood and dependence on the land to be acquired. The questionnaire for businesses is intended to provide information on the main activity, turnovers, number of employees and vendors. The representatives of settlements are targeted with the aim to complement statistical information and specifically to obtain information on the accessibility and quality of municipal services, social infrastructure, main income sources, employment situation etc.

The households have been selected randomly, taking into consideration the population size of affected settlements as well as the average size of the families in the municipalities of Pejë and Klinë (6 members for Pejë and 7 members[62] for Klinë respectively). The businesses have been selected randomly and based on the size of the settlement. To some householders the questionnaire for

[62] https://ask.rks-gov.net/rekos2011/repository/docs/REKOS%20LEAFLET%20ALB%20FINAL.pdf

general settlement related data has been given; so the settlement representatives are in the same time households responding to the livelihood and land dependence questions. In the table below the number of designated interviews is presented.

Table 62: Sample Size for the Alternative Alignments

Target Group	Alt. 1: Existing Road	Alt 2: Projects	Total
Household representatives	71	165	236
Business owners	21	67	88
Representatives of the affected settlements			11
Total			335

This survey was initially used to select the preferred alternative for the National Road N9, section from Kijeve to Zahaq. As the sample covers affected settlements located in the footprints of both considered alternatives, the obtained results were cumulative; after the selection of the Project further scrutiny and extrapolation of the results was undertaken for the selected Alignment, to the extent possible.

One should bear in mind that the respondents did not feel confortable to share some sensitive information (e.g. income). Others did not actually know the answer (e.g. type of water supply). Therefore, in the settlements` related data certain gaps prevail. At this stage we cannot point out which vulnerable people will be affected as we do not know the exact position of the motorway Alignment, but we know whether and which vulnerable groups exist in the settlements. Also we can identify the type of businesses potentially affected by the project as a result of the anticipated reduction of traffic flows along traffic diversion from the existing road.

5.1.13.2. Social Study Area Definition

The baseline is consisted and reviewed on two levels.

- Micro-regional level which includes two affected municipalities, Klinë and Pejë respectively, and;
- Local level in the sense of affected settlements within the project area.

Within these two levels the baseline describes the communities, their facilities and services transport networks, economic activity and vulnerable groups which may be potentially affected by the Project.

5.1.13.3. Baseline Assumptions and Limitations

Given the conceptual design stage of the project the available data is not sufficient to establish a Social Baseline and consequently to assess Project related impacts, as well as define proper mitigation measures. Existing gaps are in the following compartments:

- Data on social and municipal services` facilities within the Project footprint is not available;
- The actual number of properties both residential and non-residential within the Project footprint is not known;
- Number of people directly affected by the project, their employment status and dependence on land to be potentially acquired is not known;
- The level of vulnerability of the directly affected people has not bee studied;
- Data on the legal status (informal versus formal) of the affected settlements in the Municipality of Pejë is missing;
- The size of the land to be acquired for land use and land take purposes is not known.
- There is no information on ownership on forest land to be acquired potentially for temporary project compounds;
- There is information gap on the number and legal status of the affected non-residential properties located on project footprint

Hence, the Social Survey executed in March-May 2016 by no means replaces the detailed Surveys which will have to be undertaken at the Preliminary and Detailed Design stage.

The present socio-economic survey will be updated during the **Preliminary Design** stage to identify:

- vulnerable groups that may be impacted by the Project,
- changes to access,
- road safety,
- people potentially losing land, property, business premises or income due to the project

The Survey at the **Detailed Design** stage will provide sufficient information for the physical and/or economical resettlement purposes.

Notwithstanding, the information obtained under the Social Survey is analysed as a basis for mapping out the affected communicates.

5.1.13.4. Affected Municipalities

The Social Study Area at the municipality level comprises two municipalities Pejë and Klinë. The municipality of Malishevo is affected marginally; therefore, it is not included in elaborations.

Both municipalities belong to the district of Pejë and the map of their geographical location is presented below.

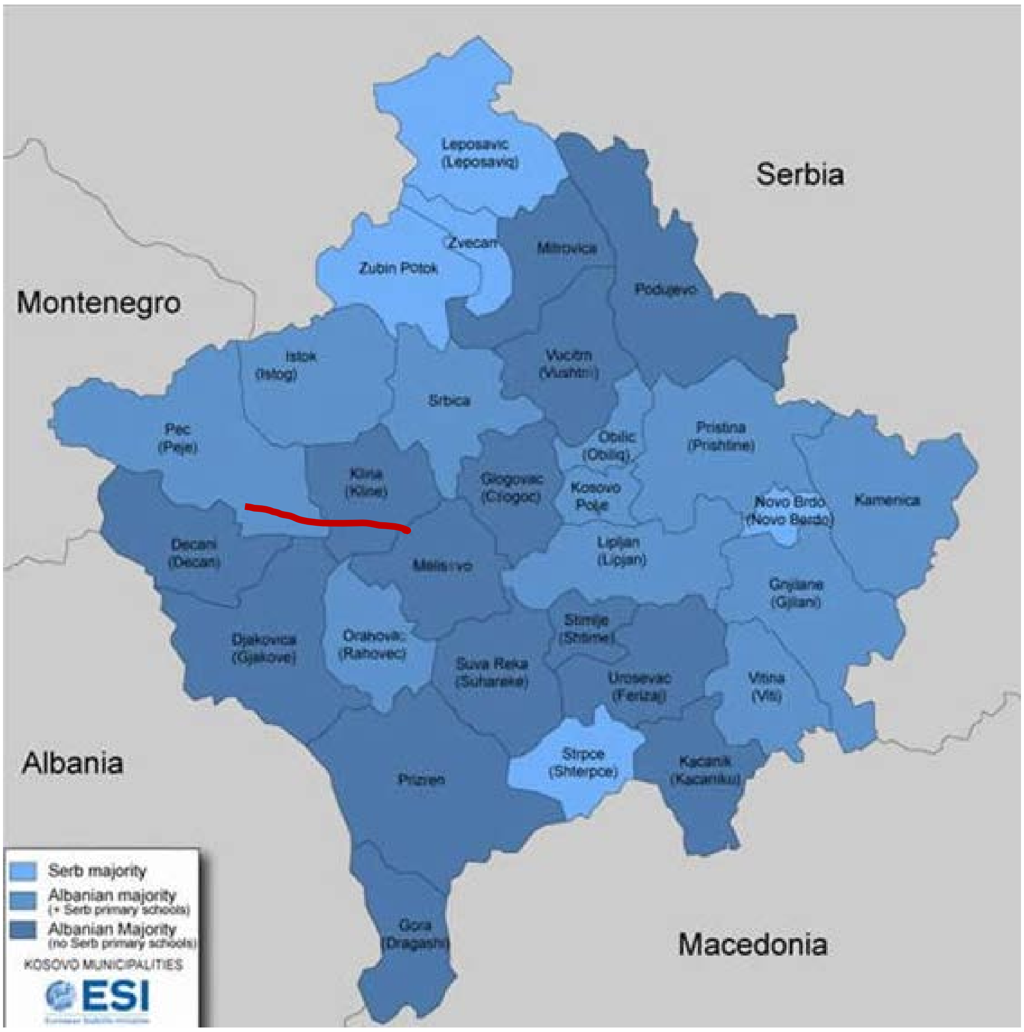


Figure 87: Municipality Boundaries

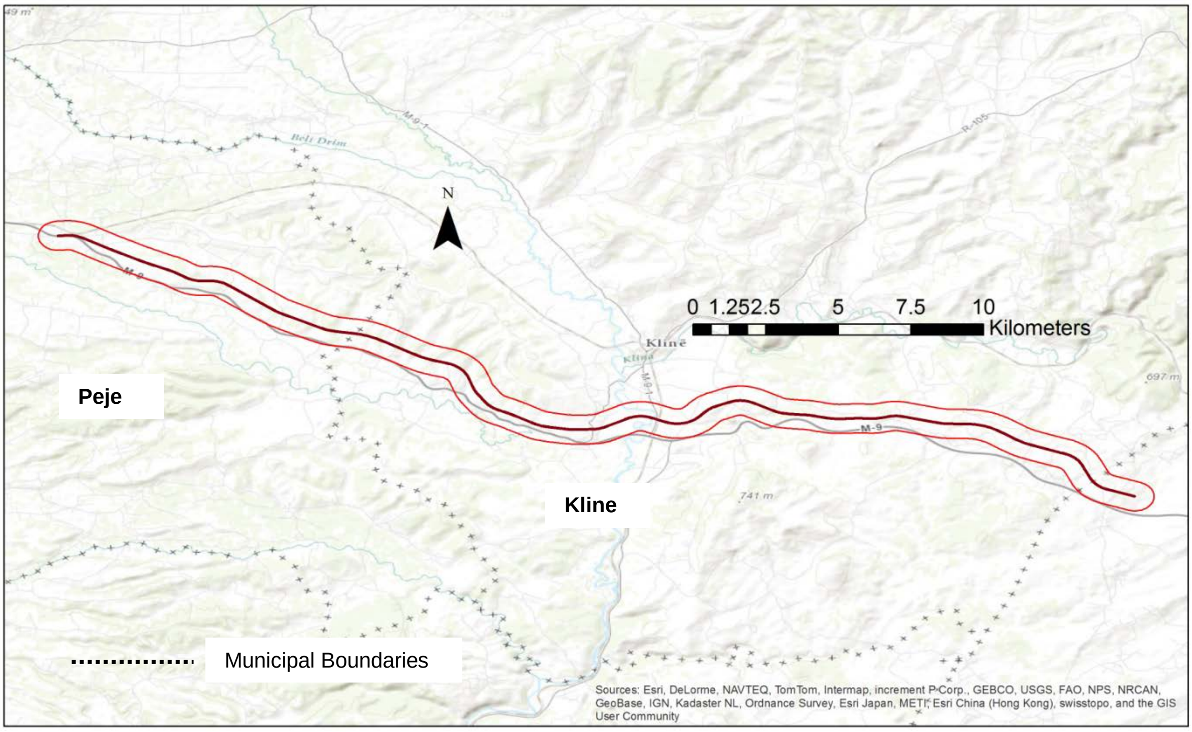


Figure 88: Project Footprint on an Administrative Map

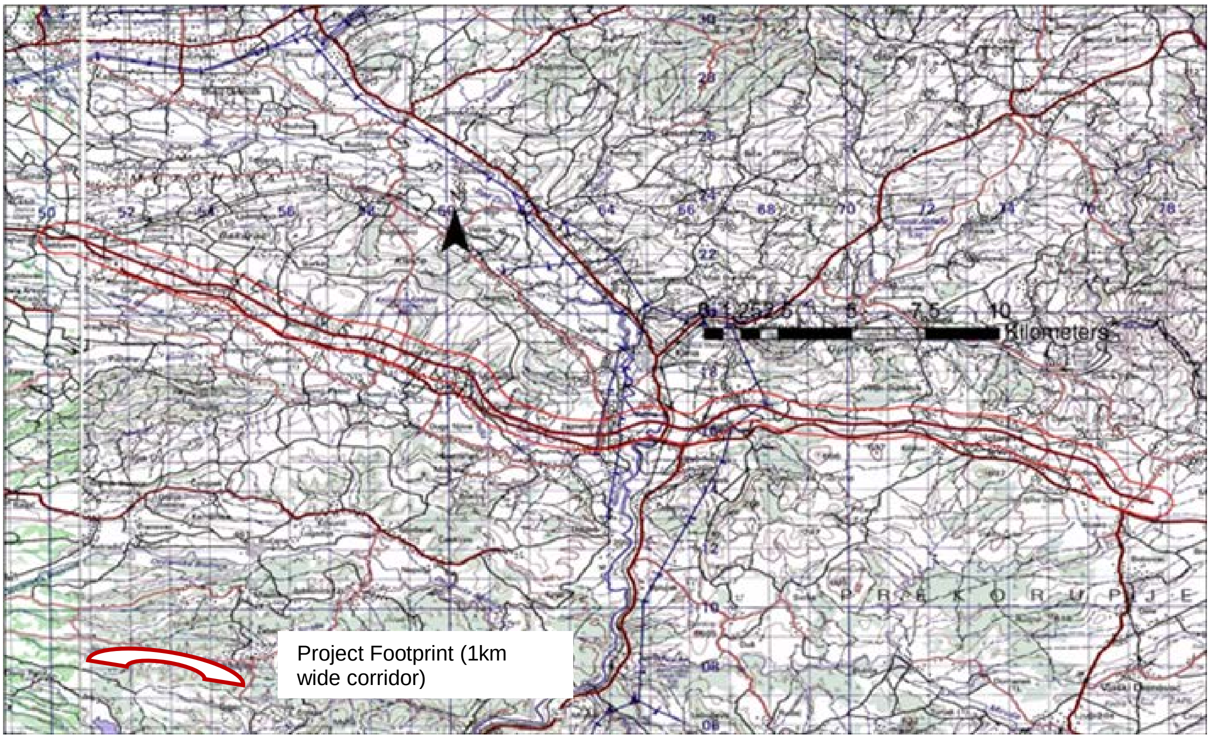


Figure 89: Project Footprint on a Topographic Map

The Municipality of Klinë

Klinë lies in the western part of Kosovo and in the northwest of Dukagjini valley. It neighbors with Pejë /Pec, Istog/Istok, Skenderaj /Serbica, Drenas/Glogovac, Malishevë/Malisevo, Rahovec /Orahovac and Gjakovë/Djakovica. Municipality of Klinë is spread on 308.8 km² and has 14 territorial units (center of the villages) with total of 54 settlements. There are 38,496 inhabitants living in the territory of Municipality of Klinë and this population is mostly engaged in agriculture.

The territory of the Municipality of Klinë and of the whole Dukagjini valley is surrounded by mountains.

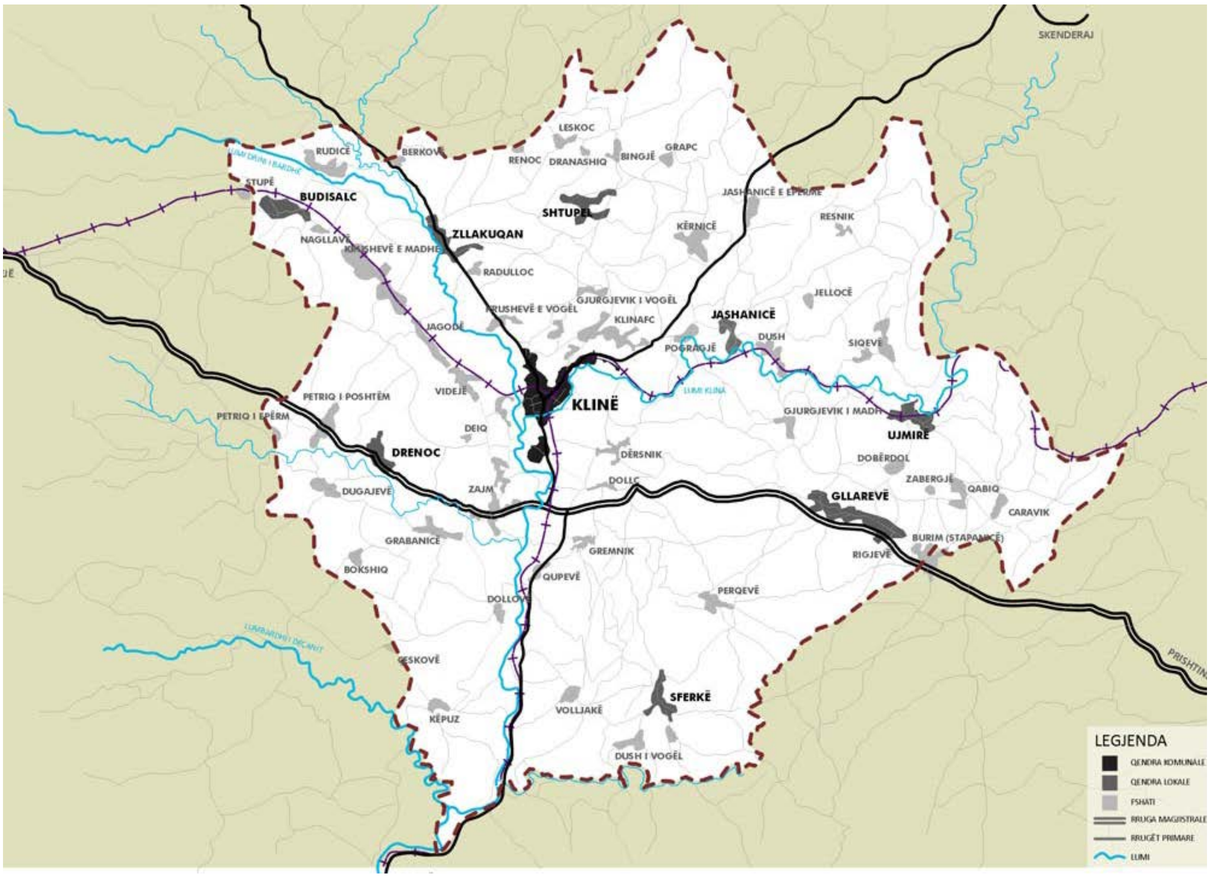


Figure 90: Map of the municipality of Klinë

Along the flow of river Mirusha, in the southern part and southwest of Klinë, waterfalls are located; they represent a rare natural beauty where rich flora and fauna are found. This complex of 200 ha is a protected zone, with a good for tourism development potential.

The Municipality of Pejë

The municipality of Pejë is located in the foothills of the Accursed Mountains near the border with Montenegro, in western Kosovo. The municipality of Pejë covers an area of approximately 603 km² and includes Pejë city and 76 villages. The municipality is divided into 27 territorial communities with an approximate population of 160,000 inhabitants. The number of people registered in Pejë is 81,026 inhabitants. 52% of the population lives in urban areas whilst the 48% of the population resides in villages.

The city of Pejë is at the centre of Kosovo`s most western region, at the foothills of the “Accursed Mountains” rising above Rugova Gorge. It lays in the north-western part of the fertile Plains of Dukagjini. Lumbardhi e Pejë s flows throughout the town of Pejë to the rocky Valley of Rugova, further flowing into the White Drin River.

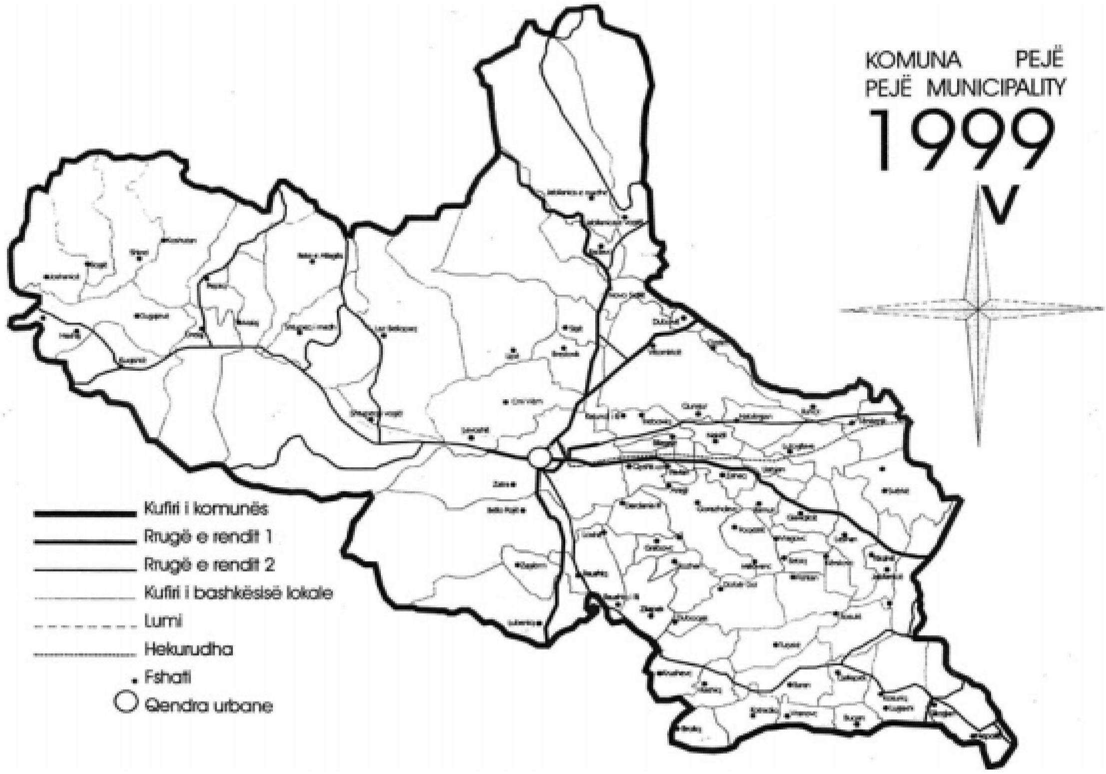


Figure 91: Map of the Municipality of Pejë

5.1.13.5. Affected Settlements

The Project affects settlements within the municipalities Klinë and Pejë. The Project affects 13 settlements.

Geographical Distribution of Affected Settlements

The Figure 92 below presents the distribution of the settlements along the route.

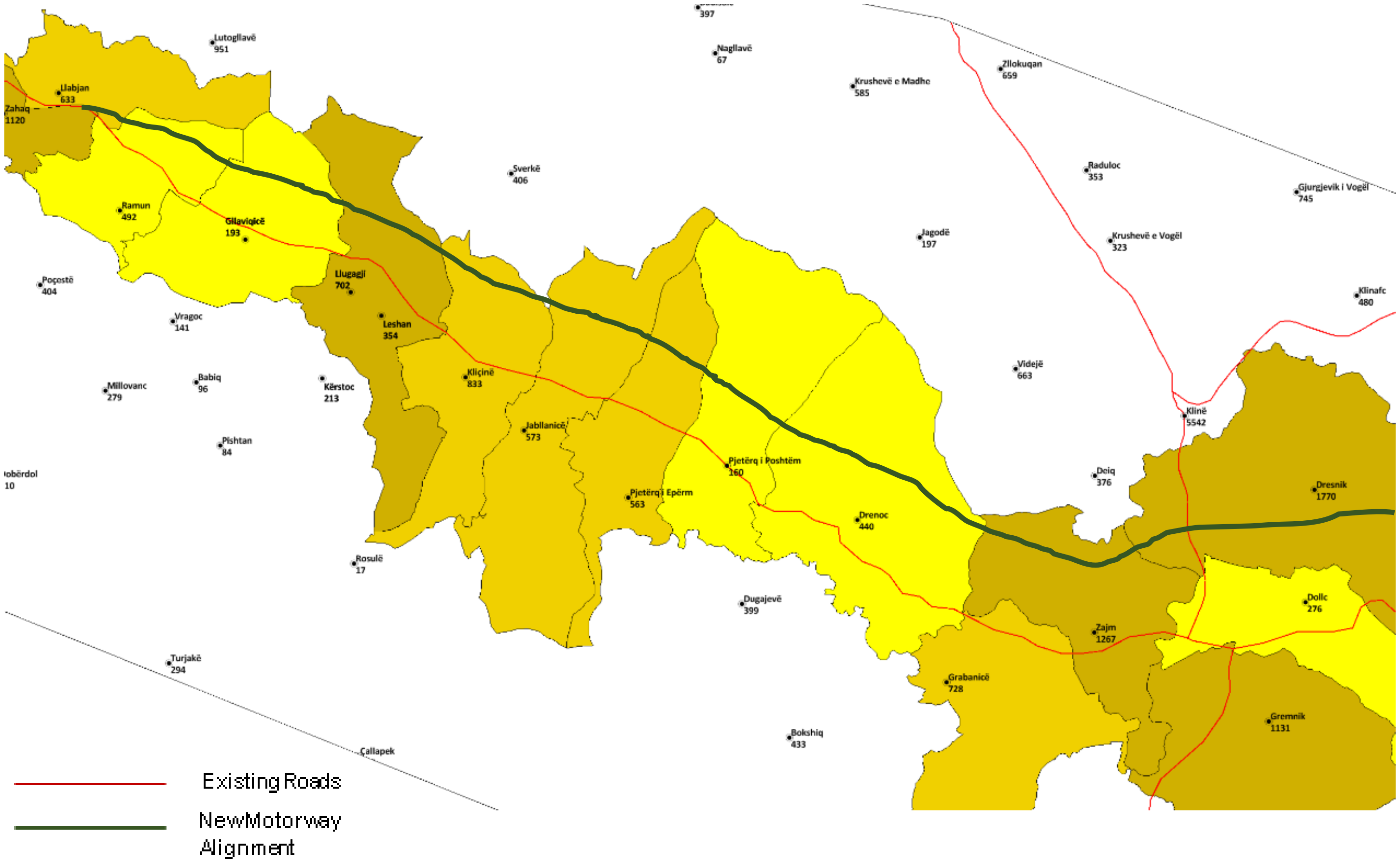


Figure 92: Settlements Affected by the Project

The Alignment avoids densely populated areas, bypassing the villages Drsnik, Jabllanicë, Kliçinë, Leshan, Lugagji, Gllaviqicë, Ramun and Zahaq. It bisects Dollc, Zajm and Drenoc. Route also crosses the northern part of the village Pjetërq I Poshtëm leaving a small settlement disconnected from the main village. The settlements are positioned on elevations elevation 400 m +/- 50 m with the highest - Zahaq (450 m.a.s.l.) and the lowest in Zajm (375 m.a.s.l.). The position of affected settlements (left hand side – LHS or right hand side – RHS) relative to the route of the planned motorway is shown in the table below.

Table 63: Directly affected settlements and their relative position to the Alignment

Name of the Settlement	Position relative to the Alignment	
	Bisected (yes/no)	Side of the Motorway: (Direction Prishtina to Pejë);
Drsnik	no	RHS
Dolc	no	LHS
Zajm	yes	LHS/RHS
Drenoc	yes	LHS/RHS
Pjetërq I Epërm	no	LHS/RHS
Pjetërq I Poshtëm	partially	LHS
Jabllanicë	no	LHS
Kliçinë	no	LHS
Leshan	no	LHS
Lugagji	no	LHS
Gllaviqicë	no	LHS
Ramun	no	LHS
Zahaq	yes	LHS/RHS

Table 64 provides data on the affected settlements including figures on the potentially affected population. The order of listed settlements follows the geographical distribution of the Route, starting from Dërsnik and ending at the entrance of Zahaq.

Table 64: Distribution of Affected Settlements, Respective Population and Elevations

Municipality	Settlements	Population in 2011	Elevation (m.a.s.)
Klinë	Dërsnik	1,770	446
Klinë	Dollc	276	452
Klinë	Zajm	1,267	375
Klinë	Drenoc	440	446
Klinë	Pjetërq i Epërm	563	397
Klinë	Pjetërq i Poshtëm	160	405
Pejë	Jabllanicë	573	405
Pejë	Klicinë	833	411
Pejë	Leshan	354	423

Municipality	Settlements	Population in 2011	Elevation (m.a.s.)
Pejë	Lugaxhi	702	420
Pejë	Gllaviqicë	193	433
Pejë	Ramun	492	420
Pejë	Zahaq	1,120	450
Total	13	8,743	

6 settlements belong to the municipality of Klinë and 7 are in the municipality of Pejë. In total 8,743 inhabitants reside in the affected settlements. The number of people directly affected by the Project is not known at present due to the early stage of the design.

Demography of the Affected Municipalities

The the basic indicators of the municipality level demographic characteristics are as follows:

Table 65: Basic Demographic Indicators of Affected Municipalities

Municipality	Inhabitants	Estimation for 2014	Area in km^2	Density	Urban Population	Rural Population	Number of settlements
Klinë	38,496	39,527	309	124.6	5,908	32,588	54
Pejë	96,450	97,776	603	160.0	48,962	47,488	79
Total	134,946	137,303	912		54,870	80,076	133
%	-	-	-	-	40.66%	59.34%	-

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[63]

The sex ratios show that there aren`t significant differences between the males` and females` participation within the municipalities and among affected municipalities. The gender structure and the number of dwellings in the affected municipalities is given in Table 66 below.

Table 66: The population According to Gender in the Affected Municipalities (2011 Census)

Municipality	Total inhabitants	Male	Female	Households	Conventional dwellings occupied by usual residents
Klinë	38,496	19,193	19,303	5,842	5,824
Pejë	96,450	48,152	48,298	17,682	17,541
Total	134,946	67,345	67,601	23,524	23,365
%	**100,0%**	**49,9%**	**50.09%**	**-**	**-**

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[64]

[63] https://ask.rks-gov.net/eng/

[64] https://ask.rks-gov.net/eng/

The following table gives the overview of the key features related to the education in the affected municipalities.

Table 67: The population according education in the affected municipalities (2011 Census)

Municipality	No completed education	Primary education	Lower secondary	Upper secondary	High school	BsC	MsC	PhD
Klinë	1,808	3,702	12,640	7,117	646	1,040	127	18
Pejë	3,988	7,194	25,628	26,311	2,574	5,206	495	61
Total	5,796	10,896	38,268	33,428	3,220	6,246	622	79
100 %	4,30%	8,07%	28,36%	24,77%	2,39%	4,63%	0,46%	0,06%

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[65]

The share of the population in the range of 15 - 64-year-old is 61%. The share of population aged above 65 is 6% of the population.

Table 68: Population According to the Age in the Affected Municipalities (2011 Census)

Municipality	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 +	Total
Klinë	7,225	8,438	6,932	5,268	3,938	2,988	2,000	1,279	**38,496**
Pejë	8,150	18,514	16,451	13,919	11,869	9,040	6,018	4,765	**96,450**
Total	15,375	26,952	23,383	19,187	15,807	12,028	8,018	6,044	134,946
%	11.39	19.97	17.33	14.22	11.71	8.91	5.94	4.48	100

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[66]

According to the age cohorts of people who leave in the affected settlements, the highest % is the cohort between 10-19-year-old followed by 0-9-year-old, which indicates that the majority population is very young.

Table 69: Affected Age Groups of Population

	Age Cohorts									
Settl.	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total Pop.
Drsnik	298	363	307	252	197	165	114	57	17	1770
Dollc	60	59	44	39	26	19	16	10	3	276
Zajm	283	266	220	195	114	95	63	23	8	1267
Drenoc	92	96	69	64	42	29	27	17	4	440
Pjetërq i Epërm	99	111	98	81	65	49	27	22	11	563
Pjetërq i Poshtëm	30	38	26	19	20	9	9	7	2	160
Jablanicë	91	126	99	76	53	61	34	17	16	573
Kliqinë	170	160	132	137	83	67	52	28	4	833
Leshanë	67	79	50	59	41	21	22	11	4	354
Lugaxhi	118	121	138	88	79	76	37	30	15	702
Gllaviçicë	34	34	45	18	26	11	15	8	2	193

[65] https://ask.rks-gov.net/eng/

[66] https://ask.rks-gov.net/eng/

Age Cohorts										
Settl.	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80+**	**Total Pop.**
Ramun	105	105	74	73	49	48	25	10	3	492
Zahaq	207	219	212	148	120	92	75	36	11	1120
TOTAL	1654	1777	1514	1249	915	742	516	276	100	8743
%	18.92	20.32	17.32	14.29	10.47	8.49	5.90	3.16	1.14	100

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[67]

The share of male population is slightly higher compared to female population. In terms of the ethnic groups affected the vast majority of population, i.e. 96.55% is with the Albanian ethnic background whereas 4.45% belongs to other ethnic groups. Within this group the highest number of representatives are with Egyptian background 2.34% and the rest of them are represented with lower shares. The gender and ethnical structure in the Affected Settlements is highlighted on the table below.

Table 70: Affected total population, gender and ethnic distribution

Settlement	Gender Structure			Ethnic Structure					
	Popul.	Male	Female	Albanian	Serb	Roma	Turk	Egiptian	No data
Drsnik	1,770	895	875	1,751	10	/	/	4	/
Dollc	276	141	135	273	30				
Zajm	1,267	617	650	1,259	/	/	/	8	/
Drenoc	440	210	230	438	/	/	/	/	2
Pjetërq i epërm	563	274	289	522	/	14	/	26	1
Pjetërq i poshtëm	160	82	78	160	/	/	/	/	/
Jablanicë	573	298	275	538	/	/	/	34	/
Kliqinë	833	435	398	811	/	/	/	22	/
Leshanë	354	187	167	262	/	/	/	92	/
Lugaxhi	702	340	362	702	/	/	/	/	/
Gllaviçicë	193	95	98	193	/	/	/	/	/
Ramun	492	245	247	492	/	/	/	/	/
Zahaq	1,120	558	562	1,040		54	5	19	2
TOTAL	8,743	4,377	4,366	8,441	40	68	5	205	5
%	100	50.06	49.94	96.55	0.46	0.78	0.06	2.34	0.06

When it comes to the level of education of the population within the affected settlements the undertaken Social Survey reveals the following situation:

[67] https://ask.rks-gov.net/eng/

Table 71: Education Level of the Potentially Affected Population in the Project Footprint

Unfinished school	Primary Education	Secondary education	Higher Education	Studying
1.3%	11.2%	14.2%	3.4%	0.0%

Data Source: Social Survey, 2016

As it can be seen from the table above majority of the population has completed secondary and primary education.

In regard to the religious affiliation of the affected population, majority of them is with Muslim religion 80%. The religious distribution is presented on the table below.

Table 72: Distribution of religions within the Project Footprint

Religion	Muslim	Catholic	Orthodox
%	80	17.1	2.9

Source: Social Survey, 2016

5.1.13.6. Summary of Demography in the Affected Settlements

Table 73: Summary of Demography in the Affected Settlements

Settlement Name	Average Family size, Age and Completed Education Level
DRSNIK	The age of the interviewed households is in the range of 8-79 with the majority of them belonging to the cohort of 30-49-year-old. The average household size is 6 members. In terms of education, the majority of interviewees have completed primary or secondary education.
DOLC	The age of the interviewed households is in the range of 9-90 with the majority of them belonging to the cohort 50-59-year-old. The average household size is 5.42. In terms of education, the majority of interviewees have completed primary or secondary education.
ZAJM	The age of interviewed households is in the range of 1 – 94 with the majority of them belonging to the cohort 20-29-year-old. The average household sizeis 5.15 members. In term of education the majority of interviewees have completed primary and secondary
DRENOC	The age of interviewed households is in the range of 7-76 with the majority of them belonging to the cohort 20-35. The average household size is 5.15 members. In terms of education the majority of interviewees have completed primary and secondary education
PJETËRQ I EPËRM	The age of interviewed households is in the range of1-84 with the majority of them belonging to the cohort of 30-45-year-old. The average household size is 5.53 members. In terms of education, the majority of interviewees have completed primary or secondary education
PJETËRQ I POSHTËM	The age of interviewed households is in the range of 5-62 with the majority of them belonging to the cohort of 20-40-year-old. The average household size is 4.8 members. In terms of education, majority of interviewees have completed primary or secondary education.
JABLLANICË	The age of interviewed households is in the range of 3-70 with the majority of them belonging to the cohort of 25-49-year-old. The average household size is 6.9 members. In terms of education, the majority of interviewees have completed primary or secondary education
KLIÇINË	The age of interviewed households is in the range of 3-65 with the majority of them belonging to the cohort of 20-49-year-old. The average household size is 4.1 members. In terms of education, the majority of interviewees have completed primary or secondary education.
LESHAN	The age of interviewed households is in the range of 7-72 with the majority of them belonging to the cohort of 20-49-year-old. The average household size is 4 members. In terms of education, the majority of interviewees have completed primary or secondary education
LUGAGJI	The age of interviewed households is in the range of 1-85 with the majority of them belonging to the cohort of 40-59-year-old. The average household size is 4 members. In terms of education, the majority of

Settlement Name	Average Family size, Age and Completed Education Level
	interviewees have completed primary or tertiary education
GLLAVIQICË	The age of interviewed households is in the range of 4-80 with the majority of them belonging to the cohort of 30-49-year-old. The average household size is 4.2 members. In terms of education, the majority of interviewees have completed primary or secondary education.
RAMUN	The age of interviewed households is in the range of 3-60 with the majority of them belonging to the cohort of 20-39-year-old. Average household size is 3.7 members. In terms of education, the majority of interviewees have completed primary or secondary education
ZAHAC	The age of interviewed households is in the range of 4-69 with the majority of them belonging to the cohort of 30-49-year-old. Average household size is 5.3 members. In terms of education, the majority of interviewees have completed primary or secondary education

5.1.13.7. Legal status of the Affected Settlements

Informal settlements are known with different names such as illegal, wild, unplanned settlement etc. Legislation recognizes them as in formal settlements. These settlements are characterized with following features: informal ownership on property; inadequate access or unavailability of basic services; inadequate or lack of participation in the government.

Main reasons why they are created pertain to: Fast Urbanization. Lack of management of the land by the authorities; Lack or poor management of urban and spatial planning; Lack of human and financial resources of the local government(s).

Identifying informal settlements is important when it comes to the resettlement and land acquisition plan and its effect on the households and communities.

Municipality of Klinë: there are 171 formal settlements and 21 informal settlements. From the project affected settlement following are informal:

Pjetërq i Poshtëm, Drenoc, Zajm, Dërsnik

For municipality of Pejë: Data on informal settlements within the Project footprint is not available and this should be further explored as stated in the section on Baseline Gaps and Limitations.

5.1.13.8. Land Use

In term of the total surface of the land use in Kosovo the total available surface is 1,094,200 ha out of which the highest portion belong so the class of forest. Detailed breakdown is presented on the table below

Table 74: Total Area of Kosovo by Land Use Classes

Land use Class	Area (ha)
Forest	460,800
Other wooded Land	28,200
Barren Land	23,400

Land use Class	Area (ha)
Agricultural land	342,400
Meadows and Pastures	153,200
Urban Areas, built- up land	40,000
Water	4,600
Not classified	41,600
Total	1,094,200

Data Source: Inventory Document, FAO Kosovo Forest Inventory Project, 2003

The land use pattern within the footprint of the Project is analysed on municipal and local level. Municipality related data has been obtained from statistical information; the land use patterns for affected settlements have derived from the habitat mapping and the Social Survey.

The rural settlements and the surrounding agricultural lands, farming, orchards, vineyards, grasslands and meadows shape the land use pattern at both municipality and settlement levels. The farming areas consist of small parcels of land. Non-productive or less intensively used areas are the fallow land, rivers with marshland, willow groves and shrubs, and scattered isolated trees.

5.1.13.9. Land Use in the Affected Municipalities

The Municipality of Klinë

The land in the territory of the Municiality of Klinë is very favourable for agricultural activities as 87.7% of the terrain is elevated below 600 m.a.s.l. The share of agricultural land is 95%.

Table 75: Agricultural Land in the Municipality Klinë

Municipality	Arable land	Greenhouses	Meadows	Orchards	Vineyards	Fallow Land	Pasture	Forests	Other
Klinë	3,694.51	85.08	1,733.99	231.60	156.43	722.32	390.17	1,983.77	737.11

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics[68]

Information on forest land is not available. Most of forests in the municipality are privately owned. Their management is regulated under forest management plans which are developed by the state and implemented by the municipalities.

The Municipality of Pejë

Out of 60.289 ha, 51.74% is classified as agricultural land, 42.66% are forests. The agricultural land eoncompasses 67 % arable land and 33 % pastures. Only 67.5 % of arable land is being cultivated.

[68] *https://ask.rks-gov.net/eng/*

Table 76: Agricultural Land in the Municipality Pejë

Municipality	Arable land	Greenhouses	Meadows	Orchards	Vineyards	Fallow Land	Pasture	Forests	Other
Pejë	3,001.19	189.02	3,897.43	320.51	131.84	598.93	727.83	1,474.85	791.10

In total, 8.501 hectares are irrigated from regular irrigation systems. However, due to the destruction of channels, blockage of water streams, etc, only 40 % of land is being irrigated. Illegal irrigation is present on 4.108 hectares: water captured from rivers and wells is conveyed through free-flow channels which are rebuilt every year.

Information on forest land is not available. Most of forests in the municipality are privately owned. Their management is regulated under forest management plans which are developed by the state and implemented by the municipalities.

5.1.13.10. Land Use in the Project Footprint

Agricultural land dominates in the project footprint with 1,842.5 ha or 58.71%. It is presented by fields and acres and smaller surfaces of orchards, fallow fields, etc. The second land use type according to the relative share in the total territory is forested land (forests and forest patches, riparian woodlands and belts, tree lines, mixed tree stands, etc.). Artificial areas and human settlements are covering 265.5 ha or 8.46% (Tab. 78). Seminatural grasllands take an important share of the land use in the analysed area.

Table 77: Area (ha) of land use types (within a buffer of 2 x 500m)

Land Use	Buffer of the Alignment
Forested land	922.48
Semi natural grasslands	107.85
Agricultural land	1842.48
Artificial areas and settlements	265.48

5.1.13.11. Land Take

The initial analyses of the Land Take requirements have been carried out by mapping out various land use types within the adjacent area of the motorway. It is anticipated that within a buffer of 2x20m alongside the Alignment land take will take place. A satellite map has been used as a background for digitalising the distinct land use types within this corridor.

The analyses reveal the following information:

- Land Take requirements outside settlements:
  - 75.2 ha of agricultural land out of which most of it concerns field and acres - 67.4 ha.
  - 38.28 ha of land take are forested land will be acquired;
  - About 3.7ha of seminatural grasllands are also subject to Land Take

- Land Take requirements within Settlements:
    - 6.34ha of land owned by households (physical persons) and businesses (legal persons) will be subject to Land Take.

The split of land use types and corresponding area to be acquired for the Project temporary and permanent structures and facilities is shown in the table below.

Table 78: Area (ha) of land use types that will be acquired during the road construction (2x20m buffer)

Land use types	Buffer
Forested land	38.28
Seminatural grasslands	3.70
Agricultural land	75.16
Land Owned by Households and Businesses	6.34

One should bear in mind that the above information is very rough and it does not take into account any cadastral information, such as land ownership and size of individual plots. Therefore, it should not be used for the purposes of expropriation. Details on the land take requirements will be known at the latter stages of the project when the Resettlement Action Plan is prepared and consequently the legal procedure for permanent land take is initiated.

During construction works temporary land take will be required from the requirements for construction compounds and work sites along or close to the rail route, and space for storage of plant, materials and locating site offices. Design and Build Contractors' may temporarily require land for other facilities such as Borrow Pits & Landfills, Concrete Batching Plants, Aggregate Crushing Facilities, Labour & Workforce Numbers, Facilities & Accommodation, Construction Laydown Areas & Design and Build Contractor Facilities.

The locations of the construction compounds are yet to be decided. This shall follow legal requirements and the agreements to be reached with the affected landowners.

While the specific sizes of the land use and land take will be determined with the detailed projection of the project route, below we provide a table of the affected settlement and size and typology of land plots as an indication of potential impact of land take/land use at the settlement level.

Table 79: Size and typology of land plots within the affected settlements.

Settlement	Structure of the Land Plots
DRSNIK	The size of agricultural land per households is in the range of 10m^2-500m^2. The type is orchards and forest. Available land is cultivated. Households that have land without property documents cultivate it periodically. Most of them do not rent agricultural land to others nor they rent agricultural land from others. Households generate 5,000 Euro anualy from land cultivation activities.
DOLC	The size of agricultural land per households is in the range of 100m^2-1500m^2. No information on type of land. Most of the agricultural land is cultivated. Households that have land without property documents cultivate the land regularly. Most of them rent agricultural land to others. Some of them rent agricultural land from others. Households generate 5,000 Euro anualy from land cultivation activities.
ZAJM	The size of agricultural land per households is in the range of 5m^2-300m^2. The type is orchards. Most of the agricultural land is cultivated. Households don't have land without property documents. Most of them do not rent

Settlement	Structure of the Land Plots
	agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
DRENOC	The size of agricultural land per households is in the range of 320m^2-350m^2. The type is forest. Some fields are cultivated. No information on the land ownership documents. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
PJETËRQ I EPËRM	The size of agricultural land per households is in the range of 60m2-700m2. The type is orchards and forest. The land is cultivated completely. Households do not have land without property documents. Most of them rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities.
PJETËRQ I POSHTËM	The size of agricultural land per households is in the range of 70m^2-500m^2. The type is orchards and forest. Total available land is cultivated regularly. Households do not have land without property documents. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
JABLLANICË	The size of agricultural land per households is in the range of 20m2-200m2. The type is forest and to a less extend orchards. As it is forest the land is not cultivated. No information on ownership document. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities.
KLIÇINË	The size of agricultural land per households is in the range of 30m^2-300m^2. No information on the type of the land. Total available land is cultivated regularly. Households have land without property documents. No information on renting land to others or from others. No information on income generated from land based activities.
LESHAN	The size of agricultural land per households is in the range of 30m^2-200m^2. No information on the land type. Total available land is cultivated regularly. Households don't have land without property documents. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
LUGAGJI	The size of agricultural land per households is in the range of 50m2-500m2. The type is orchards and forest. Total available land is cultivated regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
GLLAVIQICË	The size of agricultural land per households is in the range of 50m2-100m2. The type is orchards and forest. Total available land is cultivated regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
RAMUN	The size of agricultural land per households is in the range of 50m^2-200m^2. No information on the type of land. Total available land is cultivated regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others nor do they rent agricultural land from others. No information on income generated from land based activities.
ZAHAC	The size of agricultural land per households is in the range of 15m^2-400m^2. The type is orchards and forest. Total available land is cultivated regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others. Few of them do rent agricultural land from others. No information on income generated from land based activities.

Source: Social Survey Data, 2016

It can be concluded that the settlements along the route of the project will be affected both by land take and land use; this will impact adversely the agricultural activities which represent an additional income and contribute to the wellbeing of the households.

5.1.13.12. Assessment of the Land and Property Sensitivity

During establishing of the sensitivity of Land & Property resources the following criteria were applied:

- Monetary Value,
- Size
- Location,
- Sentimental Value
- Possibility for income generation (renting, agricultural activities, etc)

For each criterion a scoring value from 0-3 was applied with the following meaning

- 0 - no importance
- 1 - low importance
- 2 - medium importance
- 3 - high importance

The sum of scored values was used to determine the sensitivity. The rating from sensitivity was performed on the basis of the following ranges:

- 0-3-low sensitivity (ls)
- 4-7- medium sensitivity (ms)
- 8-11-high sensitivity (hs)
- 12-15- very high sensitivity (vhs)

The results are presented on the table below.

Table 80: Sensitivity Matrix

Land Use	Monetary value	Size	Location	Sentimental value	Possibility for regular income	Sensitivity
Residential Properties	3	3	3	3	2	14
Agricultural land	2	3	2	3	3	13
Pastures	2	2	2	3	2	11
Orchards	3	2	2	2	2	11
Forest	2	82	2	2	2	10

Residential Properties have high importance in regards to their monetary value, size, location and sentimental value.

Agricultural land has medium importance with regard to the monetary value and location. Additional income from agricultural activities is of high importance due to the high level of unemployment of the population. Agriculture may also be the families' sole source of income. The sensitivity of this sub receptor is considered to be very high.

Pastures have medium importance in regard to all criteria a high sentimental value.

Orchards are a long term investment and their monetary value is high. Orchards limited in size; additional income from selling the fruits is not expected. The sensitivity of this sub receptor is high.

Forests are in private ownership; forest management is monitored by the Kosovo Forest Agency[69]. The sensitivity of this sub receptor is medium.

[69] http://kosovoforests.org/kfa/

The results from sensitivity estimation matrix determined the following:

Table 81: Sensitivity Assessment

Type of Land / Property Resource	Value (Sensitivity)
Residential property	Very high sensitivity
Agricultural land	Very high sensitivity
Pastures	High sensitivity
Orchards	High sensitivity
Forest	Medium sensitivity

5.1.13.13. Facilities / Services

Various facilities / services are analyzed at municipal and settlement levels, including education, healthcare, water supply and wastewater collection, waste management, electricity supply, telecommunication and local transport. The data on municipal level has been retrieved from respective Municipal Development Plans for Klinë and Pejë, while the settlement related information is either extrapolated from the Social Survey or is obtained from tailored questionnaires filled in by the municipal administration.

Education Facilities and Services in the Affected Municipalities

Municipality of Klinë: the education process is implemented on three levels: Pre-school education, Primary education and Secondary education.

One pre-school (kindergarten) facility, 15 primary education schools and two secondary schools are located within the territory of the municipality. For the school year 2010/2011[70] the total number of students enrolled at all levels of education process is 10,318 (4,957 females and 5,361 males). The students are grouped in 420 classes. The student/teacher ratio is 19/1.

[70] Data from the Municipality profile of Kline, Publication of Kline Municipality

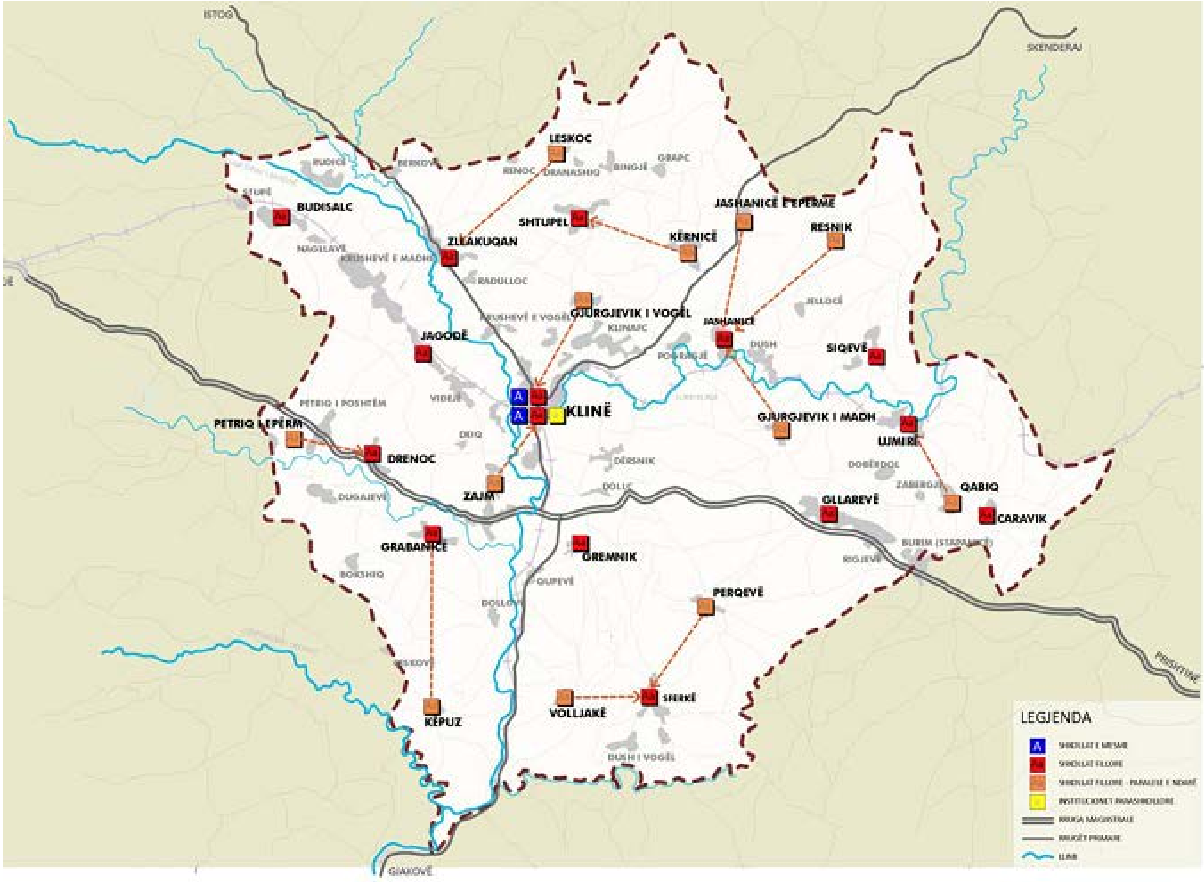


Figure 93: Network of Educational Facilities in the Municipality of Klinë

Within the municipality territory there is only one kindergarten at which are enrolled 50 children and are employed 10 people.

Primary education is organized in 15 schools. Two of them located in the municipality centre (Klinë) and the rest of schools are distributed in the villages. The schools relevant for the Project are located in Zajm, Drenoc and Pjeterq. The primary school network is not well developed and it implies long distance travel, sometime walking.

Figure 94: Children walking from home to school

Secondary education is organized in two high schools located in the municipality centre (Klinë).

Municipality of Pejë: There are 27 primary and 16 satellite schools providing education to nearly 23,750 pupils from all communities of Pejë. A secondary school and gymnasium, as well as an economic, technical, computer, art and medical school are all operational.

There is also a school for visually impaired students, a primary music school, and a secondary music school. One private school is available and at the higher level, there is a Business Faculty branch of Pristina University and the private University of European Vision. In total there are 22,853 students out of which 11,973 (52.37%) male and 10.880 female (47.63%).

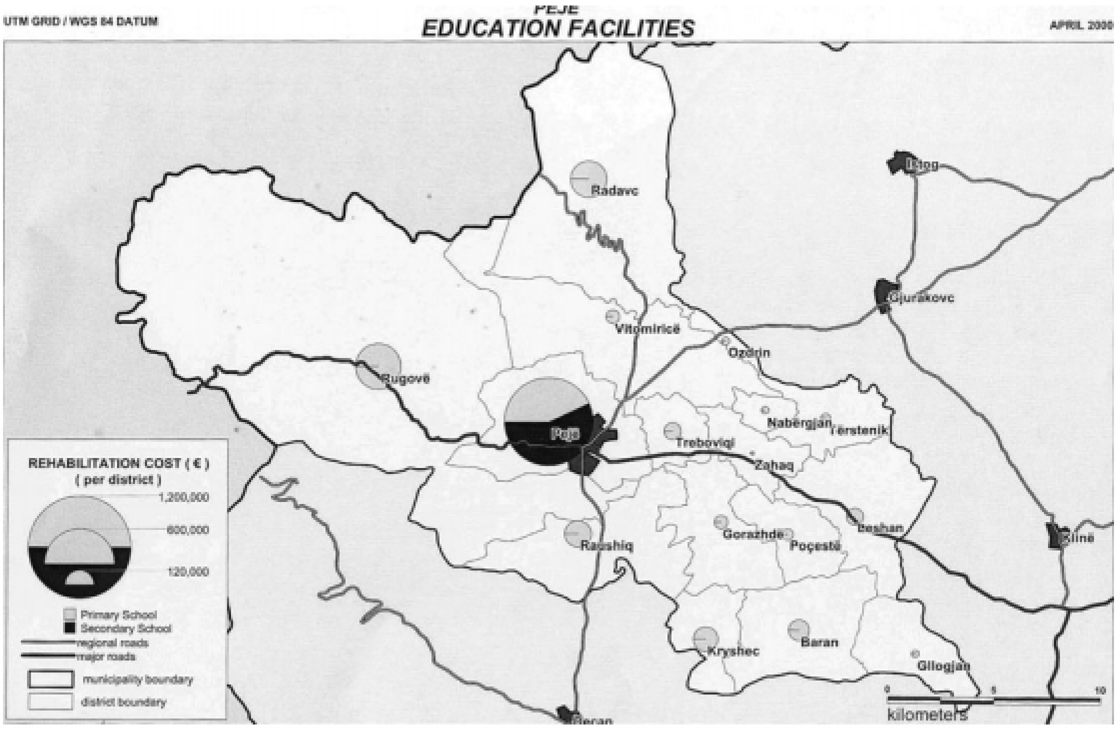


Figure 95: Education facilities location in the municipality of Pejë
Data Source: Local development Plan of Municipality of Pejë

Health Facilities and Services in the Affected Municipalities

Municipality of Klinë: there health care service is provided in main Family Health Centre (FHC) in Klinë, three Family Health Centre in settlements Zlakuqan, Ujmirë and Zverkë and 10 health care points in settlements. Within them only settlement Drenoc is directly affected by the Project. In addition to public health care providers there are private providers in a form of ambulance, poly-clinics and pharmacies.

Due to insufficient number of heal care facilities and large distance most of the patients travel to Klinë, which overburdens the service provision in main FHC.

Municipality of Pejë: there is a Family Health Centre which includes public health, dentistry, emergency, diagnostic and consultative sections. Five family medical centres are operational in town, as well as in five separate villages, with 13 additional family ambulatories covering the other villages of the municipality.

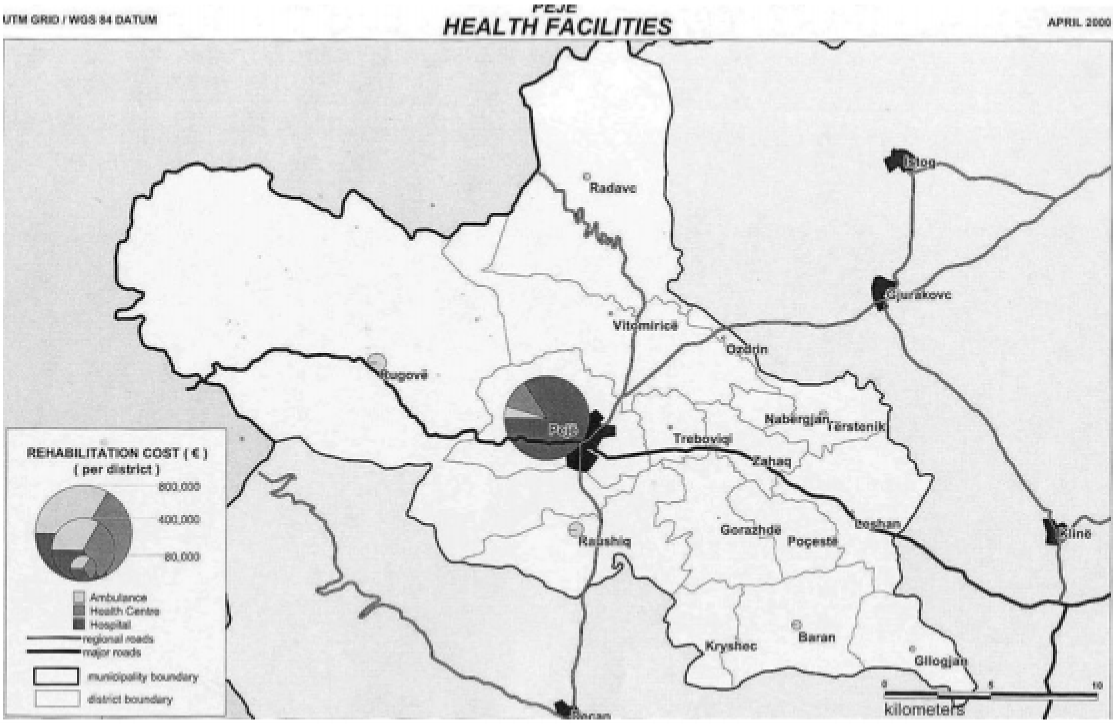


Figure 96: Health facilities network in municipality of Pejë

Data Source: Local development Plan of Pejë Municipality

Water supply and waste water in the Affected Municipalities

Municipality of Klinë: one of the greatest challenges pertains to the water supply. Most of the settlements are using the water from the water well and un-controlled water springs as they cannot access the water supply systems (WSS). There are three water supply systems: City WSS, Sverkë WSS and Jashanicë WSS. Also the citizens that are connected to the water supply system are not satisfied with the quality of the water but this is mainly pertaining to the city of Klinë. Settlements are supplied with the water mostly from water well, private springs.

There are only 24 or 44% of the settlements which are supplied /connected to a water supply system whereas 30, or 55%, are not connected and thus are supplied with water from owb wells.

As for the waste water, the biggest polluters of the rivers are waste waters that are disposed directly and without any previous treatment. The sources of the waste water are households and industrial entities. Solid waste is also presenting problem as it is disposed on the river and this creates additional challenge. In regard to the settlements, there are only 8 settlements who are connected to sewage system: Gremnik, Drenoc, Dushk, Cabic, Gllareva, Rigjeva, Carraviku and Zabërgjë.

Municipality of Pejë: it is supplied with water from two springs, "Burimi i zi" and spring from "Drini I bardhë". Both water springs have capacity of 500 l/s.

In the Municipality of Pejë water is in abundant quantity, however, due to the deterirated water supply system, there is a huge water loss. All parts of the city are connected to a water supply system. Reconstruction of the system took place in the period after the war which partially improved the situation.

In term of the supply to settlements there are only 10% or 18 settlements that are connected to Water Supply System (WSS). Other settlements use water spring, or water wells, which is not controlled in term of quality. Building of two water sypply systems is planned in the near future to cover most of the settlements with drinking water.

The water supply companies in the affected municipalities of Klinë and Pejë are presented in the table below:

Table 82: Water Supply Companies

No	Name of companies	City	Output capacities in September 2001	Number of citizens supplied by
1	SPE "Ujësjellësi"	PEJË/PEC	1000-1200 l/s	110 000
2	SPE "Ujëvara"	KLINË/KLINË	40 l/s	10 000

In regard to sewage system in Pejë, only 60% of city is connected to the system and 10% of the settlements are connected to sewerage. There is no Waste Water Treatment Plant and therefore the water is discharged directly in the river. Waste water is one of the main polluters of the river and of the groundwaters.

According ti the present knowledge, sewage systems are built in around 30% of the settlements. Where sewage exists, not all households are connected. In the absence of any sewers, households discharge waste water in the street, creeks, or in septic tanks. It represents a significant threat to the public health and the environment.

Waste management services in the Affected Municipalities

Municipality of Klinë: the responsible company for waste collection and disposal is “Ambienti Sh.A.” the branch in Klinë. The collected waste from public and private containers is transported on the regional waste landfill in Pejë, Sferkë. Waste collection frequency varies from rural to urban areas. In rural areas, waste is collected once a week. In urban areas, waste is collected every second day in the main zone, which is the city centre, and every third day in the second zone of the city. In the rural areas most of the waste is collected door to door. In the urban areas waste is mainly collected at collection points. In terms of population, the officers mentioned that around 95 percent of population is served by this company. All the villages are provided the service however there are some areas where the trucks cannot reach due to the geographical position. Clients pay slightly less than 5.00 Euros per month for the service and around 65 to 70 percent of the payment is collected[71].

Municipality of Pejë: the responsible company for waste collection and disposal is “Ambienti Sh.A.”. It collects the waste from private and public containers and it transports it on the regional waste landfill of Pejë, in Sferkë. The size of the landfill is 3.6 ha for 25.000-300.00 inhabitants. This landfill is small for the size of the inhabitants that currently are using it. The landfill is open and has a drainage system. The price for waste collection is 4 euro per family. The municipality of Pejë is in charge for quality control of the work of the waste collection company.

Table below present some of the basic parameters in regard to the citzens' awareness on waste collection and basic waste management services in the Affected Municipalities.

Table 83: Waste Management Services in the Affected Municipalities

Municipality	Landfill	Waste Management Operators	Coverage Urban	Coverage Rural	Frequency of collection in urban area	Frequency of collection in rural area
Klinë	Yes Sferkë (Pejë)	“Ambienti”	98%	98%	Twice a week	Weekly
Pejë	Yes Sferkë (Pejë)	“Ambienti”	98%	98%	Every second day	Weekly

Data Source: Waste Management in 16 Municpalities, USAID, 2016

Electricity power supply and telecommunication in the Affected Municipalities

Municipality of Klinë faces many problems with regard to the electricity supply and electricity power stability. The main supply with electricity comes from Power station TS Klinë 110/10(20) kV/kV. Electricity is distributed through overhead lines supported by wood impregnated poles, some of them are from concrete and few of the poles are combination of wood and concrete. Transformation units are installed on metal pole or concrete pole. Their condition is not satisfactory as these units are outdated and not well maintained. Electricity power supply network is developed without any previous plan and/or analyses and as such it is not the optimal for the growing needs.

Telecommunication is limited with only 2,000 connections incorporated in Phone switchboard of a type SI 2000. These connections are not distributed in rural areas. 60% is based on the phone distribution network whereas 40% use electricity distribution network.

Municipality of Pejë: public lightening is not good as only 10% of the system is active. The system is supplied by the electricity network of 260 ST 10/04Kv. The number of power stations grows every year for 26 units which depends on the participation of the consumers. Electricity power stations are supplied from three different locations in the city of Pejë.

[71] Waste Management Report for 16 Municipalities, Reinverst, 2016. Available at http://www.riinvestinstitute.org/publikimet/pdf/Waste_Management_in_16_Municipalities_ENG_5mm_v11456909115.pdf. Last time accested 10.10.2016

Figure 97: Electrical Network supply in municipality of Pejë

Data source: Municipality development plan of Pejë

Telecommunication services in Pejë are provided by the Post and Telecommunication Company of Kosovo (PTK) with 8147 phone users. The internet connectivity is provided by “IPKO-net Gjakova” and “Dardanët”

Local Roads and traffic communication in the Affected Municipalities

Municipality of Klinë: Natural position of Klinë enables a good connection through existing roads and motorways. The Prishtina-Pejë road N9 passing through the municipal territory is of national interest for Kosovo.

Regional Road to Gjakova crosses the road N9 at 620 m to the east from the crossroad towards Klinë. This traffic flows are intensive as the road enables connecting Klinë with Gjakova, Prizren and Albania. The regional roads to Istog and Skenderaj also pass through the territory of te municipality.

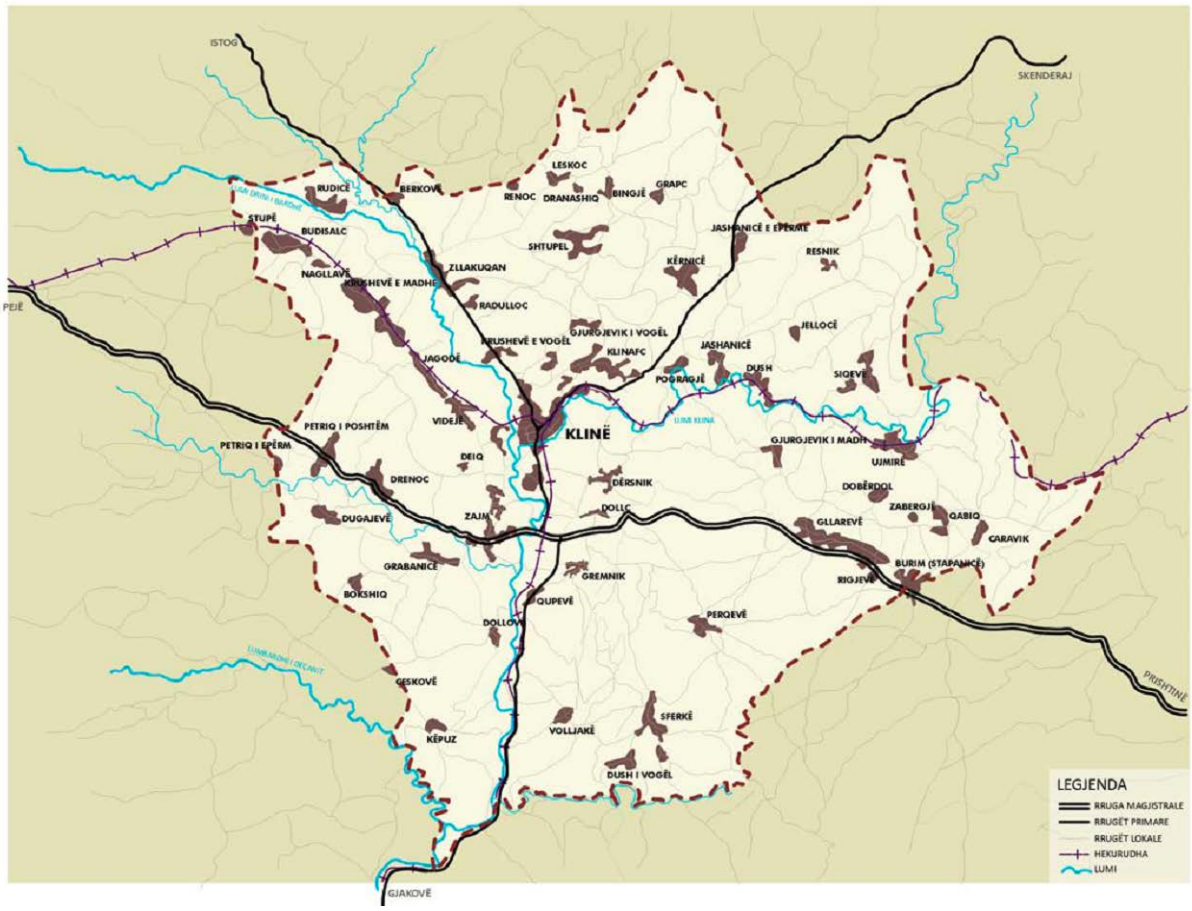


Figure 98: Map of the roads in the municipality of Klinë

Data Source: Local Profile-Local Development Plan Klinë

Roads within the municipality pass through the city which is a cause for traffic congestion. This is mostly due to the regional roads for Istog and Skenderaj which are crossing near the city of Klinë. Additional factor for congestion is due to the crossing of the regional roads for Istog and Skenderaj with motorway Klinë -Pejë.

The condition of local roads is much better than before the war and almost all local roads are asphalted. Only smaller portion of the local roads are not asphalted. Sidewalks and protection shields are missing at the local roads even though they are used by school children and elderly people; this situation exacerbates road safety.

Public transportation is not well developed in the municipality. The bus stops intended for loading and unloading of passengers are not separated from the main traffic, which makes a risk for safety of both the passengers and drivers of vehicles travelling in the same lane with buses.

Municipality of Pejë: Total length of the roads within the city of Pejë is 100.3 km out of which 67.8 are gravel road, 30 km are with asphalt and 2.5 km are macadam roads. The length of the roads to the settlements (local roads) is 120.7 km out of which 86.5 km are gravel road and 32.4 are with asphalt. Road network in the city center, urban neighborhoods and roads that are connected with regional roads need to be reconstructed as they are in bad shape due to high frequency traffic.

The existing national roads passing thorugh the territory of municipality of Pejë are connecting the city with Gjakova, Prizren, Mitrovica and Prishtina. The road M9 (Prishtina-Pejë) was constructed in 1936; it is 81 km long and connects Kosovo with the Adriatic Sea.

Social and Communal Services and Facilities in the Affected Settlements

The preliminary Social Survey provided some information on available social and communal services and facilities in the Project area. This information will have to be updated. The available information regarding social and communal services and facilities in the Affected Settlements is presented in Table 84 below.

Table 84: Availability of communal facilities and services per affected settlement

Settlement	Communal Facilities and Services
DRSNIK	No information on availability of primary school. No information about availability of health facility. Fairly good road infrastructure. Roads are in god shape. Electricity network does not provide stable intensity of electricity throughout the village. There is water a supply system. **Sewage system does not cover any Residential Properties.** There is internet penetration.
DOLC	No information on availability of primary school. No information about availability of health facility. Good road infrastructure. Roads are not in good shape. Electricity network is poor and redundant. Water supply system is old, deteriorated. **Water is not drinkable**. **Sewage system does not exist**. There is internet penetration.
ZAJM	No information on availability of primary school. No information about availability of health facility. Fairly good road infrastructure. Local road network is developed but it is only partially in good shape. There is electricity network. There is water supply system. **Only 30% of the village is connected in sewer system**. Internet services are present in the village.
DRENOC	No information on availability of primary school. One health ambulante. Fairly good road infrastructure not all the village covered. Roads are in god shape. Electricity network exists. **There is no water supply system**. Sewage system exists. There is internet penetration.
PJETËRQ I EPËRM	There is primary school. No information about availability of health facility. Road infrastructure does not cover whole settlement. Roads are in god shape. Electricity network exists. **Water supply system and Sewerage covers part of settlement.** There is internet penetration.
PJETËRQ I POSHTËM	No information on availability of primary school. No information about availability of health facility. Poor road infrastructure. Roads are not from concrete. No information on Electricity network. **No water supply system. No Sewage system**. No information on internet penetration.
JABLLANICË	No available data
KLIÇINË	There is primary school. No information about availability of health facility nor other available communal service.
LESHAN	No available data

Settlement	Communal Facilities and Services
LUGAGJI	No available data
GLLAVIQICË	There is primary school in settlement according to official statistic data. No other data on communal facilities and services is available
RAMUN	No available data
ZAHAC	No available data

Data Source: Social survey 2016

From the table above it can be seen that the major problem with regard to acces to services is the lack of controlled water sypply systems and sewerage in the majority of settlements.

The planned motorway can negatively affect the quality of potable water and threaten the public health. In some municipalities the local roads are not in good shape. The planned motorway should not contribute to further disconnecting those villages from the network of local roads.

5.1.13.14. Employment

Only 24.5% of the population in Kosovo in the cohort of 15 to 64 years -old has a job. The number of employed people is 278.672, while 55% of the labour force is unemployed: Women are particularly disadvantaged: only 11% of women are employed.

Employment in the Affected Municipalities

Municipality of Klinë: The participation rate (36.9 %) and the employment rate (15.6 %) are rather low as compared to the Kosovo average (participation rate: 44.7 %, employment rate: 24.7 %). It should be noted that the unemployment rate (57.7 %) is among the highest in Kosovo (average: 44.8 %). These rates disaggregated by gender shows that women participation in labour force is 34.59% compared to a men participation which at the level of 72.33%.

In regard to the income, the average monthly salary for men (2004) is 104.82 Euro while for women it is 21.26 Euro.

The biggest employment sectors are whole sales and retail trade with 44.4% of companies and 45.9 % of employees followed with construction sector with 9.9% of companies and 10.7% of employees[72]

Municipality of Pejë: The participation rate (45.6 %) and the employment rate (25.8 %) are slightly above the Kosovar average (participation rate: 44.7 %, employment rate: 24.7 %). It should be noted that unemployment rate (43.5 %) is slightly below Kosovo rate (average: 44.8 %).

The biggest employment sectors are whole sales and retail trade with 45.1% of companies and 48.2 % of employees followed with personal services sector with 11.8% of companies and 8.2% of employees.[73]

[72] http://www.sme-support.eu/kline.pdf

Below we provide a cumulative table for both municipalities, Klinë and Pejë, disaggregated by age, gender, activity and status in employment.

[73] http://www.sme-support.eu./peje.pdf

Table 85: Employment Status of Population by Age, Activity and Gender

Municipality	Total	Age group from 15-64			Age group from 15-64								
		Economically active (Labor force)			Economically active (Labor force)						Non active		
					Employed			Unemployed			Total	Male	Female
		Total	Male	Female	Total	Male	Female	Total	Male	Female			
Klinë	24,491	8,974	6,715	2,259	3,790	3,026	764	5,184	3,689	1,495	15,517	5,420	10,097
Pejë	63,963	28,926	19,226	9,700	16,329	11,700	4,629	12,597	7,526	5,071	35,037	12,518	22,519
Total	88,454	37,900	25,941	11,959	20,119	14,726	5,393	17,781	11,215	6,566	50,554	17,938	32,616
%		100%	68,45	31,55	53,08	38,85	14,23	46,92	29,59	17,32	100%	35,48	64,52
					100%								

Data Source: Republic of Kosovo, Office of Prime minister, Kosovo Agency for Statistics

Employment in the Affected Settlements

The unemployment in the affected municipalities is 47%. The share of employed females is 14.23% whereas in the employment in males reaches 38.85%. It is significantly higher compared to the unemployment rate of Kosovo which is 24.7%. Out of 13 affected settlements, in 8 the unemployment rate is higher than the average figure for Kosovo. The employment data disaggregated by settlements is provided in the table below.

Table 86: Employment data in the affected settlements

Municipality	Settlements	Population	Employed	%
Klinë	Drsnik	1,770	531	30
Klinë	Dollc	276	66	23,91
Klinë	Zajm	1,267	80	6,31
Klinë	Drenoc	440	36	8,18
Klinë	Pjetërq i Epërm	563	85	15,10
Klinë	Pjetërq i Poshtëm	160	54	33,75
Pejë	Jablanicë	573	204	35,60
Pejë	Kliqinë	833	478	57,38
Pejë	Leshanë	354	247	69,77
Pejë	Lugaxhi	702	245	34,90
Pejë	Gllaviçicë	193	68	35,23
Pejë	Ramun	492	90	18,29
Pejë	Zahaq	1,120	310	27,68
TOTAL		8743	3680	42,09

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics

The official unemployment figures do not match the unemployment rates perceived by the population included on the Social Survey. The interviewees point out that the unemployment is the greatest challenge in the affected settlements and reaches 60% or more.

Below we provide information gathered from the Social Survey in relation to employment and unemployment data in the Affected Settlements.

Table 87: Perception of employment and gender distribution within the Affected Settlements

Settlement	Perception on Employment
DRSNIK	Unemployment is the biggest challenge. **More than 2/3 of population is unemployed**. Within this number, the highest portion is with women.
DOLC	Unemployment is the biggest challenge. **More than 2/3 of population is unemployed**. Within this number, the highest portion is with women.
ZAJM	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed**. Within this number the highest portion is with women.
DRENOC	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed**. Within this number the highest portion is with women.
PJETËRQ I EPËRM	Unemployment is the biggest challenge**. More than 2/3 of population is unemployed**. No available data on gender ration among unemployed population.
PJETËRQ I POSHTËM	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed**. Within this number the highest portion is with women.
JABLLANICË	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed**. Within this number the highest portion is with women.
KLIÇINË	Unemployment is the biggest challenge. **More than 2/3 of population is unemployed**. No available

Settlement	Perception on Employment
	data on gender ration among unemployed population.
LESHAN	Unemployment is the biggest challenge. Within this number the highest portion is with women.
LUGAGJI	Unemployment is the biggest challenge. **More than 2/3 of population is unemployed**. More than 2/3 of population is unemployed so unemployed population is three time more than employed one. Within this number the highest portion is with women.
GLLAVIQICË	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed**. Within this number the highest portion is with women.
RAMUN	Unemployment is the biggest challenge. **More than 3/4 of population is unemployed** (from 24 interviewed only 2 are employed). Within this number the highest portion is with women.
ZAHAC	Unemployment is the moderate cha challenge for the settlement. **About 1/4 of population is unemployed**. Within this number the highest portion is with women.

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics

The information above has been generated out of answers to the questionnaires intended to picture the profile of settlements. During the nexst stage of the project the more advanced Social Survey will target households which will be subject to land take and will derive exact numbers of unemployed within the Project footprint.

5.1.13.15. Migration

According to analyses of the Kosovar Migration Report[74], in Kosovo key driving factors of migration were diverse, including: family union (46%), socio-economic factors (35%) as well as political factors, better education, etc. The largest number of persons that migrated from Kosovo occurred during 1990s, reaching the peak during the war years of 1998-99, during which the reported number was 51.728 residents (21.973 and 29.755 respectively) or about 13.6% of all Kosovar migrants. Years with lower migration rates at about 1.7% include 1986, 1987 and 2001.

Migration in the Affected Municipalities

Municipality of Klinë: The population in the municipality of Pejë and Klinë migrated predominantly before the year 2000. Emigration is often lower in municipalities with strong presence of ethnicities other than Albanian. For the municipality where there is majority of Albanian population, such as Klinë it increases up to more than 30% than in other parts of the country.

Based on the official statistics, Klinë has a very high negative migration balance of 29.1%. This indicates that more people are leaving than the one coming in municipality.

Municipcality of Pejë: A high negative migration balance of 13.2% is present; 26.96% of the population has reported remittance being the only source of income.

[74] http://KAS.rks-gov.net/publikimet/popullsia/ Kosovar migration

Main reasons for migration before 1999 were political. Nowadays the migration is mainly economic; people migrate also to find better education and training opportunities as well as to reunite with their families.

Migration in the Affected Settlements

Information on migrations in the Affected Settlements has been obtained from the Social Survey. It is indicative because the sample was not representative for the Project footprint; the deriving statistical analyses could not generate any solid figures. The only valid conclusion with regard to migration is that many young people from villages located along the Alignment`s section closer to Pristina left their homes in the last 5 years. The migration in villages located near Pejë is not considerable.

A summary of the data on migration in the Affected Settlements is provided in Table 87 below.

Table 88: Perception Data on Migration at Affected Settlements.

Settlement	Observation on Migration
DRSNIK	Migration is considerable. In last 5 years 4 families have migrated. Migrants were at the age 20-35.
DOLLC	The level of migration is rated as overwhelming. No data on number of people who migrated.
ZAJM	Level of migration is overwhelming. About 20 young people migrated in last 5 years. Migrants were at the age 20-29.
DRENOC	The level of migration is large. No data on number and age of people who migrated.
PJETERQ I EPERM	Level of migration is overwhelming and in last 5 years. Members of 5 families have emigrated in last 5 years. No data on age of people who migrated.
PJETERQ I POSHTEM	The level of migration is assessed as average. Last 5 years, members of 2 of households have migrated at age 27 and 28.
JABLANICE	The level is assessed as average. Members from three families migrated in last 5 years at age of 20-39.
KLICINË	The level of migration is assessed as average. Members from three families migrated in last 5 years at age 22 to 34.
LESHAN	No evidence
LUGAGJI	The level of migration is assessed as low. Member from one family migrated in past 5 years at age of 27
GLLAVIQICË	The level of migration is assessed as low. Members from one family migrated in past 5 years at age of 27.
RAMUN	The level of migration is assessed as low. Members from one family migrated in past 5 years at age of 29.
ZAHAC	The level of migration is assessed as low. Members from one family migrated in past 5 years at age of 52

Data source: Social Survey, 2016

5.1.13.16. Economic Activities

Kosovo has been one of only four countries in Europe that recorded positive growth rates in every year of the post-crisis period after 2008. The average growth of 3.5 percent during 2011–14 contrasts favorably to the region but has remained slightly below the global average[75]. This was happening due to limited integration of Kosovo economy into global economy and as a result of steady influx of remittances. Below section elaborates on economic activities in the Affected Municipalities and settlements.

Economic Activities in the Affected Municipalities

Municipality of Klinë: the performance of local bossiness sector in municipality is positive. There are 69 businesses per 1,000 economically active inhabitants, which is below the Kosovo average of 76. Since 2010, the development of businesses has been positive although below Kosovo average. Over the same period, the positive development of employment has been constantly above average.

Employment within the municipality is in the public sector such as health, education, and public administraton. In total it is estimated that there are 941 employed persons[76] in the public sector.

Public enterprises are:

- Water company “HidroDrini”, branch in Klinë
- Waste management company “Ambijenti”, branch in Klinë

The business entry rate is 11.8% and it is below Kosovo value of 13.6% while the business exit rate is 6.1% and it is below Kosovo average of 6.5%. The most important sectors of local economy are trade, manufacturing, construction; personal services as well as hotels and restaurants. In regard to the size of businesses, the highest share of employees (30.0 %) is working in businesses with 2 to 4 employees. When it comes to the legal form of businesses: 93.5 % are individual businesses. This percentage is slightly above the Kosovo individual businesses rate of 85.2 %.

On the table below the biggest private employers found within the area nearby the existing road N9 are presented

Table 89: Biggest private employers in Klinë

Enterprises	Number of workers	Municipality
Company Gillareva – AMORETI -Glareve	180-200	Klinë
Benita Company – Gremnik	100-120	Klinë
Mirusha Company - Klinë	20-30	Klinë
Seeds Factory KLINË	25	Klinë
Beer factory – GRIMBIRR - Gremnik	12-15	Klinë

Data source: Municipality survey, ESIA purposes, 2015

[75] http://www.worldbank.org/content/dam/Worldbank/document/eca/Kosovo-Snapshot.pdf

[76] Development Plan of Kline

Municipality of Pejë: the performance of local business sector in municipality is positive. There are 90 businesses per 1,000 economically active inhabitants which is above the Kosovo average of 76. Development of businesses is not as dynamic as in Kosovo however the development of employment is considerably above the Kosovo average.

Employment within the municipality is in the public sector such as health, education, and public administration. There is no data available on the number of persons employed in public sector.

Public enterprises are:

- Post and telecom office in Pejë
- Water company “HidroDrini”, office in Pejë
- Waste management company “Ambijenti”, Office in Pejë
- KEDS-Electric corporation
- “Drin i Bardhë” company responsible for maintenance of irrigation channels

The business entry rate is 9.9% and it is below Kosovo value of 13.6% while the business exit rate is 7.3% and it is above Kosovo average of 6.5%. The most important sectors of of local economy is trade, manufacturing, hotels and restaurants and personal services. Business services and construction are underrepresented. When it comes to the legal form of businesses: 92.4 % are individual businesses. This percentage is slightly above the Kosovo individual businesses rate of 85.2 %.

In the table below the biggest private employers found in the Project footprint are presented:

Table 90: Biggest private employers in Pejë

Enterprises	Number of workers	Municipality
"Elkos Group" Sh.pk, industrial zone, trading and manufacturing	2000	Pejë
"Birra Pejë " JSC, rr. Zhujë Salam, manufacturer	180	Pejë
"Devoll Group" Sh.pk (Industrial area)	250	Pejë
Devoll Corporation" Sh.pk, Industrial Zone	200	Pejë
"Dukagjini" Sh.pk, Fehmi Agani	200	Pejë

Data source: Municipality survey, ESIA purposes, 2015

Economic Activities in the Affected Settlements

Social survey provides data related to economic activities of the business entities located in the affected settlements. In total 18 active businesses are assessed in the following sectors

- Trade,
- Services (including petrol stations),
- Restaurants and hotels,
- Warehouses

The majority of businesses which have been visited are located along the existing road. According to the present knowledge, there aren`t any active businesses within the Project corridor. The presence / absence of active businesses in the Project footprint will be validated at the Preliinary Design stage, for the refined Route.

The focus of the Survey on the buffer zone along the existing road was set as to address the potential impact from the Project – so called “avoided communities”: Namely, businesses which are dependent on the passengers commuting along the road (vehicle mechanical workshops, petrol stations, hotels and restaurants) will potentially suffer from reduced traffic flows as a result of the transfer of the main traffic to the motorway. Therefore, the Social Survey was intended to identify those “Avoided Communities”.

In the table below basic information on businesses located along the road N9 is presented for each settlement.

Table 91: Business Parameters in the Affected Settlements

Settlement	Business parameters
DRSNIK	One business interviewed. Size of the object is 4,000m^2. No information on land plot It has 4 employees. Is registered in 2003. No employees with disabilities. Annual turnover for 2014 is lower than 50,000. The type of the business is trade.
DOLC	Two businesses interviewed. Size of the building is 400m^2. Land plot is 2,600m^2 and 9,000m^2 respectively. Both businesses are registered ('02 and '11). 13 employees (cumulatively). No employees with disabilities. Annual turnover in 2014 was below 50,000 Euro and 100,000 Euro respectively. The type of the business is services.
ZAJM	Six businesses interviewed. Size of buildings is 65m2 up to 1,150m2. The land plot is 500 m2 up to 1000m2. All businesses apart one are registered. 53 employees cumulatively. No employees with disabilities. Annual turnover for 2014 was for the first one more than 100,000 Euro, for other 2 it was lower than 50,000 Euro and other one between 50,000 up to 100,000 Euro. The type of the business is sales and services.
DRENOC	Two businesses interviewed. Size of object is 25m2 up to 200m2. No info on land plot. They are registered (2005 and 2008). 4 employees cumulatively. No employees with disabilities. Annual turnover for 2014 up to 50,000 Euro. The type of the business is trade.
PJETËRQ I EPËRM	One business interviewed. Size of buildingt 100m2. Land plot is 8,200m2. Business is registered in 2001. One employee. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. No info on type of business.
PJETËRQ I POSHTËM	One business interviewed. Size of object 700m2.Land plot is 18,000m2. Business is registered in 2005. One employee. No employees with disabilities. Annual turnover for 2014 more than 100,000 Euro. The type of the business is warehouse.
JABLLANICË	Two business were interviewed. Size of objects is 25m2 and 35m2.No info on land plot. Businesses are registered (2000 and 1983). 3 employees cumulatively. No employees with disabilities. Annual turnover for 2014 is up to 50,000 Euro. The type of the business is sale shop.
KLIÇINË	One business interviewed. Size of object is 350m2. Land plot is 7,000m2. Business is registered in 2007. 3 employees. No employees with disabilities. Annual turnover for 2014 was more than 100,000 Euro. Type of business is restaurant.
LESHAN	One business interviewed. Size of the object 70m2. Land plot is 12,000m2. Business is registered in 2002. 1 employee. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. Type of business is shop.
LUGAGJI	No business data available
GLLAVIQICË	One business interviewed. Size of object 300m2.Land plot is 1,500m2. Business is registered in 2002. 5 employees. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. No info on type of business
RAMUN	No business data available
ZAHAC	Three business interviewed. Size of building is 40m2, 150 m2 and 200m2. Land plot size is from 400 m2, 20,000m2 and 600m2. All businesses are registered ('91, 2008, 2012). 13 employees cumulatively. No employees with disabilities. Annual turnover for 2014 for two of them up to 50,000 Euro and one of them

Settlement	Business parameters
	between 50,000-100,000 Euro. The type of the business is trade, warehouse and services.

Data source: Social Survey, 2016

As it can be seen from the table above, some businessesare not formally registered. In case such businesses will be located within the Project footprintthey wil be intitled to compensation.

5.1.13.17. Sources of Income

Out of the total population residing in Kosovo, only 16% of persons make from living from work. Also, very few persons can live only from their pension or from social care. 26.96% of the population is dependant on other persons (who are likely to be members of the family).

Sources of Income in the Affected Municipalities

Municipality of Klinë: work, social care and remittances from abroad play a major role as compared to Kosovo as a whole. Census 2011 data shows that in Klinë major source of income are:

- Support from other people 37.4%
- Work 30.8%
- Pension 9.4%
- Remittances from abroad 7.9%

Municipality of Pejë: Work and remittances from abroad play a major role, while support by other persons plays a minor role as compared to the Kosovar average. Specificaly, as per data of Census 2011 major source of income in Pejë are

- Support by other people 39.3%
- Work 34.8%
- Pension 8.9%
- Remittances from abroad 6.1%

Sources of Income in the Affected Settlements

In the table below sources of income and average income for each of the affected settlement by the Project are presented.

Table 92: Main Sources of Income of affected Settlements

Settlement	Main sources of income
DRSNIK	43% income is from employment, 5.7% from pensions; 1.9% from social support. Most of the families do not receive remittances from abroad and few of them receive remittances occasionally. Average annual income: Is between 30,000 up to 900 Euro. Here we cannot draw any average monthly income due to high disparities among the respondents.
DOLLC	42% of income is from employment, 16% from Agricultural production and 15% are social transfers. Average annual income: Is from 900 Euro up to 6,800 Euro, average monthly per household or 296 Euro

Settlement	Main sources of income
	which is below Kosovo average[77] salary
ZAJM	26% is from employment, 12% are social transfers. Only few families have incomes from remittances. Average annual income: Is within the range of 900 Euro up to 12,000 Euro. Average monthly is 356 Euro which is about same level as the national average.
DRENOC	Main source of income is from agricultural activities. No information on other sources of income. Average annual income: Annual income per household is 1,827 Euro and on the monthly bases it is 152 Euro which is significantly below national average
PJETERQ I EPERM	50 % income is from employment, seasonal work 10% and pensions 5%. Remittances take insignificant share in incomes. Average annual income: From 900 Euro up to 10,800 Euro. Average monthly income is 374 Euro which falls within the Kosovo average.
PJETERQ I POSHTEM	36% income is from employment, social transfers 11.5% and pensions 14%. Average annual income: 4,480 Euro whereas monthly income is 373 Euro (Kosovo average).
JABLLANICË	Main income is employment 56%, seasonal/occasional work 30%, social transfers19.5%. Average income: Average annual income is 5,167 Euro whereas monthly income is 430 Euro (above the Kosovo average).
KLICINË	Main income is from employment 40%, seasonal employment 14% and pensions 10%, Social transfers 4.7%, remittances 2%. Average annual income: Average annual income is 4177 Euro whereas monthly income is 348 Euro (Kosovo average).
LESHAN	Main income is employment 46.57%, social transfers 12.33%. Average annual income: is 1,216 Euro, or 101 Euro monthly. It is significantly below the Kosovo average.
LUGAGJI	Main source of income is employment 50% and social transfers 30.38%. Average annual income: it s 4740 Euro and monthly salary of 395 Euro. This salary is slightly above the average national salary.
GLAVIQICË	39% income is generated from agricultural activities, employment 38%, seasonal work 28%, pensions 5% and social transfers 16%. Average annual income: is 5133 Euro whereas monthly income is 428 Euro (above national average).
RAMUN	54% income is from, employment 23.35%, seasonal work 12%. Average annual income: is 3170 Euro whereas monthly income is 264 Euro (below national average).
ZAHAC	37% income is from employment 37%, seasonal work 11%, and pensions 22%. Average annual income: is 4,644 Euro whereas monthly income is 387 Euro (within the national average)

Data source: Social Survey, 2016

The settlements with lowest household income are: Dollc, Drenoc, Leshan and Ramun. Settlements with income above national average are: Glaviqicë and Jabllanice. Highest disparities among the interviewed households are found in Drsnik. In the remaining settlements the average monthly income is within the average of Kosovo.

It can be seen that employments and family run agricultural production is an important source of income. Even if a family has a small land parcel (which is the case with the majority of respondents), the agriculture contributes to the wellbeing in monetary or non-monetary terms as the products are used for their own consumption. Seasonal work is a prominent source as well.

Another important source of income are social transfers and pensions.

Forest related activities are not mentioned as a source of income as they are not contributing monetary to the household budget (sale of the products on the market); the fuelwood supplied, however, is an important contributor to the livelihoods. Indirectly with the fact of not buying these products, the family frees available financial means for other purposes and needs.

[77] Kosovo average salary according to the Source of information : http://www.invest-ks.org/sq/Permbledhje-e-pergjithshme is 364 Euro per month.

5.1.13.18. Vulnerable Groups

According to the definition of the Employment Agency of the Republic of Kosovo[78] "Vulnerable Groups" are job seekers or the unemployed, such as: the mother of many children, persons over fifty (50) years of age, young people under the age of fifteen (15) years, the long term unemployed and people who are on social assistance.

There are many reasons[79] for social exclusion and one of them pertains to geographical barriers. In some cases, the poverty vulnerability is higher in specific regions or municipalities; which are not well connected to road infrastructure. In other words, the inability to access jobs and services because of unimproved or expensive road network is an important element of social exclusion which propels poverty and exclusion.

Profile of Vulnerable Groups

Features of each vulnerable groups targeted by the Social Survey are described below.

Unemployed/Job seekers/Long term unemployed: As a group do not have income or does not have regular income. The reason for unemployment can be multiple. Due to low level of education, not relevant skills and competence, inability to adopt to the changing needs of labour market are some of them, or combination of all (and more) of the mentioned reasons.

Unemployed mother of many children/single mothers: Vulnerability of this group relates to inability of the mother to actively enter labour force and seek employment, or, accept the employment opportunities. Some of the main reasons are related to lack of support at home for child care, or lack of child care services such as kindergartens. As the biggest portion of mother's time is consumed in provision of child care, she is not able to attend different training opportunities that would strengthen her skills and as such increase her employability.

People over fifty years' age: are vulnerable as they are next to retirement and are considered as inflexible working force. This group in most of the times is redundant workers with skills that are not needed in nowadays labour market requirements. Re training and requalification are often not available to this group especially if representatives of the group live in rural areas.

Young People under the age of fifteen: Are vulnerable as they lack experience and in most of the cases relevant education so to get employment, or decent work.

[78] (Official Gazette Of The Republic Of Kosova / No. 1 / 09 January 2014, Pristina, Law No. 04/L-205 On The Employment Agency Of The Republic Of Kosovo)

[79] Poverty, Long term unemployment, Lack of access to public services, ethnic and cultural factors, low level of education , lack of civil registration, lack of infrastructure, internal displacement, regional dimension, gender, age. Source: "White Paper-Kosovo Social Inclusion Challenges", p.13, http://www.kuvendikosoves.org/common/docs/kosovo-social.pdf and "Social exclusion" http://www.gsdrc.org/topic-guides/social-exclusion/causes/causes-and-forms-of-social-exclusion/

People receiving social assistance: In many cases this category of vulnerable group is due to unemployment (for the reasons listed above) or due to age, health conditions or any other situation that prevent the people for meaningful engagement and employment.

In addition to the above categories we have explored few more within the scope of social survey. These are as follows:

People with debt: Is a category of vulnerable group and in margin of poverty as they cannot cumulate sufficient income to pay the debt. On the contrary most of their (limited) earnings are used to serve the debt with no additional income that will help these people to leave the poverty trap and pay off the entire debt.

People with disabilities: Are considered vulnerable as the society is not providing the opportunities ofr their full integration in social life and/or in employment opportunities. Lack of opportunities is due to the inaccessibility of working positions and stigmatization of this group as less capable or "less worthy"

People with chronicle diseases: Are vulnerable due to their illness, which is an obstacle to their engaging with full capacities in labour markets and social life. Due to the low flexibility of labour markets to accommodate the needs of this group, they are often on the margin of employment opportunities or cannot access them at all.

Ethnic Minorities Are vulnerable due to present low socio-economic status; Roma, Ashkali and Egiptian (RAE) Community are considered to be the most vulnerable among the ethnic minorities. The share of RAE population in the total surveyed people was 0.78% of Roma and 2.34% of Egiptians respectively. The information whether the inrerviewed RAE families reside in the Project footprint is lacking. The information on economic activities in which RAE community is engaged is not available as well. The survey to be carried out at the Preliminary Design stage will seek to identify individuals who belong to this community within the Project footprint and assess their vulnerability.

Social Protection

Social Exclusion is complex and multi-layered phenomenon. In many cases one recipient of Social Support is/can be unemployed, single parent, mother of many children and/or representative of the above identified vulnerable groups. Due to this we elaborate in more details Social Protection Sector in Kosovo. This sector is the most comprehensive one as it encompasses most of the vulnerable groups' representatives.

The Social Protection System in Kosovo comprises of social assistance and social and family services. The social assistance scheme provides temporary financial assistance to families who are poor according to criteria established by the law.[80] To be eligible for social assistance, all family

[80] Vulnerable Groups - job seekers or the unemployed, such as: the mother of many children, persons over fifty (50) years of age, young people under the age of fifteen (15) years, the long term unemployed and people who are on social assistance.

members should have Kosovo documents and to fall into one of the categories defined by law. Social assistance is reduced if the family has acquired a second income, such as remittances or pensions from abroad. Social assistance is reversed if the income of the beneficiary family exceeds the minimum level of survival ("Ranking gross monthly standard"). In exceptional cases, recipients of social assistance may be foreign nationals who are allowed to stay in Kosovo, asylum seekers, refugees and persons enjoying supplementary and temporary protection. The average amount that families receive in Kosovo is around 60 Euros (14 Euros per a family member). People living in Kosovo have, on average, 0.46 Euros for daily needs. Kosovo allocates only 3.7 per cent of GDP on social needs, which is the lowest in the region.

Since decentralization in 2009, most of the social and family services have been provided by 40 Centers for Social Work (CSW) located in 38 municipalities across Kosovo. The CSWs provide social services and manage cash benefit schemes. Some social services are still provided under the MLSW, including: residential services, community-based services, services offered at home of beneficiaries and daily care centers for elderly persons and persons with disabilities – women and men – and services for victims of domestic violence. It is intended to transfer them to the municipalities.

Social Protection in the Affected Municipalities

Based on ther evidence of CSW, the users of the cash benefits in the affected municipalities (for the fourth quarter of 2014) are the following:

Municipality of Klinë: There is one Centre for Social Work and 4,358 recipients of the social cash benefits

Municipality of Pejë: One Centre for Social Work and 4,770 users of the social cash benefits

The numbers disaggregated by the profile of vulnerable groups, are presented on the table below

Table 93: Social Cash Benefits and Vulnerable Groups

No. of users for the fourth quarter - 2014	Klinë	Pejë	Total
Basic pension age according to municipality	3,103	6,984	10,087
Age pension paid contributors	609	2,963	3,572
Pension of persons with disabilities	361	1,142	1,503
Scheme of children with disabilities by municipalities and gender (0-18 years old)	75	124	199
Pension scheme for the families of martyrs and war invalids	496	815	1,311
Abandoned children	1	-	1
Families and members of families / households receiving social assistance	4,358	4,770	9,128

Data source: Republic of Kosovo, Office of the Prime Minister, Kosovo Agency of Statistics

(OFFICIAL GAZETTE OF THE REPUBLIC OF KOSOVA / No. 1 / 09 JANUARY 2014, PRISTINA, LAW NO. 04/L-205 ON THE EMPLOYMENT AGENCY OF THE REPUBLIC OF KOSOVO)

Vulnerable Groups in the Affected Settlements

In this section the information on major vulnerable groups present in the affected settlements is provided. The relative share of each vulnerable group in comparison with the number of people interviewed, as well as the total population residing in the affected settlement, has been estimated.

Table 94: Profile of vulnerable groups in the Affected Settlements

Settlement	Profile of vulnerable groups
DRSNIK	25% of the households are indebted. 100% households have members seeking for the job. Evidenced persons with disabilities and persons with chronic illnesses. No family with single parent. Values of family property and monthly income compared to living standard are between 4 up to 5[81].
DOLC	20% of the households are indebted. 80% households have members seeking for the job. No persons with disabilities, evidenced persons with chronic illnesses. No family with single parent. Values of households` property and monthly income compared to living standard are between 2 up to 6
ZAJM	35% of the households are indebted. 10% households have members seeking for the job. Evidenced persons with disabilities, evidenced persons with chronic illnesses. No family with single parent. Values of household property and monthly income compared to living standard are between 2 up to 6
DRENOC	0% of the households are indebted. 25% households have members seeking for the job. No persons with disabilities, No persons with chronic illnesses. No family with single parent. Values of household property and monthly income compared to living standard are between 1 up to 5
PJETËRQ I EPËRM	2% of the households are indebted. 55% households have members seeking for the job. Evidenced persons with disabilities, Evidenced persons with chronic illnesses. No family with single parent. Values of household property and monthly income compared to living standard are between 1 up to 5.
PJETËRQ I POSHTËM	0% households are indebted. 50% households have members seeking for the job. No people with disabilities. No family with single parent, evidenced chronically ill person. The value of households' property and monthly income compared to living standard are between 1 up to 5.
JABLLANICË	30% of the households are indebted. 50% households have members seeking for the job. Evidenced person with disabilities. Evidenced chronically ill person. No family with single parent. Value of households' property and monthly income compared to living standard are between 1 up to 5.
KLIÇINË	0.5% households indebted. 50% households have members seeking for the job. No people with disabilities, no single parent families, no chronically ill persons. Value of households' property and monthly income compared to living standard are between 1 up to 5.
LESHAN	No data on household indebtedness. 25% households have members seeking for the job. No evidence on vulnerable groups. The value of property compared to the living standard is between 6 to 8 which is above the average. Similar results are on total income of the household compared to living standards is 5-8.
LUGAGJI	35% of households are indebted. 50% households have members seeking for the job. No people with disabilities, chronically illness and single parents. Value of households' property compared to living standard is self-assessed between 7-2. Monthly income comparison to living standard is from 7 up to 2.
GLLAVIQICË	50% of households are indebted. 100% of households have members seeking for job. No people with disabilities, no single parent households and no chronically ill persons. The Value of households' property and monthly income compared to living standard are between 2 up to 6
RAMUN	50% of households are indebted. 35% of households have members seeking for job. No people with disabilities, no single parent households and no chronically ill persons. The Value of households' property and monthly income compared to living standards are between 1 up to 7.
ZAHAC	35% of households are indebted. 30% of households have members seeking for job. No people with disabilities, no single parent families, no chronically ill persons, no single parent families. The Value of households' property and monthly income compared to living standards are between 2 up to 9.

Data source: Social Survey, 2016

[81] The households are asked to self assess the value of their property and the level of monthly income compared to living standards. The scale for comparison is from 1-10. 1 being lowest and 10 being highest point. The range from 1-5 is considered below the average of living standard. The range of 6-10 is considered to the above the average of living standard.

As noted earlier, official statistics of the population in the Affected Settlements shows 0.78% of Roma and 2.34% of Egiptian population. They enjoy a very low socio-economic status. Therefore, special attention will be paid to their identification and compensation.

5.1.14. Summary of the Assessment of Affected Settlements

In the table below we present the short profile of each affected settlement. The data has beein obtained by extrapolating the data gathered upon the Social Survey. Population in settlements located within the boundaries of the Municipality Pejë are better off in therms of the availability of communal services, but their socio-economic status is worse compared to households residing in settlements which belong to the municipality of Klinë. However, the migration in villages located near Pejë is not considerable compared to households residing in the municipality of Klinë.

Table 95: Short Profiles of Affected Settlements

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
DRSNIK	The age of interviewed households is in the range of 8-79 with the majority of them belonging to the cohort of 30-49-year-old. The average household size is 6 members. In terms of education, the majority of interviewees have completed primary or secondary education. The average size of the land plots is 200 $m^{2.}$ Fairly good road connectivity, electricity network without consistent voltage. Available Water supply system, Partial sewage system. There is internet connectivity The main challenge facing the community is high unemployment. The majority of unemployed persons are women. Migration is considerable. In the last 5 years 4 families have migrated. Migrants were at the age 20-35. One business was interviewed. Surface area of the building is 4000m2.No information on land plot. It has 4 employees. It was registered in 2003.No employees with disabilities. Annual turnover for 2014 is lower than 50,000. The type of the business is trade. 43% employment, 5.7% income from pensions and 1.9% from social support. Most of the families do not receive remittances from abroad and few of them receive them occasionally. Average annual incomeis between 900 and 30,000 Euro. 25% of the households are indebted. 100% of households have job-seeking members. Evidenced persons with disabilities and persons with chronic illnesses. No family with single parent. Values of family property and monthly income compared to living standard are 4 to 5[82].	

[82] The households are asked to self -assess the value of their property and the level of monthly income compared to living standards. The scale for comparison is 1-10, (1 being lowest and 10 being highest point). The range 1-5 is considered below the average living standards. The range of 6-10 is considered tob e above the average of living standards.

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
DOLC	The age of interviewed households is in the range of 9-90 with most of them belonging to the cohort 50-59 year and 20-29. Average household sizeis 5.42 members. Majority of interviewed have completed primary or secondary education. The surface area of agricultural land per household is in the range of 100m2-1,500m2. No information on type of land. Most of the agricultural land is cultivated. Households have land without property documents and this land is cultivated regularly. Most of them rent agricultural land to others. Most of them rent agricultural land from others. Households generate 5000 Euro annually from land cultivation activities. No information on availability of primary school. No information about availability of health facility. Good road connectivity. Roads are not in good shape. Electricity network is deteriorated. Water supply system is old, deteriorated. Water is not drinkable. No sewage system. There is internet penetration. Unemployment is the greatest challenge. Over 2/3 of the population is unemployed. Within this number, the highest proportion falls to women. The level of migration is rated as very high. No data on number of people who have migrated. Two businesses interviewed. Surface area of the building is 400m^2. Land plot is 2600m2 and 9000m2. Both businesses were registered ('02 and '11). 13 employees (cumulatively). No employees with disabilities. Annual turnover for 2014 is lower than 50,000Euro for the first business 50,000 up to 100,000 Euro for the second. The type of the business is services. 42% of income is from wages, from agricultural production16%) and social transfers 15%. Average annual income is between 900 Euro and 6800 Euro, average monthly per household or 296 Euro which is below Kosovo average[83] salary. 20% of the households are indebted. 80% of households have job-seeking members. No persons with disabilities, evidenced persons with chronic illnesses. No families with single parents. Values of household property and monthly income compared to living standard are 2 to 6	

[83] Kosovo average salary according to the Source of information : http://www.invest-ks.org/sq/Permbledhje-e-pergjithshme is 364 Euro per month.

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
ZAJM	The age of interviewed households is in the range of 1 – 94 with most of them belonging to the cohorts 20-29 and 30-39. The average family size is 5.15 members. There is no information about the presence of health facilities. There is a primary school in the village with about 20 people employed and inhabitants are satisfied by the education services provided. Education levels vary. Most of the people have completed primary (28) and secondary (35) education The surface area of agricultural land per household is in the range of 5m2-300m2. The type is orchards. Most of the agricultural land is cultivated. Households don't have land without property documents. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No information on availability of primary schools. No information about availability of health facilities. Fairly good road connectivity. The local road network is developed but it is only partially in good shape. There is an electricity network. There is a water supply system. Only 30% of the village is connected to the sewer system. Internet services are present in the village. Unemployment is the primary challenge. More than 3/4 of population is unemployed. Within this number the highest proportion falls to women. The level of migration is very high. Approximately 20 young people migrated in the last 5 years. Migrants were at the age 20-. Six businesses were interviewed. The surface area of buildings is from 65m2 up to 1150m2. The land plots vary betwee 500 m2 and up to 1000m2. All businesses apart from one are registered. 53 employees cumulatively. No employees with disabilities. Annual turnover for 2014 was for the first one more than 100.000 Euro, for other 2 it was lower than 50,000 Euro and other one between 50,000 up to 100,000 Euro. The type of the business is sales and services. 26% of income is from employment, 12% are social transfers. Only a small number of families have incomes from remittances. Average annual incomeis within the range of 900 Euro and up to 12000 Euro. The average monthly income is 356 Euro which is at about the same level as the national average. 35% of the households are indebted. 10% of the households have job-seeking members. Evidenced persons with disabilities, evidenced persons with chronic illnesses. No single-parent households. Values of household property and monthly income compared to living standard are 2 to 6	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
DRENOC	The average household size is 5.15 members. The oldest members are 76 years old and the youngest 7 years. Most of the interviewees are aged 20-35. There is one health facility with 2 employees with not very satisfactory performance. There is one primary school with 30 employees and with satisfactory performance. Ethnic composition is mixed and religious composition as well. Education is at primary and secondary level completion The surface area of agricultural land per household is in the range of 320m2-350m2. The type is forest. Available fields are cultivated. No information on the land ownership documents. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No information on availability of primary school. One health facility. Fairly good road connectivity, though the entire village is not connected. Roads are in good shape. An electricity network exists. There is no water supply system. A sewage system exists. There is internet penetration. Unemployment is the greatest challenge. More than 3/4 of population is unemployed. Within this number the highest proportion falls to women. The level of migration is substantial. No data on the number and age of people who migrated. Two businesses interviewed. Building size is 25m2 up to 200m2. No info on land plot. They are registered (2005 and 2008). 4 employees cumulatively. No employees with disabilities. Annual turnover for 2014 up to 50,000 Euro. The type of the business is sales. Main source of income is from agricultural activities. No information on other sources of income. Average annual income: Annual income per household is 1,827 Euro and monthly income is 152 Euro which is significantly below the national average 0% of the households are indebted. 25% households have job-seeking members. No persons with disabilities, No persons with chronic illnesses. No single parent households. Values of household property and monthly income compared to living standard are 1 to 5.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
PJETËRQ I EPËRM	The average household size is 5.53 members. In terms of age the oldest person is 84 years and the youngest is 1-year-old. The higher share of respondents belongs to the cohort of 30-45-year-old. Education completed is at the level of primary and secondary education. The size of agricultural land per households is in the range of 60m2-700m2. The type is orchards and forest. The land is cultivated completely. Households do not have land without property documents. Most of them rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. There is a primary school. No information about availability of health facilities. Road infrastructure does not cover the whole settlement. Roads are in good shape. An electricity network exists. The water supply and sewage system covers parts of the settlement. There is internet penetration. Unemployment is the biggest challenge. More than 2/3 of population is unemployed. No available data on gender ratios among the unemployed population. The level of migration is very high and in the last 5 yearsmembers of 5 families have emigrated. No data on age of people who migrated. One business interviewed. Surface area of building 100m2. Land plot is 8200m2. Business was registered in 2001. One employee. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. No info on type of business. 50 % of income is from employment, seasonal work 10% and pensions 5%. Remittances take up an insignificant share of incomes. Average annual income: From 900 Euro up to 10800 Euro. Average monthly income is 374 Euro 2% of the households are indebted. 55% households have job-seeking members. Evidenced persons with disabilities, Evidenced persons with chronic illnesses. single parent households. Values of household property and monthly income compared to living standard are 1 to 5.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
PJETËRQ I POSHTËM	The smallest family has 4 members; the largest family has 6 members while the average is 4.8 members. The average age of those evidenced on survey is 20-40-year-old cohort. Both employed and unemployed have completed for the most part primary and secondary education. The surface area of agricultural land per household is in the range of 70m2-500m2. The type is orchards and forest. The land is cultivated completely/regularly. Households do not have land without property documents. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No information on the availability of primary schools. No information about the availability of health facilities. Poor road connectivity. Roads are not from concrete. No information on electricity network. No water supply system. No sewage system. No information on internet penetration. Unemployment is the greatest challenge. More than 3/4 of population is unemployed. Within this number the highest proportion falls to women. The level of migration is assessed as average. Last 5 years, members of 2 of households have migrated at age 27 and 28-year-old. One business interviewed. Surface area of building 700m2.Land plot is 18,000m2. Business is registered in 2005. One employee. No employees with disabilities. Annual turnover for 2014 more than 100,000 Euro. The type of the business is warehouse. 36% income is from employment, social transfers 11.5% and pensions 14%. Average annual income: 4,480 Euro whereas monthly income is 373 Euro. 0% households are indebted. 50% households have job-seeking members. No people with disabilities. No single-parent households, evidenced chronically ill person. The value of households' property and monthly income compared to living standard are 1 to 5.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
JABLLANICË	The smallest household has 3 members while the largest has 16 members and the average is 6.9 members. 48 males and 42 females is the ratio between women and men. The respondents are mostly within 25-49 age cohorts. Education is divided into primary school completion 44 and the rest is secondary school completed. The surface area of agricultural land per household is in the range of 20m2-200m2. The type is forest and to a lesser extent, orchard. As it is forest the land is not cultivated. No information on ownership documentation. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No available data. Unemployment is the greatest challenge. More than 3/4 of the population is unemployed. Within this number the highest proportion falls to women. The migration level is assessed as average. Members from three families migrated in last 5 years at age of 20-39 years. Two businesses were interviewed. Surface area of buildings is 25m^2 and 35m^2.No info on land plot. Businesses are registered (in 2000 and 1983). 3 employees cumulatively. No employees with disabilities. Annual turnover for 2014 is up to 50,000 Euro. The type of the business is retail store. Main sources of income are employment 56%, seasonal/occasional work 30%, and social transfers19.5%. Average annual income is 5,167 Euro whereas monthly income is 430 Euro. 30% of the households are indebted. 50% households have job-seeking members. Evidenced person with disabilities. Evidenced chronically ill person. No single-parent households. Value of households' property and monthly income compared to living standard are 1 to 5.	
KLIÇINË	The smallest family has 2 members; the biggest family has 7 members; the average is 4.1 members. The average age of those evidenced on survey is 20-49-year-old cohort. The highest proportion of both employed and unemployed residents have completed primary and secondary education. The surface area of agricultural land per households is in the range of 30m2-300m2. No information on the type of the land. The land is cultivated completely and regularly. Households have land without property documents. No information on renting land to others or from others. No information on income generated from land based activities. There is a primary school. No information about availability of health facilities or any other communal service. Unemployment is the greatest challenge. More than 2/3 of population is unemployed. No available data on gender ratios among the unemployed population. The level of migration is assessed as average. Members from three families migrated in last 5 years at age 22 to 34. One business interviewed. Surface area of the building is 350m2. Land plot is 7000m2. Business was registered in	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
	2007. 3 employees. No employees with disabilities. Annual turnover for 2014 was more than 100,000 Euro. Type of business is restaurant. Main sources of income come from employment 40%, seasonal employment 14% and pensions 10%, Social transfers 4.7%, remittances 2%. Average annual income: Average annual income is 4177 Euro whereas monthly income is 348 Euro 0.5% households indebted. 50% households have job-seeking members. No people with disabilities, no single parent families, no chronically ill persons. Value of households' property and monthly income compared to living standard are 1 to 5.	
LESHAN	Average household size is 4 members. In terms of education a majority of those assessed have completed primary and higher education The surface area of agricultural land per household is in the range between 30m2-200m2. No information on the land type. The land is cultivated mostly completely and regularly. Households don't have land without property documents. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No available data. Unemployment is the biggest challenge. Within this number the highest proportion falls to women. No evidence on migration One business interviewed. Surface area of the building at 70m2. Land plot is 12,000m2. Business was registered in 2002. 1 employee. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. Type of business is shop. Main sources of income are employment 46.57%, social transfers 12.33%. Average annual income is 1216 Euro. No data on household indebtedness. 25% households have job-seeking members. No evidence on vulnerable groups. The value of property compared to the living standard is between 6 to 8 which is above the average. Similar results are on total income of the household compared to living standards is 5-8.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
LUGAGJI	Average household size is 4 members. The age of respondents is within the range of 1 up to 85 years old with higher representations in the age cohorts 40-59. In regard to education a majority of villagers have completed secondary education and tertiary education. The surface area of agricultural land per household is in the range between 50m2-500m2. The type is orchards and forest. The land is cultivated mostly completely and regularly. Households have land without property documents which is cultivated periodically. Most of them do rent agricultural land to others. Most of them do rent agricultural land from others. No information on income generated from land based activities. No available data Unemployment is the greatest challenge. More than 2/3 of population is unemployed. More than 2/3 of population is unemployed the unemployed outnumber the employed three to one. Within this number the highest proportion falls to women. The level of migration is assessed as low. A member from one family migrated in past 5 years at the age of 27. No business data available. The main sources of income are employment 50% and social transfers 30.38%. Average annual incomeis 4740 Euro and monthly salary of 395 Euro. This salary is slightly above the average national salary. 35% of households are indebted. 50% households have job-seeking members. No people with disabilities, chronically illness and single parents. Value of households' property compared to living standard is self-assessed between 7-2. Monthly income compares to living standard from 2 to 7.	
GLLAVIQICË	The smallest family has 3 members and the largest family has 5 members while the average is 4.2 members. The average age of those evidenced on survey is 30-49-year-old cohort. Both employed and unemployed have completed primary and higher education for the most part. The surface area of agricultural land per household is in the range of 50m2-100m2. The type is orchards and forest. The land is cultivated mostly completely and regularly. Households have land without property documents which is cultivated periodically. Most of them do rent agricultural land to others. Most of them do rent agricultural land from others. No information on income generated from land based activities. There is a primary school in settlement according to official statistic data. No other data on communal facilities and services is available. Unemployment is the greatest challenge. More than 3/4 of population is unemployed. Within this number the highest proportion falls to women. The level of migration is assessed as low. Members from one family migrated in the past 5 years at age 27. **O**ne business interviewed. Surface area of the building 300m2.Land plot is 1500m2. Business was registered in 2002.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
	5 employees. No employees with disabilities. Annual turnover for 2014 was up to 50,000 Euro. No info on type of business. 39% income is generated from agricultural activities, employment 38%, seasonal work 28%, pensions 5% and social transfers 16%. Average annual income: is 5,133 Euro whereas monthly income is 428 Euro. 50% of households are indebted. 100% of households have job-seeking members. No people with disabilities, no single parent households and no chronically ill persons. The Value of household's property and monthly income compared to living standard are 2 to 6	
RAMUN	The smallest family has 2 members; biggest family has 5 members while the average is 3.7 members. The average age of those evidenced on survey is 20-39-year-old cohort. Both employed and unemployed have for the most part completed primary and secondary education. The surface area of agricultural land per household is in the range of 50m2-200m2. No information on the type of land. The land is cultivated mostly completely and regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others. Most of them do not rent agricultural land from others. No information on income generated from land based activities. No available data. Unemployment is the greatest challenge. More than 3/4 of population is unemployed (from 24 interviewed only 2 are employed). Within this number the highest portion is with women. The level of migration is assessed as low. Members from one family migrated in past 5 years at age 29. No business data available 54% of the sources of income come from, employment 23.35%, seasonal work 12%. Average annual income is 3,170 Euro whereas monthly income is 264 Euro. 50% of households are indebted. 35% of households have job-seeking members. No people with disabilities, no single parent households and no chronically ill persons. The Value of households' property and monthly income compared to living standards are 1 to 7.	

Settlement Name	Average Family size, Age and Completed Education Level	Photo of the Affected Settlement
ZAHAC	The smallest family has 2 members; the largest family has 12 members while the average is 5.3 members. The average age of those evidenced during the survey is 30-49-year-old cohort. Both employed and unemployed have for the most part completed primary and secondary education. The surface area of agricultural land per household is in the range of 15m2-400m2. The type is orchards and forest. The land is cultivated mostly completely and regularly. Households have land without property documents which is cultivated periodically. Most of them do not rent agricultural land to others. Few of them do rent agricultural land from others. No information on income generated from land based activities. No available data. Unemployment presents a moderate challenge to the settlement. About 1/4 of population is unemployed. Within this number the highest portion is with women. The level of migration is assessed as low. Members from one family migrated in past 5 years at age 52. Three businesses interviewed. Surface area of buildings amounts to 40m2, 150 m2 and 200m2. Land plot size is from 400 m2, 20000m2 and 600m2. All businesses are registered ('91, 2008, 2012). 13 employees cumulatively. No employees with disabilities. Annual turnover for 2014 for two of them up to 50,000 Euro and one of them between 50,000-100,000 Euro. The type of the business is sales, warehouse and services 37% income is from employment 37%, seasonal work 11%, and pensions 22%. Average annual income: is 4644 Euro whereas monthly income is 387 Euro VG: 35% of households are indebted. 30% of households have job-seeking members. No people with disabilities, no single parent households, no chronically ill persons, no single parent families. The Value of households' property and monthly income compared to living standards are 2 to 9.	

Data Source: Social Survey, 2016

6. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

In this chapter, the information on the assessment of the environmental and social impacts is organized in subchapters for each environmental resource / receptor impacted.

The aims of the impact identification and assessment process are:

- Identify possible adverse and beneficial environmental and social impacts based on the knowledge of the construction and operation regime of the Project and the relevant baseline information in the Study Area;
- Set out design proposals to mitigate adverse impacts and enhance beneficial impacts.

This impact identification and assessmend was informed by the guidance provided in the Design Manual for Roads and Bridges[84] (DMRB) (chapter 11 in particular), potential lenders` and Kosovo* laws requirements. Opinions of stakeholders obtained during the previous engagement activities have been considered as well.

6.1.1. Impact Identification and Assessment Method

The impact identification and assessment process operated with the following premises: (i) Baseline conditions and value / sensitivity of resources / receptors, and (ii) Project activities as a source of impacts. As a result of this process, appropriate significance level to each impact was assigned.

The attributed impact significance was based on available information which, for certain environmental and social resources, was not sufficient for objective judgement. For some impacts the identification and assessment will have to be updated to reflect data, information and knowledge to be obtained during the future design process. Therefore, the level of certainty was discussed for each impact respectively.

Notwithstanding, the significance of each impact was considered a function of the assessed Sensitivity of the resources / receptors and the the impact`s Magnitude or more specifically:

- The **value of the resource** or the sensitivity of the receiving environment / community / receptor and numbers affected (where relevant);
- **magnitude** of the impact (low / medium / high), and whether it be adverse or beneficial is assessed based on:
  - Type (direct / indirect / cumulative);
  - Geographic extent (local / regional / national);
  - Reversibility (reversible / irreversible impact);

[84] https://www.gov.uk/guidance/standards-for-highways-online-resources#the-design-manual-for-roads-and-bridges

Value (sensitivity) of the receptors and resources: analysed environmental and social resources likely to be impacted include soil, water, landscape quality, habitats, cultural heritage, public health and livelihoods. Applied descriptors and criteria for assessing value (sensitivity) of resources / receptors are listed in Table 96.

Table 96 Generic Environmental / Social Value (or Sensitivity) Criteria[85]

Value (sensitivity)	Typical descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution.
High	High importance and rarity, national scale, and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution.
Low (or Lower)	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

Magnitude of the impacts: Used descriptors and criteria to define magnitude of an impact due to the Project are listed in Table 97.

Table 97: Magnitude of Impact and Typical Descriptors

Magnitude of impact	Typical criteria descriptors
Major	• *Adverse:* Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements • *Beneficial:* Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality
Moderate	• *Adverse:* Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements • Beneficial: Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	• *Adverse:* Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. • *Beneficial:* Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	• *Adverse:* Very minor loss or detrimental alteration to one or more characteristics, features or elements. • *Beneficial:* Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change	• No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of effect: Five significance categories (**very large, large, moderate, slight and neutral**) have been used to assess significance of eacn impact (Table 98).

[85] Based upon DMRB Volume 11 Section 2 part 5 Table 2.1; August 2008 (dft.gov.uk).

Table 98: Descriptors of the Significance of Effect Categories

Significance category	Typical descriptors of effect
Very Large	• Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large	• These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
Moderate	• These beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.
Slight	• These beneficial or adverse effects may be raised as local factors. hey are unlikely to be critical in the decision-making process, but are important inenhancing the subsequent design of the project.
Neutral	• No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Lastly, appropriate **significance category** has been attributed to each impact against aforementioned criteria: sensitivity (value) of the resources (receptors) and the magnitude of impacts (Table 99).

Table 99: Arriving at the Significance of Effect Categories

		MAGNITUDE OF IMPACT (DEGREE OF CHANGE)				
		No Change	Negligible	Minor	Moderate	Major
ENVIRONMENTAL VALUE (SENSITIVITY)	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight or Moderate	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

For each resource / receptor, **impacts have been distinguished based on the period of occurrence: Project Construction and Operational phases**.

The **assessment is made without considering the application of preventive and corrective measures that could attenuate the magnitude of the impact**.

In *Chapter 7,* observations of assumptions made and limitations encountered for each resource / receptor were summarised, along with the change management process accompanying next stages of the design. This analysis informed the development of the *Environmental & Social Management & Monitoring Plan.*

In *Chapter 8, m*itigation measures were defined, predominantly for impacts of moderate and major significance. The effectiveness of proposed measures in attenuating the impact was then evaluated and residual impacts were identified. The statement made with regard to the certainty of the assessed significance is valid and all measures that are not based on sound knowledge of affected environmental and social resources will have to be updated.

In Chapter 9, as part of the *Environmental & Social Management & Monitoring Plan,* mitigation measures, associated targets and timelines, as well as institutions responsible to meet these targets, have been defined for each resource / receptor. In addition, monitoring location / parameters, frequency and period of monitoring, as well as responsible institution, have been set. As stated elsewhere, for all mitigation / monitoring proposals attributed with uncertainty, the process will continue throught the Preliminary and Detailed Design stages.

6.2. Impacts on Soil and Erosion

6.2.1. Assessment of Impacts and Likely Significance

Sensitive soil resources are found in areas with presence of alluvial deposits (Drini I Bardhe Rvier and upper terrace of Bistrica e Pejë s River). Potentially affected areas by soil pollution, where groundwater is used for water supply from private wells, are also sensitive. The sensitivity of soils has been assessed as **medium or high**.

At the present Conceptual Design stage the available information does not provide insights into:

- Locations of storage sites for materials to be used during construction;
- The height and locations of major embankments and cuttings as well as the prospects of erosion and landsliding;
- The demand for opening new borrow pits and their locations if need be; the volume of excess earthen material and suitable disposal sites;

Therefore, **the impacts assessed in this section are not localised and/or quantified**. Anyway, the following impacts, for which the likelihood of occurrence is high, have been assessed further:

- Construction phase
    - Impairment of soil quality due to introduction of pollutants;

- Soil erosion due to clearance of vegetation and earth movements;
  - Soil loss and degradation due to opening borrow pits and forming excess material disposal sites
  - Destruction of fertile top soil.
- Operation phase
  - Impairment of soil quality (soil contamination) due to the introduction of pollutants from road surface runoff;
  - Soil erosion in cuts / fills devoid of vegetation.

Soils will be affected during construction and operational phases:

6.2.2. Construction Phase

Impairment of soil quality (soil contamination) due to the introduction of pollutants

The construction works will induce a heavy traffic of vehicles and machinery and inadvertent leaks of oil and lubricants may occur. Hazardous materials` storage areas could cause even more serious effect; these events would be unlikely if an adequate storage would be organised for.

Magnitude and Significance

Construction activities and areas affected will be limited in time and space and therefore the soil functions will not alter in a wider area. Heavy metal contents in soil along motorways are usually found within 5-10 m distance from the Alignment The magnitude of impacts caused by potential leaks from equipment and material storage is considered to be minor. The description and assessment of the magnitude is given in Table 100 below.

Table 100: Magnitude of the Impact - Impairment of soil quality (soil contamination) due to the introduction of pollutants

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Positive or Negative	Negative	Not desirable
Type of Impact	Direct/Cumulative	Soil contamination occurs from materials and emissions generated by construction equipment/activities.
Reversibility	Reversible	Soil contamination can be remediated by natural means if contaminants are biodegradable and are in low concentrations. For severe contamination episodes, an active remediation would be needed.
Geographic Extent	Local	Limited to the footprint of the project
Time when the impact occurs	Immediate	Soil contamination occurs as the pollutants are released
Duration	Medium-term	As long as soil contamination is not severe, the soil self-purification will eliminate contaminants in relatively short periods of time (weeks to years).

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Likelihood of appearance	Probable	The impact has a medium likelihood of occurring
Magnitude	Minor	See above

The assessment significance is based on the magnitude matrix presented above (Table 100) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, without mitigation measures is **slight**.

Soil erosion due to clearance of vegetation and earth movements

Soil erosion will emerge as a result of exposure to wind and water runoff, removal of topsoil, exposure of buried structures, sedimentation, increased turbidity levels in waterways and the local stormwater system. Stability of soils upon higher cuts can be compromised and erosion may occur. It is anticipated that for sections at which more intensive earthworks will take place a risk of erosion exists, particularly during rainy or windy days, (if no mitigation measures would be implemented).

Most of the construction works will take place on rolling and hilly terrains. Erosion will mainly occur in the areas where the motorway will run on the side of the hills, which is where the cuttings will expose large surfaces of soil. A high cut (over 12 meters) is foreseen at the chainage km 15+000.

At the section Km 16+000 – Km 21+000, where surface wash-off in cohesionless sediments occurs, erosion can be further triggered by the construction.

Some exposed soil will also occur at the areas of the abutments and pillars of the bridge over the Drini I Bardhe River (chainage km 13+550 and viaducts at chainage km 25+000 and km 27+000).

The geomechanical investigations` results propose to strengthen bearing capacity of soils at the sections km 10+000 to 12+000 and km 15+000 to 23+000.

Locations of certain areas prone to erosion are highlighted in the Figure below.

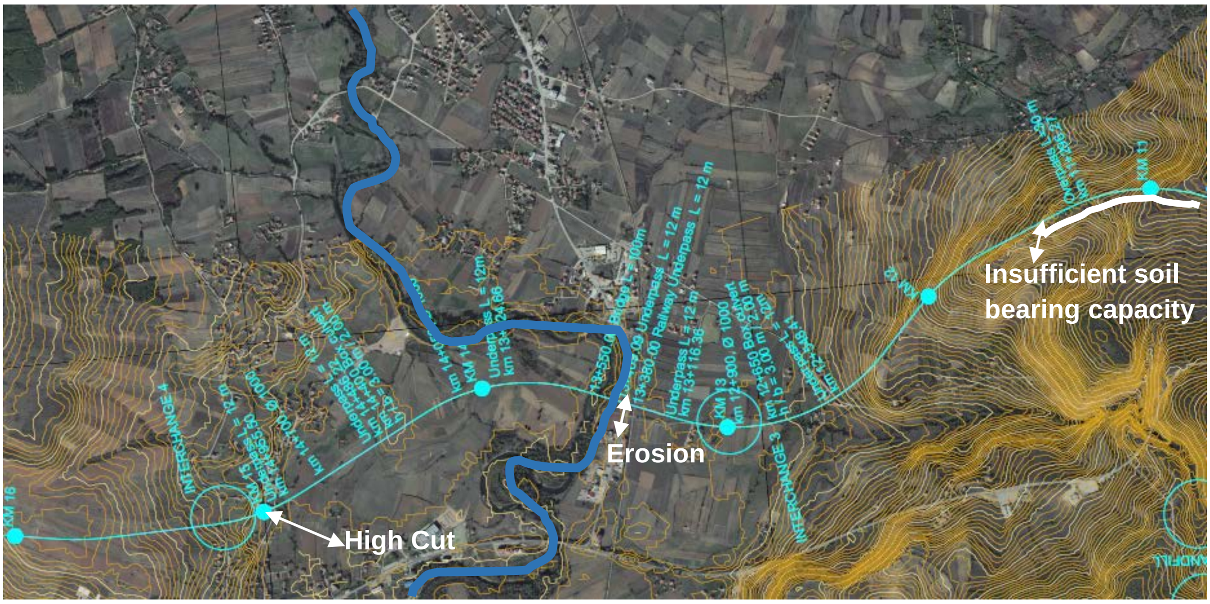


Figure 99 Areas Prone to Erosion

Magnitude and Significance

Soil erosion during the construction of the motorway will be clearly visible, but will be limited to realtively small areas and the overall magnitude of the impact on the soil resources is considered moderate. The description and assessment of the magnitude is given in Table 101 below).

Table 101: Magnitude of the Impact- Soil erosion due to clearance of vegetation and earth movements

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Erosion occurs because of exposure of soil by earth movements of the construction works.
Reversibility	Irreversible	Eroded soil cannot be replaced.
Geographic Extent	Local	Limited to the footprint of the project
Time when the impact occurs	Immediate	Soil erosion will occur as soil is exposed to the surface
Duration	Short-term	During construction works
Likelihood of appearance	Probable	The impact has a medium likelihood of occurring
Magnitude	Moderate	See above

The assessment of significance is based on the magnitude matrix presented above (Table 101) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

Soil loss and degradation due to opening borrow pits and forming excess material disposal sites

There are existing quarries located in the proximity of the motorway Alignment which can potentially meet the demand for construction material, to be defined at the later stage of the design process. Opening new borrow pits is associated with soil loss and altering soil ecological functions due to compaction and contamination.

As a result of forming and managing sites for the disposal of surplus earthen material from the motorway construction, soil will be lost in certain areas; ecological functions of soil onto access roads and the surroundings of these sites will be altered due to compaction and pollution.

Current proposals for excess material disposal sites and borrow pits are given in the figure below:

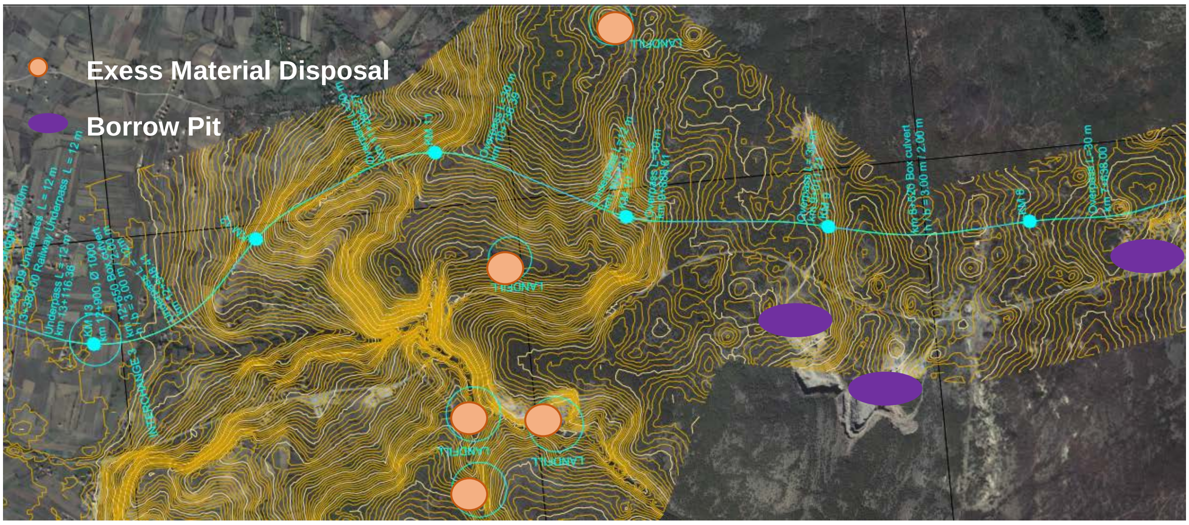


Figure 100: Indicative Excess Material Disposal Sites and Borrow Pits along the Alignment

Magnitude and Significance

Soil erosion during the construction of the motorway will be clearly visible, but will be limited to realtively small areas and the overall magnitude of the impact on the soil resources is considered moderate. The description and assessment of the magnitude is given in Table 102 below.

Table 102: Magnitude of the Impact soil loss and degradation due to opening borrow pits and forming excess material disposal sites

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Soil loss and degradation occurs because of soil removal and compaction.
Reversibility	Irreversible	Soil removed from borrow pits and degraded upon the disposal cannot be replaced

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Geographic Extent	Local	Limited to the wider footprint of the project
Time when the impact occurs	Immediate	Soil loss and distriction will occur as soil is removed and/or compacted
Duration	Short-term	During construction works
Likelihood of appearance	Certain	The impact has a high likelihood of occurring
Magnitude	Moderate	See above

The assessment of significance is based on the magnitude matrix presented above (Table 102) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

Destruction of top soil

The planned motorway will mostly go through land covered with anthropogenic (agricultural) and semi natural soils (meadows, pastures and forests), which have well-preserved ecological functions. Semi natural soils have higher sensitivity than the anthropogenic soils.

This impact is relevant for two main reasons, because soil is rendered useless and it is unavoidable, althought corrective measures are available. It generally implies a large amount of rich top soil removed that cannot be given another use; use of excess top soil can be otherwise given away to agricultural producers.

Estimation of the magnitude

Approximatelly 123.48ha of land will be subject to land take for the construction of the motorway and associated infrastructures; this means that the top soil in this surface will be removed and lost forever (assuming no other loction can be found to use it).

Of these 123.48ha, about 35% is high and very high sensitivity natural and semi natural soils, 55% is medium sensitivity agricultural soils, and the rest (10%) is soil in settlements with negligible sensitivity.

The destruction of top soil will be distinguishable and measurable, will affect most of the motorway Alignment, but be restricted to a narrow strip of land and it will not affect the integrity of the soil resource in the area. Therefore, the magnitude of the impact is considered moderate.

The description and assessment of the magnitude is given in Table 103 below.

Table 103: Magnitude of the Impact- Destruction of Top Soil

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Type of Impact	Direct	Loss of top soil occurs because of land take needed to construct the motorway slignement.
Reversibility	Irreversible	Rich top soil is removed to construct the permanent way and the right of way and cannot be replaced.
Geographic Extent	Local	Limited to the footprint of the project
Time when the impact occurs	Immediate	Top soil is lost when clearance and earth works start
Duration	Long-term	Top soil underneath the motorway Alignment will be lost for ever
Likelihood of appearance	Certain	Top soil needs to be removed to construct the motorway
Magnitude	Moderate	See above

The assessment of significance is based on the magnitude matrix presented above (Table 103) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

6.2.3. Operational Phase

Impairment of soil quality (soil contamination) due to introduction of pollutants

Soil contamination can occur during operation of the motorway by the airborne substances and polluted run-off from carriageway surface. The pollutants originate from exhaust emissions, dust generated by the traffic, road surface wear, wearing of tire and other car parts. Chemicals used for winter road maintenance constitute considerable source of contamination. Inadequate use of salt (in large quantities) might cause the release of chloride ions to the melt waters and soil salinity. Resistant soils, with high soil reaction and absorption complex capacity, are less sensitive to pollution. At this stage the existence or distribution of resistant soils is not known. Soil type, i.e. its resistance to pollution, should be identified at later stages, in the areas where groundwater used for water supply is highly sensitive.

Pollutants settling in road-side soil can impair the growth of vegetation and the success of soil organisms, thus increasing the likelihood of erosion. These effects are usually much localized, affecting only a narrow band on either side of the road.

It is expected that the concentration of pollutants in soils along the planned motorway will not increase significantly; potentially, the soil quality will worsen in areas where, potentially, the run-off from the carriageway surface will be discharged without any treatment. With the technological advancement of vehicles, the amount of pollutants released into the surface layer of the soils tends to decrease. In Kosovo*, however, the vehicle fleet is mostly obsolete and some soil pollution is likely.

Estimation of the magnitude

Magnitude depends on many factors including: traffic congestion, vehicle technical condition, land development, climate conditions or the width of the drained road prism. Traffic flows along the new motorway are expected to raise and reach 30,000 Annual Average Daily Traffic (AADT) in 2020 and 46,000 AADT in 2030; vehicles` technical condition is controlled upon annual technical examinations and it is considered that it will not influence significantly the magnitude; the route runs mostly through agricultural land. Having in mind these factors, the magnitude of the impact is considered moderate.

The description and assessment of the magnitude is given in Table 104 below.

Table 104: magnitude of the Impact- impairment of Soil Quality

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct/Cumulative	Soil contamination occurs due to the runoff containing sediments of exhaust emission, dust generated by the traffic, road surface wear, tire wear and wearing of other car parts; also it contains solt used for winter maintenance.
Reversibility	Reversible	Soil contamination can be remediated by natural means if contaminants are biodegradable and are in low concentrations. For severe contamination episodes, an active remediation would be needed.
Geographic Extent	Local	Limited to the footprint of the project
Time when the impact occurs	Delayed	Distinguishable soil contamination would take a time until sufficient pollutants accumulate.
Duration	Long-term	Soil contamination will be concomitant to motorway operation.
Likelihood of appearance	Probable	The impact has a medium likelihood of occurring
Magnitude	Moderate	See above

The assessment of significance is based on the magnitude matrix presented above (Table 104) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

Soil erosion in cuts / fills devoid of vegetation

Main risks are associated with mobilisation of unconsolidated materials if disturbed surfaces are not stabilised or successfully revegetated. In addition, around the abutments of the bridge over the Drini I Bardhe River some post-construction erosion process in the form of gullies could be expected. The same goes for the abutments and pillars of the viaducts. The soils in the areas of the bridge and viaducts can be prone to erosion.

Estimation of the magnitude

Post-construction erosion processes would be mainly expected in the areas where the motorway will run on the side of the hills, which is where the cuttings will have exposed large surfaces of nude soil. Also, fills formed to adapt the motorway longitudinal section to the slope may be subject to erosion processes in the form of gullies.

The erosion map of Kosovo*[86] shows that in the Project area the only section prone to moderate erosion is the wider riverbed of Drini I Bardhe River, including the slopes towards to river before the bridge.

Thus, it is considered that there may be some measurable changes in the soil resource during the operational phase of the Project, but the losses will be minor and limited to key areas. The magnitude of the impact is considered to be minor.

The description and assessment of the magnitude is given in Table 105 below.

Table 105: Magnitude of the Impact- Soil Erosion in Cuts / Fills Devoid of Vegetation

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Erosion occurs because of exposure soil left devoid of vegetation or retaining material after the construction works.
Reversibility	Irreversible	Eroded soil cannot be replaced.
Geographic Extent	Local	Limited to the footprint of the project
Time when the impact occurs	Delayed	Soil erosion processes in cuttings and fills start to be noticeable after some time upon exposure of the soil
Duration	Medium-term	The growth of vegetation should help to stop the erosion processes.
Likelihood of appearance	Probable	The impact has a medium likelihood of occurring
Magnitude	Minor	See above

The assessment of significance is based on the magnitude matrix presented above (Table 105) and soil resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Soil Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

6.2.4. Summary of Impacts on Soil

The significance of impacts on soils that are evaluated in this Section are:

[86] Spatial Plan of Kosovo, http://mmph.rks-gov.net/repository/docs/Spatial_Plan_of_Kosova_2010_2020.pdf

- Construction phase
    - *Impairment of soil quality (soil contamination) due to the introduction of pollutants - **SLIGHT**;*
    - *Soil erosion due to clearance of vegetation and earth movements - **MODERATE**;*
    - *Soil loss and degradation due to opening borrow pits and forming excess material disposal sites - **MODERATE**;*
    - *Destruction of fertile top soil - **MODERATE**.*
- Operation phase
    - *Impairment of soil quality (soil contamination) due to the introduction of pollutants from road surface runoff - **MODERATE**;*
    - *Soil erosion in cuts / fils devoid of vegetation **MODERATE***

For impacts attributed with Moderate significance appropriate mitigation measures will have to be implemented.

6.3. Impacts on Surface Water

6.3.1. Assessment of Impacts and Likely Significance

Surface water bodies are vulnerable to pollution. Water quality and flow characteristics (level and volume) can change as a result of project activities, during both - construction and operational phases.

Construction activities can be a source of **pollutants**:

- **Suspended solids** may be swept by storm water runoff from the construction site devoid of vegetation or accidentally released during construction of the motorway structures, dumping of waste, or cleaning of equipment. The washout from concrete batching plants or ready-mix concrete lorries is particularly damaging due to the highly alkaline nature of uncured concrete. The release of significant volumes of sediments to the water bodies by storm water runoff or direct disposal, can lead to changes in water courses` flow patterns.
- **Hydrocarbons lubricants, paints, solvents, resins, acids, or uncured concrete**, which are released upon accidental leaks and spills from machinery and material storage sites, can contaminate water. Contamination of the water body may occur either directly (e.g. if the construction site is taking place very close to or on the river or stream) or indirectly, though soil and groundwater transport to the surface water body.

The main construction activities associated with the motorway project potentially affecting surface water quality are summarized in Table 106.

Table 106 : Construction Activities Potentially Affecting Surface Water

Activity	Description
	Uncontrolled sediment erosion and contaminated silt runoff caused by removal of vegetation and destruction of soil and gravel rocks into small fractions, which could

Activity	Description
Activities that provide a pollution source	cause water turbidity, sediment deposition on stream beds and banks, and accumulation on the slopes of rivers and ravine gorges. Mainly caused by blasting and earthworks.
	Leaks and accidental spills from the use of concrete during the construction of bridges and viaducts. Cleaning of equipment holding these products.
	Leaks and accidental spills of fuel, lubricants and other hazardous substances at product and waste storage areas
	Leaks and accidental spills of fuel and lubricants from construction machinery and vehicles at construction site
Activities that cause variations in natural flow	Accumulations of excessive amounts of sediments in watersheds from increased runoff from cleared areas or cleaning of equipment (e.g. concrete mixing plant)
	Changes to the existing drainage network, including interception and redirection of watercourses
	Discharge of groundwater to surface water, if the groundwater table is intercepted.
Activities that provide a pollution pathway	Blasting, earthwork
	Vegetation clearing
	Cleaning of equipment

During **operational phase**, water can be affected by the release of **pollutants**[87] and **changes in local flow patterns** due to the physical presence of the motorway:

- **Pollutants** are released from vehicles or freight
- **Changes in local flow patterns** occur if:
  - the motorway is constructed in the flood plain of the river (e.g. Drini E Bardhe flood plain); as such, it will occupy a space that is no longer available for the water to expand during flooding periods and the water will be retained upstream;
  - drainage system and outflow patterns from the motorway are not hidrologically and hidorgeologically designed properly and as a result, the motorway could sause floodings downstream.

The main sink of all released substances are the motorway embankment and the water body receptors nearby through the sink by the drainage systems and a smaller proportion deposit in soil nearby the Alignment.

The main operational activities associated to the motorway project that may affect surface water bodies are summarized in the Table below.

[87] Water pollution during operation derives from diffuse release of inorganic and organic substances (lead, zinc, cadmium and polycyclic aromatic hydrocarbons (PAH), lubricants solvents, acids, bases, etc.). Most of these pollutants are listed in the Water Framework Directive (List I and II substances).as priority substances.

Mott MacDonald

Table 107: Operation Activities Potentially Affecting Surface Water

Activities that provide a pollution source	Operation of the vehicles, passengers and freight transport. Diffuse release of organic and inorganic contaminants.
	Potential leaks from transported hazardous substances
	Accidental spills of transported hazardous substances and lubricants
Activities that cause variations in natural flow	Occupation of the flood plain by the motorway
	Drainage pipes and bridges at the intersections of the motorway with water courses

The following potential impacts on surface water have been identified and are subject to assessment for the construction and operational phases of Motorway Project Alignement:

- Construction phase
  - o Impairment of water quality due to the introduction of pollutants;
  - o Leaks and accidental spills of fuel and lubricants from construction machinery;
  - o Accumulations of excessive amounts of sediments in watersheds
- Operational phase
  - o Impairment of water quality due to the introduction of pollutants in the runoff; Accidental spills of transported hazardous substances and lubricants;
  - o Alteration of flow patterns and sediment deposition during flooding periods

6.3.2. Construction Phase

Impairment of water quality due to the introduction of pollutants

The construction works of the motorway project are expected to have an impact on the surrounding water courses along the Alignment. Affected water courses are:

- Drini i Bardhe River (bridge to be constructed at the crossing point Km 13+550)
- Bistirice e Pejë s River as it runs at lower elevations than the motorway and all gullies collected by the culverts are drained into it, and
- A few temporary water courses which are drained beneath the carriageway.

Their previously assigned sensitivities are high, medium and low respectively.

Estimation of the magnitude

The magnitude assessment was made based on the:

- intensity of Project activities that are expected to be performed nearby water courses (at the crossing with Drini i Bardhe River and upon culverts / ditches)
- sensitivity of water courses to the pollution in the area of the construction works (high, medium and low, please see section Baseline of Water Resources above),

- distance between the water course and the Alignment (the minimum distance between the Alignment and Bistrica e Pejë s River is approximately 200m; the section at Km 16+730 is highly sensitive, however, the overall sensitivity of the river was assessed as medium).

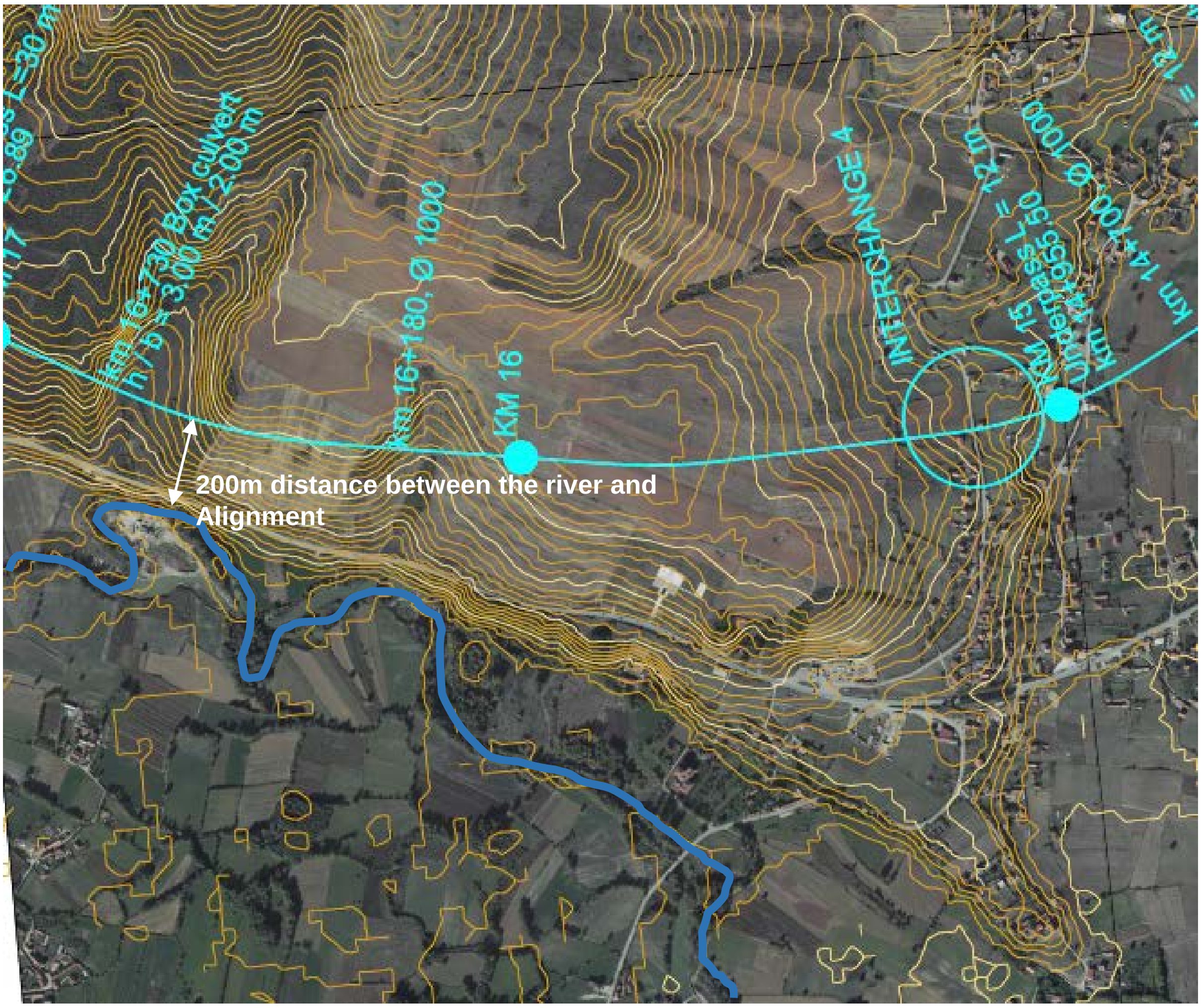


Figure 101 Section of the Alignment Approaching Bistrica e Pejë s River at 200m distance

Having in mind these factors, the magnitude of the impact is considered **Moderate.**

The magnitude of the impact is as follows (Table 108).

Table 108: Magnitude of the Impact - impairment of water quality due to the introduction of pollutants

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct/Cumulative	Water pollution generated due to emissions and contaminated effluents generated by the construction activities

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Reversibility	Reversible	The impact is reversible only during the construction phase at surface water areas. However, water bodies have a self-purification capacity that allows the return to natural conditions
Geographic Extent	Local	The alteration of water quality is limited to the footprint of the project, and only at passing over surface waters
Time when the impact occurs	Immediate	The alteration of the water quality occurs as the construction takes place and contaminated effluents reach surface water bodies
Duration	Short-term	At each location it will last the time the construction activity takes place
Likelihood of appearance	Probable	The execution of the construction works generates effluents and emissions to soil that might reach water bodies
Magnitude	**Moderate**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 108) and water resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Water Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

Leaks and accidental spills of fuel and lubricants from construction machinery

The construction works of the motorway project are expected to have an impact on the surrounding water courses along the Alignment with leackages and possible accidental spills of fuel and lubricants from the construction machinery and vehicles. These leaks and spills could occur either at the construction site or at the storage sites for products and waste.

Estimation of the magnitude

The criteria used for assessing the magnitude of this impact ase the same with those which applied to the impact “Impairment of water quality due to the introduction of pollutants”.

Having in mind these factors, the magnitude of the impact is considered **moderate.**

The magnitude of the impact is as follows (Table 109).

Table 109: Magnitude of the Impact - leaks and accidental spills of fuel and lubricants from construction machinery

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct/Cumulative	Water pollution generated due to leaks and accidental spills of fuel and lubricants from construction machinery and other sources generated at the construction sites

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Reversibility	Reversible	The impact is reverible only during the construction phase. However, water bodies have a self-purification capacity that allows the return to natural conditions
Geographic Extent	Local	The alteration of water quality is limited to the footprint of the project, and only at passing over surface waters
Time when the impact occurs	Immediate/Delayed	The alteration of the water quality occurs as the construction takes place and contaminated effluents reach surface water bodies. Delayed impact occurs when contaminents reach the water through the soils
Duration	Short-term	At each location it will last the time the construction activity takes place
Likelihood of appearance	Probable	The execution of the construction works might generate spills and accidents to soil that might reach water bodies too.
Magnitude	**Moderate**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 109) and water resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Water Resources). The deriving initial **significance of this impact**, (without mitigation measures), is **moderate**.

Accumulations of excessive amounts of sediments in watersheds

The construction works of the motorway project are expected to have an impact on the water courses running in the vicinity the Alignment and in their immediate watersheds by accumulations of excessive amounts of sediments.Sources of the impact are related to the increased runoff from cleared areas or cleaning of equipment (e.g. concrete mixing plant), changes to the existing drainage network, including interception and redirection of watercourses, blasting, earthworks, occurance of intensive storms along the cleared areas, etc.

Estimation of the magnitude

The criteria used for assessing the magnitude of this impact are the same with those which applied to the impact “Impairment of water quality due to the introduction of pollutants” and “Leaks and accidental spills of fuel and lubricants from construction machinery”. Having in mind these factors, the magnitude of the impact is considered negligible.

The magnitude of the impact is as follows (Table 110).

Table 110: Magnitude of the Impact - accumulations of excessive amounts of sediments in watersheds

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Type of Impact	Direct/Cumulative	Water pollution generated due to accumulations of excessive amounts of sediments in watersheds
Reversibility	Reversible	The impact is ireversible only during the construction phase. However, water bodies have a self-purification capacity that allows the return to natural conditions
Geographic Extent	Local	The alteration of water quality is limited to the footprint of the project, and only at passing over surface waters
Time when the impact occurs	Immediate	The alteration of the water quality occurs as the construction takes place and sediments reach surface water bodies.
Duration	Short-term	At each location it will last the time the construction activity takes place
Likelihood of appearance	Probable	The execution of the construction works might generate sedimentation in the surface waters
Magnitude	Negligible	See above

The assessment of significance is based on the magnitude matrix presented above (Table 110) and water resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Water Resources). The deriving initial **significance of this impact**, (without mitigation measures), is ***Slight***.

6.3.3. Operational Phase

The surface waters of interest for the analyses are the rivers Drini i Bardhe (crossed at one point only) and the Bistrica e Pejë s River, which runs southern of the Alignment and into which the gullies crossed by the motorway are discharged.

The impacts on water resources are very similar to those described for the Construction Phase and thus the applied methodology is the same. Therefore, only the summary of the significance of respective impacts is provided in the next section.

6.3.4. Summary of Impacts on Surface Water

- Construction phase
  - Impairment of water quality due to the introduction of pollutants - ***MODERATE***
  - Leaks and accidental spills of fuel and lubricants from v - ***MODERATE***
  - Accumulations of excessive amounts of sediments in watersheds - ***SLIGHT***
- Operational phase
  - Impairment of water quality due to the introduction of pollutants in the runoff - ***MODERATE***
  - Accidental spills of transported hazardous substances and lubricants - ***MODERATE***
  - Alteration of flow patterns and sediment deposition during flooding periods - ***SLIGHT***

6.4. Impacts on Groundwater

6.4.1. Assessment of Impacts and Likely Significance

The motorway construction is expected to have short-term impacts to groundwater resources.

Pollution of groundwater may occur as a consequence of:

- leaks or accidental spills at the construction site and storage areas. Leaked or spilled hazardous contaminants most often will reach groundwater indirectly by leaching through the soil, or directly, when the groundwater table is exposed to the atmosphere.
- dewatering systems: these are applied during excavations to lower the groundwater table, when it is higher than the base level of the cutting or the motorway substructure. The resulting disruptance of the groundwater table may have indirect effects like drying of existing springs/wells, and potential movement of contaminated plumes, if present.

With regards to the **operational phase**, the same operational activities discussed for surface water may impact groundwater: Contaminants released by construction activities saturate in run-off and by percolating though the vadose zone eventually reach the groundwater.

When groundwater table is high or soil characteristics enable water to percolate through the vadose zone, all cuttings should be being waterproof in order to ensure the durability of the structure, reduce maintenance, and reduce hazards related to ice formations during winter. In the absence of such a measure, the impact that started during construction may last throughout the operational life of the motorway.

The following potential impacts on groundwater have been identified and are subject to assessment for the construction and operational phases of Motorway Project Alignement:

- **Construction phase**
  - Impairment of groundwater quality due to the introduction of pollutants
  - Alteration of groundwater flow patterns during excavation and cutting operations

- **Operational phase**
  - Impairment of groundwater quality due to the introduction of pollutants

6.4.2. Construction Phase

Impairment of qroundwater quality due to the introduction of pollutants

The susceptibility of an aquifer to pollutants released on the ground depends on the permeability and thickness of overlying geological materials (vulnerability of groundwater). Vertical travel time needed for pollutants to reach the groundwater is also linked to the hydro-geological features of the terrain.

Detailed information regarding the distribution of lithological formations and water bearing strata is not available at present. The presence of groundwater is certain only for Alluvial terraces, i.e. fiverbanks and Quarternary sediments which are intermittently present in the initial section of the Alignment near Kieve.

The construction works of the Project will potentially have impact on free water level alluvial aquifers (Drini I Bardhe and Bistrica e Pejë s River valleys), which are crossed by the Alignment. In addition, water bearing strata located to the south of the Alignment, from which drinking water is abstracted from private wells for water supply, is particularly sensitive.

At present, there isn`t any information available about the:

- **Vulnerability of groundwater used for water supply to pollution from the motorway**
- **Links between water bearing strata storing groundwater which is being used for water supply and the aquifers crossed and thus affected by the alignment**

Therefore, only aquifers formed in major river valleys, which will get into direct contact with materials used for construction, are analysed. Further studies are needed to assess to which extent the groundwater used for water supply will be affected by the Project construction and operation activities.

Estimation of the magnitude

The magnitude of impact is assessed based on intensity of activities, distance from (known) aquifers and sensitivity. As explained above, groundwater in sensitive aquifers may become contaminated through contaminated soils from leaks and spills of hazardous materials, or even directly through the construction of the pile foundations for the bridge, for instance. Having in mind these factors, the magnitude of the impact is considered **moderate.**

The magnitude of the impact is as follows (Table 111).

Table 111: Magnitude of the Impact - impairment of groundwater quality due to the introduction of pollutants

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct/Cumulative	Groundwater contamination in most of the cases would occur through soil contamination
Reversibility	Reversible	The impact is reversible only during the construction phase at surface water areas. However, groundwater bodies have a self-purification capacity that allows the return to natural conditions
Geographic Extent	Local	Groundwater pollution would be limited to the area downstream the source
Time when the impact occurs	Delayed	Groundwater contamination would show up sometime after soil becomes contaminated

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Duration	Medium term	Once contaminants reach groundwater, depuration may take several years if the source is removed. If the source is important and is not removed the duration may be considered on the long term
Likelihood of appearance	Unlikely	The probability of occurrence depends on important enough leaks or spills of hazardous substances into soil so that the contaminants can reach the groundwater level
Magnitude	**Moderate**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 111) and water resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Water Resources). The deriving initial **significance of this impact**, (without mitigation measures), is ***Moderate***.

Alteration of groundwater flow patterns during excavation and cutting operations

The construction works of the Project, carried out at the excavations in alluvial sediments crossed by the Alignment and to a lesser extent in cutting zones, are expected to have an impact on these aquifers by altering groundwater flow patterns.

Estimation of the magnitude

The major excavation works will take place in hilly areas where groundwater table is well below the surface and any exposures are not likely. In this regard, it is considered that the construction of the bridge over Drini i Bardhe River at chainage km 13+550, will have greater potential of altering groundwater patterns. Where the Alignment approaches Bistrica e Pejë s River at 200m, altering groundwater patterns is also possible, however, the likelihood of occurrence cannot be assessed at present.

Alteration may be caused by construction of bridges and viaducts, excavation and cutting. Having in mind these factors, the magnitude of the impact is considered **minor.**

The magnitude of the impact is as follows (Table 112).

Table 112: Magnitude of the Impact - alteration of groundwater flow patterns during excavation and cutting operations

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Groundwater levels would be intercepted because of excavation and/or cutting operations.
Reversibility	Reversible	When the interception action stops (e.g. sealing of the interception zone)
Geographic Extent	Local	Dewatering/watering would occur locally, limited to the

Criteria	Assessment Thresholds	
	Threshold	Descriptions
		radius of influence of the interception area
Time when the impact occurs	Immediate	Dewatering starts to occur as the level is intercepted, watering at new locations may occur
Duration	Short term	If the interception stops during the construction period. Long term if interception zone is not sealed
Likelihood of appearance	Unlikely	Most of the Alignment where new cuttings are going to be constructed runs over impermeable materials. However, it is not discarded that some isolated bearing water formations could be crossed.
Magnitude	**Minor**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 112) and water resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Water Resources). The deriving initial **significance of this impact**, (without mitigation measures) is ***Slight***.

6.4.3. Operational Phase

The groundwater of interest for the analyses are the Alluvial terraces of rivers Drini i Bardhe (crossed at one point only) and the Bistrica e Pejë s River, which runs southern of the Alignment and into which the gullies crossed by the motorway are discharged.

The impacts on water resources are very similar to those described for the Construction Phase and thus the applied methodology is the same. The impact will be permanent, unlike the temporary impact during construction. Therefore, only the summary of the significance of respective impacts is provided in the next section.

6.4.4. Summary of Impacts on Groundwater

- **Construction phase**
    - o *Impairment of groundwater quality due to the introduction of pollutants - **MODERATE***
    - o *Alteration of groundwater flow patterns during excavation and cutting operations - **SLIGHT***

- **Operational phase**
    - o *Impairment of groundwater quality due to the introduction of pollutants - **MODERATE***

6.5. Impacts on Climate and Air Quality

6.5.1. Assessment of Impacts and Likely Significance

The motorway construction is expected to have short-term impacts on the air quality and long-term impacts during the operational phase. For this ESIA, the air emissions and their effects on air quality will be due to the construction of the motorway, generated by the outdoor machinery, equipment and transportation vehicles, and to the operation with traffic during the operational phase.

The main construction activities of the motorway project that may affect air quality are summarized in the table below.

Table 113: Construction Activities Potentially Affecting Air Quality

Activity	Description
Activities - a pollution source	Movement of construction machinery and vehicles at the construction site
	Clearance of the top soil and vegetation along the Alignment
	Blasting, excavations, earthworks and boreholes

With regards to the **operational phase**, the air emissions and their effects on air quality will be due to the traffic flows.

The following potential impacts on the air quality have been identified and are subject to assessment for the construction and operational phases of Motorway Project Alignement:

- **Construction phase**
  - Impairment of air quality due to emission of construction-borne air pollutants
- **Operational phase**
  - Impairment of air quality due to emission of air pollutants from traffic along the motorway

6.5.2. Construction Phase

Impairment of air quality due to emission of construction-borne air pollutants

The construction activities will generate dust and combustion gases from fuel powered machinery and vehicles along the contruction site (PM_{10}, $PM_{2,5}$, CO_2, NO_x, PAH, SO_2).

Dust will mainly be generated from earth movements (blasting, excavation, levelling, dumping), wheels of trucks and machinery moving /travelling along unpaved surfaces, handling and transport of soil, wind erosion from exposed surfaces and crushing plants.

An initial step in the construction phase will be the demolition of objects (buildings, Residential Properties, fences, etc.) located on the path of the motorway route. In the case of buildings and Residential Properties, their demolition implies the risk of finding asbestos containing materials that might have been used for their construction. If this happened a highly dangerous asbestos air contamination could occur.

At the construction site, the possible impacts are expected across the axis of the motorway (at a distance of ± 100 m).

Estimation of the magnitude

The estimation of the magnitude for dust emissions depends on the number of mechanization vehicles on the construction site at the same time, number of working hours, meteorological conditions (mainly wind direction, speed, air moisture), and distribution of urban settlements with regards to the source.

Emission factors[88] appropriate for use in estimating Total Suspended Particles and PM_{10} particles to be emited during construction are shown in the table below.

Table 114: Factors for dust emission from construction activities

Construction Activity	Unit	TSP	PM_{10}	Controls to be adopted (% reduction)
Drilling	kg/hole	0.59	0.31	water sprays (70%)
Blasting	kg/blast	11.7	6.09	hoardings around site (30%)
Excavation	kg/tone	0.025	0.012	hoarding and water sprays (65%)
Bulldozers on spoil	kg/hour	1.63	0.33	hoardings around site (30%)
Loading trucks	kg/tone	0.0003	0.0001	hoardings around site (30%)
Wheel generated dust	kg/vkt	3.88	0.96	water sprays (75%)
Trucks dumping spoil	kg/tonne	0.012	0.0043	-
Wind erosion	kg/ha/hour	0.4	0.2	-

Emissions of dust as Total Suspended Particles and PM_{10} particles could not be performed for this ESIA due to the lack of information on:

- amounts of needed borrow bits and excavated earth,
- quantities of expected surplus earth materials to be disposed,
- construction work progress per day,
- haul distance on unsealed roads for spoil movements and materials delivery,
- total construction surface,
- blasting patterns
- the emission factors of combustion emissions from vehicles, equipment and machinery.

The software *ImmProg2000,* which was used to assess the distribution of air pollution from vehicles during operation, can be applicable to construction activities as well. Namely, the same pattern of distribution of pollution will apply as the model considers topographical and climatic characteristics. As a result of the model, the sensitivity of settlements has been identified: out of 13, in 4 settlements the concentration of dust is expected to be high, in 4 will be medium and in 5 will be low. The average sensitivity is ranked as medium.

[88] *Emission Estimation Technique Manual for Mining version 2.3* (NPI, 2001)

Based on the previously assessed sensitivity of settlements, which took in consideration the length of the row of properties exposed to pollution and their distance to the Alignment (Table 52 above), in conjunction with the emission of pollutants as per the dispersion model, the magnitude of the impact is considered minor.

The magnitude of the impact is as follows (Table 115).

Table 115: Magnitude of the Impact - impairment of air quality due to emission of construction-borne air pollutants

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct/Cumulative	Dust and combustion gases are generated by the construction activities
Reversibility	Reversible	Air contamination stops when construction works are interrupted. Air selfpurification factor is good enough for reversibility
Geographic Extent	Local	The alteration of air quality is limited to the footprint of the project
Time when the impact occurs	Delayed	The alteration of the air quality occurs as the motorway structures are constructed
Duration	Short-term	At each location it will last the time the construction activity takes place.
Likelihood of appearance	Certain	The execution of the construction works generates dust and combustion gases
Magnitude	**Minor**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 115) and air resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Air Quality). The deriving initial **significance of this impact**, (without mitigation measures), is ***Slight***.

6.5.3. Operational Phase

With regards to the operational phase, there is a concern about air pollution by emissions of transportation activities (traffic).

The sensitive receptors of interest are residential properties which are located within a ± 100m buffer from either side of the Alignment. However, the identification of sensitive receptors and the width of the buffer between the motorway Alignment and the residential properties will have to be updated during the Preliminary Design stage. Measurements of air quality within the Project area will have to be carried out along with air quality modelling.

The current Alignment (at the Conceptual Design stage), avoids densely populated areas for the most of its length. The traffic from the existing N9 road will be diverted to the new motorway which will imply a decrease of air pollution in the densely populated areas crossed by the existing road. The cumulative effect in this regards is positive due to the split of the traffic and dispersion of the pollution from vehicles running along two parralel Alignments over wider area.

Sensitivity of receptors is as follows: 4 settlements are highly sensitive, 4 are assigned by medium sensitivity and 5 by low sensitivity.

The impacts on air quality are very similar to those described for the Construction Phase and thus the applied methodology is the same. The impact will be permanent, unlike the temporary impact during construction.

Impairment of air quality due to emission of air pollutants from traffic along the motorway

It is obvious that pollutants (dust, NO_x, SO_2) will be emitted in the air from traffic during the operational phase along the motorway. However, sensitive receptors (residential properties) are located at limited sections only (please see table 52 above).

Estimation of the magnitude

The traffic flows will grow in 2020 and 2030 and the pollution will increase; however, the technologically advanced vehicles will penetrate the market in Kosovo* and the pollution from mobile sources will stabilise. Considering also the sensitivity of receptors, which are for the most length of the Alignment located at a distance of 70-100 meters from it, the magnitude of the impact on air quality is considered to be **minor**.

The magnitude of the impact is as follows (Table 116).

Table 116: Magnitude of the Impact - impairment of air quality due to emission of air pollutants from traffic along the motorway

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Air emissions are generated by diesel combustion engines
Reversibility	Reversible	If contamination is slight, return to natural conditions through self-purification may be possible.
Geographic Extent	Local	Air pollution would be limited to the area closest to the Alignment
Time when the impact occurs	Immediate	The alteration of the air quality occurs due to the traffic operations
Duration	Long-term	As long as the motorway operates
Likelihood of appearance	Certain	Contaminant gases are generated in combustion engines powered with fossil fuels
Magnitude	**Minor**	See above

The assessment of significance is based on the magnitude matrix presented above (Table 116) and air resource sensitivity assessment, carried out in previous sections (i.e. Baseline of Air Quality). The deriving initial **significance of this impact**, (without mitigation measures), is ***Slight***.

6.5.4. Summary of Impacts on Air Quality

- Construction phase
  - o *Impairment of air quality due to emission of construction-borne air pollutants - **SLIGHT***
- Operational phase
  - o *Impairment of air quality due to emission of air pollutants from traffic along the motorway - **SLIGHT***

6.5.5. Assessment Method for Climate Change Impacts

The Assessment includes the following critera:

- Comparison of the existing GHG emissions from the transport in Kosovo and the estimated emissions of CO_2 by the Project to derive the potential contribution of the Project to an increase of these emissions in 2020, 2030 and 2045;
- Distribution of the traffic along the existing road N9 and the new motorway and the deriving reduction of traffic congestion

6.5.6. Assessment of Climate Change Impacts

The sampling conducted for the existing Alignment did not include measurements of CO_2. Instead, the total annual emissions of CO_2 for the baseline conditions within the corridors of the existing road N9 and the Project area were computed by the model and compared. The estimated emissions of CO_2 for the Project area for the periods 2020, 2030 and 2045 are given in the table below:

Table 117: CO2 emissions along the Project Corridor

Emissions	2020	2030	2045
Pollutant	Tonnes/year	Tonnes/year	Tonnes/year
CO_2	9	12	17

According to the national GHG inventory, there are 5.5 million tonnes of CO_2 produced annually by motor vehicles in Kosovo as a result of outdated emission reduction technologies. By comparing the existing CO2 emissions deriving from the transport and the estimated contribution to the possible increase of the CO2 emissions due to the introduction of a new transport corridor, Climate change effects of the Project is expected to be ***low***.

Apart from the modelled emissions of CO2, an important criterion is the speed limits and hence congestion. It is evident for the existing road N9 as the road configuration is not adequate to receive even the current traffic flows, let alone the expected growth in the future. In the settlements (20 crossed or bypassed) the speed limit is as low as 50 kph. High CO_2 emissions are emitted for the sections where the existing road crosses settlements and/or where the exits to properties, bus stops and junctions to local roads are designed.

On the contrary, the new motorway will have a continuous flow; interchanges are planned at 6 locations, but due to the modern design, congesions are not expected.

As mentioned elsewhere, the traffic will split along the existing road and the new motorway. The anticipated split of traffic along the existing road and the new motorway in 2045 is given in the table below:

Table 118: Traffic on the Existing Road and on the New Motorway, 2045, veh/day

The existing road			2045 M [veh/day]	Mew Motorway			2045 M [veh/day]	Remaining traffic on the existing road
No.	**FROM**	**TO**	**moderate**	**No.**	**FROM**	**TO**	**moderate**	
1	KIJEVE	GLLAREVA	73,408	1	Interchange Kijeve	Interchange Gllareve	88,497	6%
2	GLLAREVA	ROAD TO GJAKOVE	68,180	2	Interchange Gllareve	Interchange Dollc	83,274	13%
3	ROAD TO GJAKOVE	ROAD TO KLINË	59,447					
4	ROAD TO KLINË	ZAJM	44,230	3	ZAHAQ	Interchange Dollc	57,862	7%
5	ZAJM	BREG	43,324					
6	BREG	ZAHAQ	43,324					

Source: Pre-feasibility study for the Project[89], 2016

The assessment of the magnitude of the Climate Change impacts using the established criteria is presented in the table below:

Table 119: Anticipated Magnitude of Climate Change Impacts

Parameter	Magnitude	Character
GHG emissions by the motorway compared to the total GHG emissions from the transport	Negligible	**Negative**
Reduction of CO_2 emissions along the existing Alignment	Major	**Positive**

Due to the project, the congestion along the existing road N9 will be reduced and the CO_2 emissions as well. It will inply that the increased ***CO_2 emissions originating from the anticipated rising traffic flows will be offset by reducing the CO_2 emissions along the existing road***. The magnitude of the impact on climate change due to the split of traffic flows and reduced congesiont along the existing road is High and Positive.

[89] The Project is "Update of the Feasibility Study, ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë – Pejë (SEETO Route 6 B), section from Kijevë – Kline to Zahaq (30km)".

The magnitude of the impact is further assessed using the matrix below.

Table 120: Magnitude of the Impact – Climate Change

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	GHG is emitted by the construction machinery and the vehicles during operation
Reversibility	Irreversible	The climate change effects are global and the project is not a significant contributor
Geographic Extent	Local	CO2 emissions would be limited to the area closest to the Alignment
Time when the impact occurs	Delayed	The alterations of the climate change are not dependent on the project
Duration	Long-term	The alterations of the climate change are not dependent on the project
Likelihood of appearance	Certain	CO2 emissions are proven to contribute to the climate change effects
Magnitude	**Minor**	See above

The initial **significance of this impact**, without mitigation measures is **Slight**.

6.6. Impacts on Landscape

6.6.1. Assessment of Impact and Likely Significance

Anticipated impacts on the landscape will arise from the presence of new elements that will change the landscape, either temporarily or permanently. Temporary changes will generally be associated to the physical presence of workers and construction machinery and materials during the construction phase, whereby permanent impacts will be associated to the built structural elements of the motorway. The effects on the landscape start in the construction phase, but they continue through the operational phase.

In this section, the impacts furing construction phase refer to those that have a temporary character. Long-term impact on the landscape are analysed as part of the operational phase.

The following potential impacts on landscape have been identified for the construction and operational phases of the Project:

- Construction phase
    - Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities
- Operation phase
    - Alteration of landscape scenery by the presence of the motorway (cuts and the structures – bridge, viaducts, underpasses, overpasses, culverts etc.).

6.6.2. Counstruction Phase

Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities

The main activities of the construction phase that are anticipated to have short term effects on the landscape include:

- The construction site itself, where the presence of the workers, the heavy machinery, the earth movements, the deposits of construction material, the piles of waste, the nude soil, etc. will impair the local landscape, especially for nearby residents. This landscape impairment will disappear as the construction front advances to other areas.
- The construction camps for workers, where the site huts for offices, toilets and accommodation will occupy a previously bare space. This type of camps will also be perceived as an impairment of the landscape at a local scale.
- Ancillary areas for vehicle and machinery maintenance and the installation of other temporary structures such as the concrete plant or the crushing plant, etc., which may have a high visual impact due to their size and height.

Estimation of magnitude

The magnitude of the impact on the landscape is anticipated to be minor during construction stage, due to the fact that the above mentioned activities are not expected to be observed by a large number of people; they will occupy limited extensions of land, will have relatively small dimensions and will be located next or close to the Alignment.

The magnitude of the impact is as follows (Table 121).

Table 121: Magnitude of the Impact - Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	The alteration of the landscape occurs because of the presence of construction activities
Reversibility	Reversible	The alteration of the landscape because of the presence of construction activities will disappear when construction is complete and construction elements removed.
Geographic Extent	Local	The alteration of the landscape is limited to the footprint of the project
Time when the impact	Immediate	The alteration of the landscape occurs as the

Criteria	Assessment Thresholds	
	Threshold	Descriptions
occurs		construction elements are installed
Duration	Short-term	It will last during the construction period
Likelihood of appearance	Certain	The presence of the construction elements will be seen by nearby residents, road users, etc.
Magnitude	Minor	See above

Considering an overall medium sensitivity of the landscape receptors (please see section 5.1.2.7 above), the initial significance of this impact, without mitigation measures is ***Slight***.

6.6.3. Operation Phase

Alteration of landscape scenery by the presence of the rmotorway (cuts, fills and structures – bridge, viaducts, underpasses, overpasses, culverts etc.)

With the implementation of the Project, the landscape impacts arise due to the:

- appearance of linear and geometric forms,
- changes of colors, due to the removal of the vegetative cover and use of construction materials[90] with textures and colors different from those of the nearby natural elements,
- creation of cuttings[91] and embankments.

These changes in the natural landscape pattern are assessed with regard to:

- Intensity of impacting actions, evaluated by the size and exposure to sight[92] of local residents, visitors and passengers
- Visual vulnerability (visibility), evaluated by the location and number of viewers[93].

For the assessment of landscape impacts, the immediate surroundings and the midway distance (800 to 1000 meters) have been considered.

Estimation of magnitude

The magnitude of the impact of the project actions has been evaluated based on the sensntivity of the affected landscape units, the intensity of the project activities and the number of potential landscape observers in the area where the project action takes place.

[90] The materials that will induce significant change of the color`s pattern in the existing environment are concrete, asphalt, etc.

[91] The newly open substratedue to cuttings has a clearer and brighter coloration than the natural substrate

[92] Exposure to sight of local residents and other viewers depends on the morphology of the terrain and the distance of the spectator from the Alignment

[93] Visual vulnerability is higher for densely populated settlements.

The potential viewers of the motorway structures for the sections running through rolling terrains and hilly thermophiles broadleaf forest, which are located to the south from the Alignment, are considered the most affected.

Project structures to be built in landscapes with differing sensitivity are are as follows:

- Cuts / embankments for the sections on hilly terrain: Km 10+000 – Km 12+000, (high sensitivity) and Km 15+000 – Km 23+000, (medium sensitivity);
- Interchanges built at the following sections: Km 2+900 (medium sensitivity), Km 6+740 (high sensitivity), Km 12+900 (high sensitivity), Km 14+950 (low sensitivity), Km 20+050 (medium sensitivity) and Km 28+100 (low sensitivity);
- Section between Km 13+300 and Km 13+600 of the new Alignment is laid down on landscape with low sensitivity, however, it is particularly affected because:
    - large structures of the new Alignment are situated at very short distances: the interchange at Km 12+900 and bridge over Drini I Bardhe River spanning over the railway which runs in parallel to the river;
    - existing structures of the road N9 - bridge over Drini I Bardhe River and the railway are placed at a relative short distance from the new Alignment (approximately 600m.); the road to Gjakova is also brandching off the road N9 in this area;
    - Density of population viewing these dense and big structures;
    - Visibility of new Alignment structures from the existing road N9 and the railway
- Building the bridge and viaducts, occupying a highly visible space (bridge located at Km 13+300 (low sensitivity) and viaducts built on Km 25+000 (low sensitivity) and Km 27+000, (medium sensitivity).
- Forming excess material disposal sites for the disposal of surplus material from excavation works. The locations of surplus material disposal sites are not known at present; this ESIA will recommend avoiding highly sensitive landscapes.

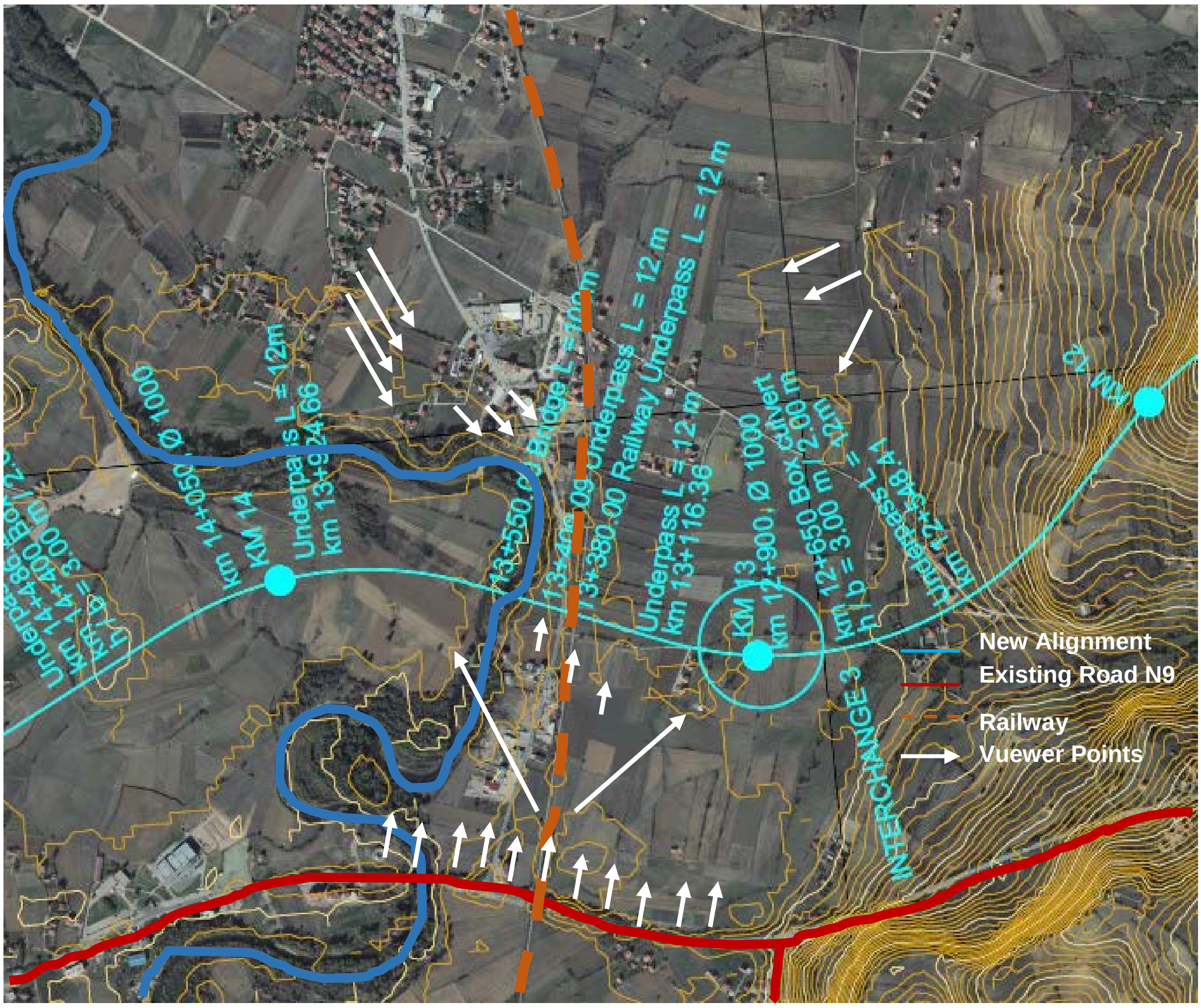


Figure 102 Intensive Changes in the Landscape in the Drini I Bardhe River Terrace visible from settlements, existing road N9 and railway

A quantitative method has been used to assess the visibility (visual vulnerability) and intensity of impact causing activities in each landscape unit, applying scores to both parameters:

- Negligible (1),
- Low (2),
- Medium (3),
- High (4), and
- Very high (5).

The intensity of works (size and frequency of structures) is considered to be low for the most sections, due to the fact that only one cut is foreseen to be as high as 17 meters; other cuts / embankments will blend with the terrain due to its relative small size. Only the works around Dini I Bardhe River is considered to have medium intensity.

The population density in nearby villages as well as the number of viewers is low. Only the area around the Dini I Bardhe River is more densely populated and the visibility is medium.

The magnitude of the impact, obtained as an average score for Landscape Sensitivity, Visibility, and Intensity of impacting actions are shown in table below. An average magnitude score has also been estimated for each section.

Table 122: Assessment of the Magnitude of the Impact

Landscape Unit	Landscape quality	Visibility	Intensity of impacting actions	Magnitude of the impact
Agricultural landscape on wavy terrain	Medium	Low	Low	Minor
Agricultural landscape on floodplain and	Low	Medium	Medium	Moderate
Landscape of hilly thermophiles broadleaf forest.	High	Low	Low	Minor

The magnitude of the impact is minor.

The magnitude of the impact is as follows (Table 123).

Table 123: Magnitude of the Impact - Alteration of landscape scenery by the presence of the rmotorway (cuts, fills and structures – bridge, viaducts, underpasses, overpasses, culverts etc.)

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	The alteration of the landscape occurs because of the presence of the motorway structures
Reversibility	Irreversible	The size of many of the motorway structures is too large to be hidden by the surrounding vegetation.
Geographic Extent	Local	The alteration of the landscape is limited to the footprint of the project
Time when the impact occurs	Immediate	The alteration of the landscape occurs as the motorway structures are built
Duration	Long-term	It will last during the operational life of the motorway
Likelihood of appearance	Certain	The presence of the motorway structures will be observable at several locations
Magnitude	Moderate	See above

The overall significance of the impact on the landscape during the operational phase is ***Slight***.

6.6.4. Summary of Impacts on Landscape

The significance of impacts on landscapes that are evaluated in this Section are:

- Construction phase

Mott MacDonald

   - *Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities - **SLIGHT***
- Operation phase
   - *Alteration of landscape scenery by the presence of the the motorway (cuts and the structures – bridge, viaducts, underpasses, overpasses, culverts etc.) - **SLIGHT***

As mentioned above, even thought the overall magnitude of the impacts during operation is assessed as slight, for some sections the magnitude will be moderate. It will be taken into accound upon the definition of the mitigation measures.

6.7. Impacts on Noise and Vibration

6.7.1. Assessment of Impacts and Likely Significance

Noise Levels have not been measures for sensitive receptors yet. The Project area is characterised by absence of any stationary or mobile noise generating sources. Therefore, it is assumed that the baseline noise levels are within the permissible limits, as defined by the national legislation and World Health Organisation.

The Noise Levels within the Project area will increase as a result of the Project implementation during construction and operation. The difference between the Baseline Noise Levels and the Noise Levels during Project implementation will determine the magnitude and consequently the significance of the impact.

During the construction phase, outdoor machinery and equipment will generate noise and vibration which will affect population inhabiting the surrounding area. The Noise Levels will significantly increase compared to the present situation.

During operation, the ambient noise will increase due to motorway traffic. In 2020, the average hourly traffic flow will amount to 1000 vehicles which is an equivalent of 24,000 vehicles of average annual daily traffic.

Potential impacts on noise and vibration discussed above and analysed in this section are:

- Construction phase
   - Impairment of acoustic quality due to noise emissions from construction vehicles and machinery.
- Operation phase
   - Impairment of acoustic quality due to traffic noise emission;

6.7.2. Counstruction Phase

Impairment of acoustic quality due to noise emissions from construction vehicles and machinery

Noisy construction operations (earth movements, bridge construction, demolition, dredging, production of gravel and concrete, transport of materials in and out the construction site, etc.) will take place in rural areas with low population density which are currently very quiet.

Estimation of magnitude

The magnitude of the noise impact from the outdoor equipment will depend on:

- construction machinery, transportation vehicles and equipment`s noise emission levels[94],
- the number of machinery in one area used at the same, and
- distance of the source to the sensitive receptors.

Table 124 shows average noise level specifications for the outdoor equipment most commonly used the construction of civil works. The equipment will usually be distributed at specific points of the Alignment for certain period of time and not all machines will work at the same time.

Table 124: Construction Machinery and Noise Levels

Type of equipment (extraction-discharge work)	Sound level (dB)A	Time of duration	Type of equipment (excavation –earth work)	Sound level (dB)A	Time of duration
Bulldozer	90	long-term	Distributor	83	long-term
Compressor	80	short-term	Finisher	83	long-term
Grader	83	long-term	Trampling machine	90	long-term
Water jet machine	87	long-term	Truck	85	linear
Truck	85	short-term	Watering machine	87	long-term
Trampling machine	90	long-term	Pneumatic drill	85	short-term
Drilling machine	85	short-term	Concrete pump	110	short-term

Noise will dissipate in the air and due to obstacles; noise levels will drop with the increase of the distance between the source and receptor. The rule of thumb is that the noise level drops 6 decibels when the distance doubles. A noise level decreasing trend with an increase of distance between the source and receptor is presented in the table below.

Table 125: Noise levels at various distances from the construction site during ground extraction, transportation and earth work stage

Distance from the source to the receptors [m]	Sound equivalent level at source[(dB) A}	Sound equivalent level at receptor[(dB) A}
40	81	73
60	78	71
80	76	68

[94] Noise specification of equipment should be declared by the manufacturer in a noise certification.

Distance from the source to the receptors [m]	Sound equivalent level at source[(dB) A}	Sound equivalent level at receptor[(dB) A}
100	74	66
200	68	60
300	64	57
400	62	54
500	60	52

As mentioned earlier, the magnitude of noise impacts is related to the Noise Level increase in comparison to the Baseline situation at the location of a receptor.

The effects of noise changes, descriptions of subjective response and the magnitude[95] of the impact is presented below in Table 126.

Table 126: Change in Noise Levels and Magnitude of Impacts

Noise Level increase, dB(A)	Subjective Response	Impact Magnitude
0 – 0.9	Imperceptible	Negligible
1 – 2.9	Barely perceptible	Minor
3 – 4.9	Noticeable	Moderate
5.0 to 9.9	Up to a doubling or halving in loudness	Large
10.00	More than a doubling or halving in loudness	Very Large

Assuming a Baseline noise in the Project footprint of 55 Leq dBA and a sound level of 73 Leq dBA acting upon a receptor located at a distance of 40m from the source (construction machinery), change in Noise Levels acting upon these receptors will be over 10 Leq dBA and the magnitude will be very large (major).

For all identified sensitive receptors, located at a distance of 5 to 50 meters from the motorway, (please see Section 5.1.8 Noise and Vobration above), the magnitude of the noise impact during construction will be very large (major). These sensitive receptors are located along short sections, while the Alignment for the most of its length avoids populated areas. Therefore, the suggested magnitude of the impact is major (Table 127).

Table 127: Magnitude of the Impact - Impairment of acoustic quality due to noise emissions from construction vehicles and machinery

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Impairment of the acoustic environment will occur because of the execution of construction works
Reversibility	Reversible	Noise levels will return to baseline levels when the construction works are over.

[95] For the assessment of magnitude of the noise impact, “Guideline for Noise Impact Assessment” produced by the Institute of Acoustics (IOA) / Institute of Environmental Management and Assessment (IEMA) Joint Working Party, has been used.

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Geographic Extent	Local	Noise increases will be limited to locations of sensitive receptors
Time when the impact occurs	Immediate	Noise levels will increase as soon as vehicles, machinery, equipment enter the construction site.
Duration	Short term	During the time construction works take place at a given location
Likelihood of appearance	Certain	Construction vehicles and equipment are sources of outdoor noise.
Magnitude	Major	See above

Considering the high sensitivity of receptors and major magnitude, the initial significance of this impact without mitigation measures is ***Large***.

6.7.3. Operation Phase

Impairment of acoustic quality due to traffic noise emission

According to applied TNS technique, using information for traffic flows in 2020 (24,000 AADT and 1,000 vehicles/hr) and wehicle speed of 95 kph, the Noise Level acting upon receptors located at a distance of 15 m from the Alignment will be **68-70 Leq dBA.** The **Noise Level** will drop to permissible limits (**55 Leq dBA)** at receptors` centreline distance from the Alignment of **80 m**.

In line with this, all properties located within a buffer of 80 meters on either side of the Alignment are found to be sensitive. Suitable mitigation measures (i.e. noise barriers) will have to be applied to abate traffic noise.

At the Preliminary Design stage, a more sophisticated nose prediction technique will have to be employed to:

- Verify the accuracy of projected noise levels at respective distances from the motorway Alignment,
- Check the width of the buffer in which the Noise Levels exceed the limits and identify all sensitive receptors located within this buffer,
- Validate the length of rows of sensitive receptors located in the buffer.

Estimation of magnitude

The estimation of the magnitude has been carried out using simple graphs that determine the level of magnitude depending on the noise levels change (increase) due to the Project operations. These are shown below:

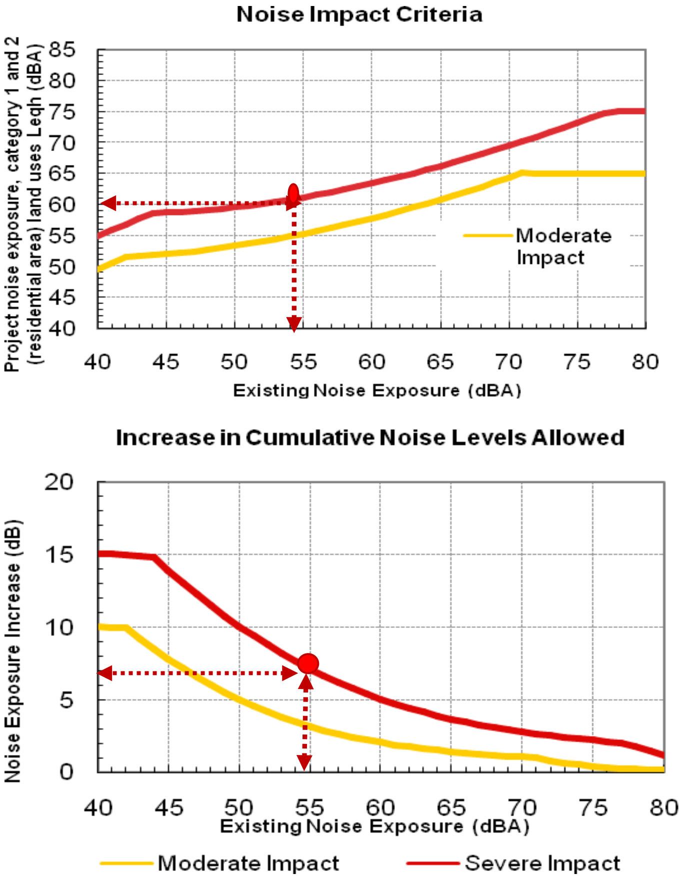


Figure 103: Increase in cumulative noise levels allowed for residential areas

Assuming that the present Noise Level acting upon receptors located at a distance of 15 m from the Alignment is 55 dB(A), an increase of 13-15 dB(A) is expected. For these receptors the magnitude of the impact will be ***Major***. However, these sensitive receptors are located along short sections, while the Alignment for the most of its length avoids populated areas. Therefore, the overall magnitude will be ***major.***

Table 128: Characterisation of the Impact - Impairment of acoustic quality due to traffic noise emission

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	Impairment of the acoustic environment will occur because of the traffic of vehicles
Reversibility	Reversible	Noise levels should return to baseline levels when the motorway operations stop
Geographic Extent	Local	Noise increases will be limited to the footprint of the project
Time when the impact occurs	Immediate	Noise levels will increase as soon as the motorway traffic starts.

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Duration	Long term	During the operational life of the motorway
Likelihood of appearance	Certain	Motorway traffic is a major source of noise
Magnitude	Major	*See above*

Considering the high sensitivity of the receptors (residential areas), the initial significance of this impact, without mitigation measures is ***Large***.

At the next stage of the design process efforts will be made to avoid populated areas to the extent possible. The impact`s magnitude may change if the distance of majority of receptors from the Alignment would be 80m and above.

6.7.4. Summary of Noise Impacts

- Construction phase
  - *Impairment of acoustic quality due to noise emissions from construction vehicles and machinery - **LARGE***
- Operation phase
  - *Impairment of acoustic quality due to traffic noise emission - **LARGE***

6.8. Impacts on Habitats

6.8.1. Assessment of Impacts and Likely Significance

The following potential impacts on habitats have been identified for the construction and operational phases of Project:

- Construction phase
  - Habitats loss (direct destruction)
- Operation phase
  - Habitats fragmentation

6.8.2. Construction Phase

Habitat Loss (Direct Destruction)

A 40 meters wide land strip (20m at both sides, measured from the motorway axis) has been considered to assess the actual surface of habitat loss.

The magnitude of the impact - Loss of Habitat - has been quantified through the equivalent surface of habitat loss. The equivalent surface has derived from the following matrix:

Table 129: Weighing Factors to Derive Habitat Equivalent Surface

Habitat sensitivity category	Weighting factor
Very high	1
High	0,75
Medium	0,5
Low	0,25

In the table below a breakdown of areas of respective habitats to be lost as a result of the Project is presented.

Table 130: Habitat Loss due to the Project

Habitats	Habitat Loss (ha)	Sensitivity	Equivalent Surface (ha)
Oriental hornbeam & White oak forest	8.0424	ms	4.0212
Italian and Turkey oak forests and patches	8.0158	ms	4.0079
Willow and Poplar belts	0.4062	hs	0.30465
Willow and Poplar woodlands	0.2846	hs	0.21345
Robinia stand	0.0426	ls	0.01065
Black locust stand	0.5776	ls	0.1444
Mixed tree stands	0.9798	ls	0.24495
Tree lines	0.1004	ls	0.0251
Hill pastures	1.0006	ls	0.25015
Meadows	0.8238	ms	0.4119
Total	20.2738		9.63435

The equivalent surface of directly destructed highly sensitive habitats (Willow and Poplar belts and Willow and Poplar woodlands) is 0.518 ha. Compared to the overall equivalent surface of habitat loss of 9.63435 ha, the direct destruction of sensitive habitats is negligible.

Nevertheless, the following magnitude rating is applied:

Table 131: Criteria for Assessing the Magnitude of the Habitat Loss Impact

Equivalent surface area of lost habitat	Magnitude of the impact
0-0,5	Negligible/No change
0,6-12,0	Minor
12,0-29,9	Moderate
+30	Major

Therefore, the magnitude of the impact - habitat loss is minor.

Table 132: Magnitude of the Impact – Habitat Loss (Direct Destruction)

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Type of Impact	Direct	The loss of habitat derives directly from the land clearance needed for the construction of the motorway
Reversibility	Irreversible	Except for the construction camps, the loss of habitat will be, for practical purposes, irreversible on the long term
Geographic Extent	Local	The loss of habitats is limited to the footprint of the project
Time when the impact occurs	Immediate	The loss of habitat occurs as soon as land clearance is executed
Duration	Long-term	It will last during the operational life of the project and later
Likelihood of appearance	Certain	The land will necessarily be cleared for the motorway construction
Magnitude	Minor	See above

Considering a medium to high sensitivity of the receptor and low magnitude the initial significance of this impact, without mitigation measures is ***Slight*** to ***Moderate.***

6.8.3. Operation Phase

Habitat fragmentation

The cleared land strip along the motorway will be permanently occupied by the carriageway and the associated structures. This will cause the fragmentation of habitats, this is, their division into a number of discrete parts. Over time, the populations become divided into a number of subpopulations, and if they are too small they may be prone to local extinction. Also, fragmentation of habitats can lead to a reduction in genetic diversity within populations at both sides of the motorway, which can make the populations susceptible to extinction as well.

Estimation of magnitude

The magnitude of this impact has been evaluated in a qualitative manner, taking into account the types and sensitivities of the habitats that will be separated by the motorway, as well as the species that will have to cross the motorway.

Thus, the effects of fragmentation will be generally more important in those areas where high sensitivity habitats are predominant at both sides of the motoway Alignment. Also, the effects will occur in medium sensitivity habitats.

The areas where fragmentation of habitats can occur and where sensitive habitats are present is shown in the following table:

Table 133: Assessment of the Significance of Fragmentation

Section	Habitat Types	Sensitivity	Magnitude of Fragmentation
Section Kijevë-Iglarevo	Italian and Turkey forest patches	ms	Minor
Iglarevo-Dërsniku	Oriental hornbeam forests and meadows	ms	Minor
Dërsniku - Zajm	Agricultural Fields and Willow and Poplar belts	ls and hs	Moderate
Zajm - Gllaviqice	Italian and Turkey forest patches	ms	Minor
Gllaviqice - Zahaq	Agricultural Fields	ls	Negligible

The magnitude of the impact on habitat fragmentation is minor. It can be seen in the table below.

Table 134: Magnitude of the Impact – Habitat Loss (Direct Destruction)

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	The fragmentation effect arises from the physical presence of the motorway.
Reversibility	Irreversible	Once the fragmentation effects commence, it may be difficult to revert them.
Geographic Extent	Local	Some species of fauna present in the highly and moderately sensitive habitats will face difficulty to migrate due to the barrier effect of the motorway.
Time when the impact occurs	Delayed	The effects of fragmentation will take a time (years) to be observable.
Duration	Long term	The fragmentation effect will continue throughout the operational life of the motorway.
Likelihood of appearance	Probable	The motorway has one bridge, two viaducts and a number of culverts that attenuate the fragmentation effects, but it would be expected to occur at least in some areas of the Alignment and with some species.
Magnitude	Minor	See above

According to the significance matrix, the initial significance of this impact, without mitigation measures, is ***Slight***.

6.8.4. Summary of Impacts on Habitats

- Construction phase
  - *Habitats loss (direct distruction) – **SLIGHT TO MODERATE***
- Operation phase
  - *Habitats fragmentation - **SLIGHT***

6.9. Impacts on Flora and Fauna

There haven`t been any species that are considered rare, endemic or designated as priority species in the Habitats Directive fund within the corridor of the Alignment i.e. within a buffer of 2x500 meters from the road axis. Therefore, the impact on flora and fauna is not analysed.

6.10. Impacts on Protected and Designated Areas

There aren`t any protected or designated areas located within the project corridor. There is only one monument of nature which is found within the corridor of 2x500 meters measured from the motorway axis. It is single tree which is known by the authorities in charge of the project. It is not expected that the motorway can impact this monument of nature either during the construction activities or operation. As a precautionary measure it will be proposed to monitor the construction works if some temporary structure needs to be established nearby this tree.

6.11. Impacts on Cultural Heritage

Known cultural heritage monuments and archeological sites are not directly impacted by the Project as they all are located within a minimum distance of 330 meters from the Alignment.

The identified cultural heritage sites within the established buffer of 2x500 meters along the road axis are the following:

- Monastery of Dollc, 500 m away from the route of the motorway; It is under the protected zone (please see above the location of the protected zone under the section on baseline conditions)
- Archaeological sites of the Bronze Age: There are two sites from this age found in close vicinity of the planned rout (440m away from the route of the motorway, located in Rigjevë – Gllarevë);
- Prehistorical cementery - Bronze age, flat necropolis known as Gllareva 1 with 39 identified graves and Gllareva 2 site with 9 identified graves
- Archaeological site – settlement from the period I-IV century, cottage from II-III century (Dersnik, 340m away from the route of the motorway);
- Ortodox Church, located in Dersnik, 340m away from the route of the motorway;

Locations and importance of all known cultural heritage sites are described in this ESIA; therefore, when changing the Alignment during next design phases, or during construction – when settling auxhiliary facilities of temporary nature - these will be avoided.

However, during constructions other, previously non-identified sites may be discovered. This assumption is grounded in the fact that the Project area has been inhabited for hundreds of centuries; it has a very rich cultural and spiritual past, testified by the abundance of cultural and historical artefacts and monuments.

6.11.1. Potential impact and likely significance

- Construction Phase
    - Destruction of non-identified buried archaeological sites
- Operational Phase
    - Plundering of archaeological sites

6.11.2. Construction Phase

Destruction of non-identified buried archaeological sites

The fact that there aren`t unknown archaeological sites within the Project footrpint does not mean they do not exist. Construction works, and particularly earth movement operations might expose buried archaeological and paleontological sites and destruct them. This impact may occur along the entire route of the Project.

Estimation of Magnitude

Should the destruction of archaeological sites occur, the magnitude of the impact would depend on the importance of the site. It shall be assessed by an expert archaeologist. Assuming the findings were to have a high value and were destroyed by construction works, the magnitude of the impact would be major, as the integrity of the resource would be lost.

The magnitude of the impact is as follows:

Table 135: Assessment of Impacts

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Direct	The destruction of the archaeological site results from earth movements carried out during construction.
Reversibility	Irreversible	Once destroyed, the site can not be recovered
Geographic Extent	Local	The destruction will affect to sites in the footprint of the project
Time when the impact occurs	Immediate	The effects will occur while the construction works take place.
Duration	Long term	If destruction occurs, it will be for ever
Likelihood of appearance	Probable	The abundance of archaeological sites in the area and its rich history increases the likelihood to find other sites.
Magnitude	Major	See above

Considering the potential high value of the archaeological site and the potential major magnitude of the impact, the initial significance of this impact, without mitigation measures, is **Large.**

6.11.3. Operational Phase

Plundering of the archeological sites

The easier access to the area (by using the new motorway) will attract visitors from other areas. Among these visitors, the presence of poachers of archaeological artefacts is possible.

Estimation of the Magnitude

The magnitude of this impact has been considered moderate, as the effect of poaching would result in a partial loss of the resource, but not affecting to the integrity of the site; the limited number of poachers and the probably relatively long walking distances to the archaeological sites would prevent the sites from being devastated.

The impact`s magnitude is as follows:

Table 136: Assessment of Impacts

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Not desirable
Type of Impact	Indirect	The plundering of archaeological would result from an increased in the affluence of visitors induced by the easier access to the area brought by the train.
Reversibility	Irreversible	Stolen artifacts will hardly be returned to the site.
Geographic Extent	Local	Plundering would mostly affect to those sites close to the motorway through which visitors have access to the area
Time when the impact occurs	Immediate	Plundering would start as soon as visitors have access to the area when motorway operation will start.
Duration	Long term	The effect will continue throughout the operational life of the motorway.
Likelihood of appearance	Probable	Poachers are aware of the existence and location of unprotected archaeological sites.
Magnitude	Moderate	See above

Considering a high sensitivity of cultural heritage receptors and a moderate magnitude, the initial significance of this impact, without mitigation measures, is **Moderate.**

6.11.4. Summary of Impacts on Cultural heritage

- Construction Phase
    - o *Destruction of non-identified buried archaeological sites - **LARGE***
- Operational Phase
    - o *Plundering of archaeological sites – **MODERATE***

6.12. Social Impacts

This chapter assesses the impacts that project activities will have on the different socio-economic and land use receptors/resources discussed under the social baseline conditions. The assessment considers effects on the following resources: Land and Property, Community Health and Safety, Community Tensions, Access & Severance, Utilities, Economy, Employment, Education, Vulnerable Groups and Workforce related effects.

6.12.1. Introduction to Social Impacts

The Project is beneficial to the local economy and communities, and general feeling is supportive and welcoming the Project. It has been confirmed during various meetings with affected stakeholders. The removal of heavy traffic and commuter traffic from village/settlement centres will improve the quality of life of these communities and reduce community road safety risks.

The construction of the Project will, however, result in a series of physical and economic displacement impacts over affected owners, users and communities. The potential impacts to affected communities are listed in the table below and presented in this chapter below.

Table 137: Involuntary Resettlement Issues

Category of Affected Communities	During Construction	During Operation
Physical Displacement		
Resident Owners of Assets	Loss of weekend or permanent Residential Properties and assets (that are not movable)	/
Formal & Informal Tenants of residential properties	Temporary or permanent loss of residential properties	Increased disturbance to those returning to temporarily relocated residential structures
Economic Displacement		
Garden land owners	Temporary or permanent loss of garden area and any assets/improvements on the land owned by them	
Agricultural land owners	Temporary or permanent loss of land Loss of immovable assets/structures on the land (e.g. fences/barns/livestock sheds etc.). Permanent loss of income (from rent etc.)	Reduction in land value due to restrictions being placed on land which runs along the Project road right of way
Businesses	Loss of business structures (e.g. workshops, hotel, shops or similar etc.) and immovable assets; Loss of business from temporary disruption in access during construction	Potential loss of clients for Non-Residential Properties (businesses) servicing the passengers: hotels, restaurants, car workshops, petrol stations etc. due to the reduced traffic along the existing road.

The present design is at conceptual stage and social impacts described in this section is indicative. During the next stages of the Project more detailed observation of the involuntary resettlement issues will be carried out and a tailored Social Survey will be designed and implemented.

More details related to the social impacts are provided in the sections below.

6.13. Impact on Land Property

Temporary and permanent impacts have been identified with regard to Land Property. Permanent loss of land and property will occur during the pre-construction phase. Temporary land and property impacts will affect the owners during construction.

Precise information on the land take requirements is not available at present due to the early stage of the design. Therefore, we present only potential impacts based on rough estimations. Temporarily and permanently affected properties are identified within buffers along the alignement of 2x500m and 2x20m, respectively.

Preliminary assessment identified that properties will be affected by either temporary or permanent Project structures as follows.

Table 138: Preliminary assessment impact on Land Property.

Settlement	Potential Temporary Impact (chainage km)	Potential Permanent Impact (chainage km)
Drsnik	0+400; 1+500; 2+550; 3+200; 3+950.	/
Dollc	4+100 - 4+600;	5+500
Zajm	6+500; 8+200	/
Drenoc	11+150	/
Pjetërq I Epërm	13+400	12+800 - 13+000
Pjetërq I Poshtëm	14+750; 15+800	15+000
Jabllanicë	17+000- 23+000	19+000; 19+500
Leshan	20+600; 21+000 – 22+000	20+000
Gllaviqicë	23+500	/
Zahac	/	30+000

6.13.1. Potential Impacts and Likely Significance

Following potential impact have been identified in relation to land acquisition and property

- Construction Phase
  - Temporary Impacts on Land Property
    - Loss of land
    - Livelihoods
  - Permanent Impacts on Land Property
    - Loss of housing

- Loss of land

6.13.1.1. Construction Phase

Temporary Impacts on Land Property

Loss of Land

Most of the temporary land loss will be for establishing of borrow pits, excess material disposal sites, storage facilities, access roads and workers` compounds. It is likely, however, that existing borrow pits will be used and no additional land will be taken. The existing access roads will be used to the extent possible.

The placement of temporary facilities will meet legal requirements and agreements will be reached with affected landowners.

Estimation of magnitude

The impacts will emerge dring a short time period and after completion of construction activities; the majority of the land will be returned into its previous condition. Due to minor loss or alteration of the land resource in a short-time period, the magnitude of this impact is estimated as minor.

The magnitude of the impact is as follows (Table 139).

Table 139: Magnitude of the Impact- Temporary Land Loss

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact will disrupt usage of land for other purposes like stock feeding, limited hunting activities
Type of Impact	Direct	Construction activities will have direct impact upon receptor
Reversibility	Reversible	The effect caused by impact is reversible. Situation can be returned into previous condition
Geographic Extent	Local	Impact is limited to communities that are on the closest distance to the motorway
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium- term	Based on estimation for construction activities duration is estimated impact to last in short term (3-4 years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Minor	During construction phase alteration of the receptor will occur

The initial significance of this impact, without mitigation measures, is ***slight***.

Livelihoods

Temporary land take will cause removal of livestock from grazing areas during periods of blasting or heavy equipment operations. In forest areas, construction activities could result in long- term loss of timber production due to need of removing trees. Movement in this area will be restricted during the construction phase.

Estimation of magnitude

Stockbreeding, fuelwood harvesting or recreational activities will be temporarily disturbed. Because of the very limited size of land required and available land around the construction area where these activities can be relocated, a small number of local population will be affected. Following construction, livelihood effects will be restored. The magnitude of the impact is estimated as minor.

The magnitude of the impact is as follows (Table 140).

Table 140: Magnitude of the Impact - Livelihoods

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Characterization of Impact	Negative	Impact will cause disturbance of livelihood
Type of Impact	Indirect	It is indirect impact on receptor through impact on local communities' livelihood
Reversibility	Reversible	Livelihood when impact duration will end can be reversed to previous condition
Geographic Extent	Local	Impact will be limited to specific individuals or population groups at or close to motorway
Time when the impact occurs	Immediate	Impact will occur immediately following project activities
Duration	Medium- term	Impact it is expected to last during construction period (from 2 to ten years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Minor	Only alteration of receptor will occur

The initial significance of this impact, without mitigation measures, is ***slight***.

Permanent land loss

Loss of housing

The corridor for the motorway Alignment is located outside of settlements, for the most of its length. It crosses agricultural areas of lower category. Most properties can be avoided by making micro adjustments to the Alignment during its further refinements.

The preliminary assessment, (which is not based on any topographic survey), indicates that several Residential Properties may be affected at the following chainages:

Table 141: Potentially Affected Residential Properties

No. of structures (houses / commercial buildings)	Chainage (km)	Distance to the Motorway
5	0+400	250
3	1+500	70
Interchange is planned – the no. of Residential Properties cannot be determined	3+200	300
3	3+950	70
5	4+400-4+600	450
6	5+500	1-3
3	6+500	450
1 (commercial)	8+200	70
30	12+800 – 13+000	5 – 15
20	13+400	100
5	14+750	60
Interchange is planned – the no. of houses cannot be determined	15+000	1-3
1 (commercial)	15+800	150
Overpass is planned, the no. of Residential Properties cannot be determined	19+500	10
Overpass is planned, the no. of Residential Properties cannot be determined	20+000	3 – 5
3+1 commercial	20+600	350
30	21+000 – 22+000	400
5	23+500	100 – 150
3	25+000	80
3 Non-Residential Properties (businesses)	30+000	Currently intended for demolition; changes are possible at the stage of the Detailed Design

As the design of the project will be further specified there is a high likelihood that the effect could result with land take instead of loss of housing.

Estimation of magnitude

The residents who will have to be resettled for the construction of the motorway may experience additional impacts such as:

- Changes in type and tenure of housing;
- Disconnection with their precious memories related with their homes which has high sentimental value;
- The resident's present social relationships will be disrupted and they will have to establish new relationships in a different social environment. This may cause social and psychological impacts;

The magnitude of the impact is as follows (Table 142).

Table 142: Magnitude of the Impact - Loss of housing

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact is not desirable since people are losing their homes
Type of Impact	Direct	Project activities results in a direct impact upon receptor
Reversibility	Irreversible	Cannot be returned into previous condition
Geographic Extent	Local	Impact will be limited to specific individuals or population groups at or close to motorway
Time when the impact occurs	Immediate	Impact will occur immediately following project activities
Duration	Medium - term	Impact it is expected to last during construction period
Likelihood of appearance	Certain	There is a high likelihood for this impact to occur
Magnitude	Major	Loss of receptor will occur

The initial significance of this impact, without mitigation measures, is **large**.

Loss of land

This impact will occur during the construction phase. The planned motorway will require approximately 123,48 ha will be taken. Out of this the biggest portion is Agricultural land (75,15 ha) forest land (38,28 ha) and semi natural grasslands (3.70 ha).

Estimation of magnitude

Long term negative impact is permanent loss of land used for farming activities. Land is important for subsistence farming in difficult economic situations. The owners will be compensated with cash value for the expropriated land, hower, the magnitude of the impact is major.

The magnitude of the impact is as follows (Table143).

Table 143: Magnitude of the Impact – Permanent Land Loss

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact is not desirable since people are losing their land
Type of Impact	Direct	Project activities results in a direct impact upon receptor
Reversibility	Irreversible	Cannot be returned into previous condition
Geographic Extent	Local	Impact will be limited to specific individuals or population groups at or close to motorway
Time when the impact occurs	Immediate	Impact will occur immediately following project activities
Duration	Medium- term	Impact it is expected to last during construction

Criteria	Assessment Thresholds	
	Threshold	Descriptions
		period (from 2 to ten years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	Loss of receptor will occur

The initial significance of this impact without mitigation measures, is **large.**

6.13.2. Summary of Impacts on Land Property

- o Temporary Impacts on Land Property
  - Loss of land - *SLIGHT*
  - Livelihoods - *SLIGHT*
- o Permanent Impacts on Land Property
  - Loss of housing - *LARGE*
  - Loss of land - *LARGE*

6.14. Potential impacts on community health, safety and security

Construction activities may imply community exposure to health, safety and security issues. Health concerns includes exposure to diseases arising from temporary or permanent changes in population; exposure to hazardous materials during construction and transport of goods and materials. Safety concerns relate to risk for accidents due to movement of heavy vehicles during construction.

MI will promote health, safety and security of the public and will comply with the Performance Requirement (PR) 4 (EBRD Social and Environmental Policy).

6.14.1. Potential impact and likely significance

The following potential impacts on Community Health, Safety and Security have been identified for the construction and operational phases of Project.

- Construction Phase
  - o Impact from the influx of temporary workers
  - o Impact from increased community exposure to diseases
  - o Impact from increased traffic and heavy vehicles on local roads during the construction
- Operational Phase
  - o Impact to the better access to the larger towns and health services located in larger towns

6.14.1.1. Construction Phase

Impact from the influx of temporary workers

Although considerable number of the workforce will be mobilized locally, the skilled workforce will be provided by the Contractor; thse workers will reside in the construction camps.

It is expected that the increased concentration of workers at the construction sites will have impact on local communities. Movement of workers will be organized and defined by agreements between the Employer and the Contractor(s).

Conflicts between local community members and newly arrived people due to socio-cultural differences and other issues are possible. Due to this, workers must receive training and sign a labour code of conduct, in order to avoid conflicts.

Increase in diseases, associated with the entry of temporary workers in the construction area is likely.

Estimation of magnitude

Workers from affected communities will be largely engaged during the contruction. The impact from an influx of temporary workers is expected to be limited. The impact`s magnitude is estimated to be minor.

The magnitude of the impact is as follows (Table 144).

Table 144 Magnitude of the Impact – Impact from the influx of temporary workers

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact could create worsening over the current situation in community safety
Type of Impact	Direct	Construction activities will have direct impact upon receptor
Reversibility	Reversible	The effect caused by impact is reversible. Situation can be returned into previous condition
Geographic Extent	Local	Impact is limited to communities that are on the closest distance to the motorway
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium -term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Minor	Alteration

The initial significance of this impact, without mitigation measures, is **slight.**

Impact from the community exposure to the disease

The presence of a large number of workers can give rise to an increased spread of communicable diseases. Construction projects are commonly associated with social interactions amongst the construction workers and local communities. This among other factors may produce an inherent increased risk of transmission of sexually transmitted diseases, HIV/AIDS and other contagious diseases such TB, pneumonia etc.

Estimation of magnitude

Unqualified construction workers will be mainly employed from the Project affected settlements. A risk of increased community exposure to disease still persists, especially to communicable diseases. The impact magnitude is estimated to be major.

The magnitude of the impact is as follows (Table 145).

Table 145 Magnitude of the Impact – Impact from the community exposure to the disease

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Type of Impact	Direct	Construction activities will have direct impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Regional	Impact is originally on local level towards specific individuals or population communities but due to the nature of impact and possibility of spreading could have regional size
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium-term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Certain	There is a high likelihood for this impact to occur
Magnitude	Major	Loss of quality and integrity of resource

The initial significance of this impact, without mitigation measures, is **large.**

Impacts from increased traffic and heavy vehicles on local roads during construction

The traffic related to construction will influence negatively road safety, especially along the road Prishtina-Pejë and local roads, where some contractor's facilities will be located. Residents from local settlements situated on haulage roads, will potentially be exposed to accidents and injuries. Traffic consisting of heavy vehicles and machinery is especially risky.

Estimation of magnitude

The increased traffic of heavy mechanisation, required for construction activities, will change normal traffic regime. This will result in increased risks for accidents and injuries. The magnitude is estimated to be major.

The magnitude of the impact is as follows (Table 146).

Table 146: Magnitude of the Impact – Impacts from increased traffic and type of traffic on local roads during construction

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact is not desirable
Type of Impact	Direct	Construction activities will have direct impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Regional	Impacts extend across the affected municipalities and the districts of Prizren, Djakova, Mitrovica, Pejë and Pristina
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium-term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)

The initial significance of this impact, without mitigation measures, is **large.**

6.14.1.2. Operational Phase

Improvement of access to better health and other services located in larger towns/cities

The operational motorway will provide the local residents with better accessibility to social and educational services in larger towns in Kosovo and otside the country.

In case the person`s starting point is in an affected settlement away from the motorway, the travel time increased due the need to travel to the nearest junction before entering the motorway and thus the travel time to reach the health services located in Pejë or Pristina may not be necessarily shorter. Anyway, the time lost for commuting to reach the closest motorway`s interchange, will be offset by the speed of travel along the motorway.

If the traveller would use the public transport it is likely that the travel time along the existing road would also decrease due to the reduced traffic and therefore congestion.

Estimation of magnitude

New alternative and faster transport will largely improve the present situation. The magnitude of this impact will be major.

The magnitude of the impact is as follows (Table 147).

Table 147: Magnitude of the Impact – Improvement of access to better health and other services located in larger towns/cities

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impact is desirable
Type of Impact	Direct	Impact on receptor quality is going to be direct
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation cannot be returned into previous condition
Geographic Extent	Regional	Impacts extend across the affected municipalities
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Long –term	Impacts extends throughout operation of motorway
Likelihood of appearance	Certain	There is a high likelihood of occurring
Magnitude	Major	Mayor improvement of receptor quality

The initial significance of this impact is **large.**

6.14.2. Summary of Impacts on Community Health, Safety and Security

- Construction Phase
  - *Impact from the influx of temporary workers – **SLIGHT***
  - *Impact from increased community exposure to diseases - **LARGE***
  - *Impact from increased traffic and heavy vehicles on local roads during the construction – **LARGE***
- Operational Phase
  - Impact to the better access to the larger towns and health services located in larger towns – ***LARGE***

6.15. Potential impacts on access and severance effects

The construction and operation of the motorway will hve have effects of access and severance of the general public, the community services and the business sector in communities at or close to the motorway. Settlements Zajm, Drenoc and Zahac, which are bisected by the motorway, will be specifically imposed to potential impacts on access and severance effects. Also some of the access routes will become non functional during both construction and operational phase of the motorway. Affected people must get used to new traffic solution and to utilize new safe access to their homes, neighbourhood and towns.

6.15.1. Potential impact and likely significance

The following potential impacts on access, due to severance, have been identified for the construction and operational phases of The Project.

- Construction Phase
    - Impacts on access and severance effects
- Operational Phase
    - Impacts on access and severance effects on general public, community services and business sector in communities at or close to the motorway.

6.15.1.1. Construction Phase

Impact on access and severance effects

8,743 people in the affected settlements will be imposed to access problems during the construction and operation of the motorway by being limited in their mobility within the construction area. Access will be restricted for farmers, who use the pastures along the Alignment for stockbreeding; people who harvest forest wood; people who find recreation in this area. There will be high occurrence of access and severance effects in communities that are close to the construction sites and motorway The sensitivity of this sub receptor is very high.

Access to community services will be affected by the required longer travel times as a result of construction activities on site. There are no community services that will be directly affected as the motorway is away from the existing road. Some problems, however, might occur during the construction of underpasses and overpasses, as well as the interchanges; it may impact the commuting by the local roads.

Indirectly business sector will suffer from changes in traffic (congestion due to transport of construction materials and workers by the existing road) and changed access (during the construction of the junctions with the local roads) as some vendors and clients coming from other parts of Kosovo, and outsde, will need additional time for travel to reach these business.

Estimation of magnitude

Access and severance effects will mainly occur during the construction period due to limited movement at construction sites, and changed access road increasing travel time. Impact is estimated to have minor magnitude.

The magnitude of the impact is as follows (Table 148).

Table 148: Magnitude of the Impact – Impact on access and severance effects

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact could worse the current situation access and severance
Type of Impact	Indirect	Construction activities will have indirect impact upon receptor
Reversibility	Reversible	The effect caused by impact is reversible. Situation can be returned into previous condition

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Geographic Extent	Local	Impact is limited to communities that are on the closest distance to the motorway
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium -term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Probable	There is a medium likelihood this impact to occur
Magnitude	Minor	Alteration of receptor

The initial significance of this impact, without mitigation measures is **moderate.**

6.15.1.2. Operational Phase

Impacts on access and severance effects

Access will be limited to exits / entries at interchanges. Overpasses and underpasses will secure continuous traffic flow along roads crossed by the motorway. However, there will be a restricted movement of people, compared to the present situation along the existing road N9, where unlimited access to and from nearby properties is enabled. This will cause severance effects.

During the operation of the motorway, the travel time of existing businesses` vendors and clients may also increase slightly (depending on the location of particular business premises) due to the need to use junctions of the motorway to reach the location of existing businesses. The time lost in connecting to the existing road from the motorway may be offset by the higher speed at the motorway.

Estimation of magnitude

Impact is estimated to be of moderate magnitude.

The magnitude of the impact is as follows (Table 149).

Table 149: Magnitude of the Impact – Impacts on access and severance effects

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Negative	Impact could worsen the current situation
Type of Impact	Direct	Operation activities will have direct impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Local	Impact is limited to communities that are on the closest distance to the motorway
Time when the impact occurs	Delayed	Effect delayed and occurs after project activities, in this case during operational phase

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Duration	Long -term	Impacts extends throughout operation of motorway
Likelihood of appearance	Probable	There is a medium likelihood this impact to occur
Magnitude	Moderate	Loss of resource/large scale of improvement

The initial significance of this impact, without mitigation measures could give rise to large negative effects. The impact will result in substantative changes in defined population/communities or result in a large change in socio-economic conditions.

6.15.2. Summary of Impacts on Access and Severance Impacts

- Construction Phase
  - *Impacts on access and severance effects - **MODERATE***
- Operational Phase
  - *Impacts on access and severance effects on general public, community services and business sector in communities at or close to the motorway – **MODERATE***

6.16. Potential Economic Impact

During the construction phase it is expected that related construction works will have significant impact especially on local economy and national economy. During operational phase, new markets will be opened as a result of better transfer of goods and technologies; new transport alternatives will be available which will significantly impact development of local and national economy.

6.16.1. Potential impact and likely significance

The following potential impacts on Economy have been identified for the construction and operational phases of the Project:

- Construction Phase
  - Stimulation of economic growth at local level
- Operational Phase
  - Effects on local economy and national economy

6.16.1.1. Construction Phase

Stimulation of economic growth al local level

The local economy will be directly and positively affected. A potential market for the local agricultural producers, and other businesses will be opened. The project will stimulate local economic activities by engaging local entrepreneurs. Local Sub-Contractors will use locally available community services.

Part of increased revenue and taxes will be redirected to the local communities once collected at the central level.

Estimation of magnitude

It is expected that the impacts will result in an improved local economy and therefore the impact will have a major magnitude.

The magnitude of the impact is as follows (Table 150).

Table 150: Magnitude of the Impact – Stimulation of economic growth al local level

Criteria	Assessment Thresholds	
	Threshold	**Descriptions**
Characterization of Impact	Positive	Impacts is improvement of current situation; it is desirable
Type of Impact	Direct	Construction activities will have direct impact upon receptor
Reversibility	Reversible	The effect caused by impact is reversible. Situation can be returned into previous condition
Geographic Extent	Local	Impact is limited to communities that are on the closest distance to the motorway
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium -term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	High improvement of receptor quality

The initial significance of this impact is **large.**

6.16.1.2. Operational Phase

Effect on Local Economy and National Economy

Local economy

During the operational phase, the local economy will benefit through engaging workforce for maintenance activities. Project associated services, such as gas stations, rest areas, restaurants etc. will provide employment opportunities. Better accessibility will boost development of local economic activities like agriculture, forestry, tourism, harvesting of forest foods which is expected to intensify due to better access to newly opened markets locally and nationally.

More detailed information on the magnitude of the impact will be obtained through a detailed Social Survey during the Preliminary Design stage, which will assess the affected existing businesses (so called “avoided communities”), the likelihood and extent of their economic displacement as a result of the Project.

Estimation of magnitude

It is expected the impact on the Local Economy will be positive and of a large scale. The impact will have a major magnitude.

The magnitude of the impact is as follows (Table151).

Table 151: Magnitude of the Impact – Effect on Local Economy

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impact is improvement of current situation; it is desirable
Type of Impact	Indirect	Operational mtorway will have indirect impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Local	Impact is limited to specific individuals or population groups/communities at or close to the motorway
Time when the impact occurs	Delayed	Effect delayed and occurs sometime after project activity
Duration	Long-term	Impact extends throughout operation of motorway
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	High improvement of receptor quality

The initial significance of this effect is **large.**

National Economy

Operation of the motorway will promote economic growth by building, enhancing, managing and maintaining the transport services. Transport times will decrease, influencing positively market prices of products. It will lead to an improved competitiveness of the national economy.

Estimation of magnitude

It is expected that the impact on the National economy will be positive and of a large scale. This impact will have a major magnitude.

The magnitude of the impact is as follows (Table 152).

Table 152: Magnitude of the Impact – Effect on National Economy

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impacts is improvement of current situation; it is desirable
Type of Impact	Indirect	Operational motorway will have indirect impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Geographic Extent	Nationaly	Impacts extends through much of Kosovo area
Time when the impact occurs	Delayed	Effect delayed and occurs sometime after project activity
Duration	Long-term	Impact extends throughout operation of motorway
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	High improvement of receptor quality

The initial significance of this effect is **large.**

6.16.2. Summary of Impacts on Economy

- Construction Phase
  - *Stimulation of economic growth at local level – **LARGE***
- Operational Phase
  - *Effects on local economy and national economy – **LARGE***

6.17. Potential Impact in Employment

6.17.1. Potential impact and likely significance

The following potential impacts on Employment have been identified for the construction and operational phases of the Project:

- Construction Phase
  - Creation of local employment
- Operational Phase
  - Creation of employment
  - Improvement in access to employment opportunities across the region

6.17.1.1. Construction Phase

Creation of local employment

During construction of the motorway, employment will be generated mainly for construction workers. In terms of gender distribution, it can be expected that woman will be engaged within work camps, administration of Contractors or in Supervison (administrative or engineer staff).

Estimation of magnitude

It is expected that employment opportunities of a major magnitude will be created during the construction phase.

The magnitude of the impact is as follows (Table 153).

Table 153: Magnitude of the Impact – Creation of local employment (direct and indirect)

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impacts is improvement of current situation in regards with unemployment, it is desirable
Type of Impact	Direct/Indirect	Construction activities will have both direct and indirect impact upon receptor
Reversibility	irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	National	Impact extends through much of Macedonia (national construction companies could be engaged)
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium -term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	High improvement of receptor quality

The initial significance of this impact is ***Large***.

6.17.1.2. Operational Phase

Creation of employment

Following the construction period, a number of people will find employment in the company (public of private) responsible for maintenance of the motorway. It is expected majority of these employees to be male. Also along the motorway, additional employments will be generated in the Project associated facilities.

Estimation of magnitude

It is expected that during the operational phase employment opportunities will be created; the magnitude will be major.

The magnitude of the impact is as follows (Table 154).

Table 154: Magnutide of the Impact – Creation of local employment (direct and indirect)

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impacts is improvement of current situation; it is desirable
Type of Impact	Direct/Indirect	Operation of motorway will have both direct and indirect impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Geographic Extent	Global	Effects extends globally beyond SEE area
Time when the impact occurs	Delayed	Effect delayed and occurs after project activities (during operation of motorway)
Duration	Long -term	Impacts extends throughout operation of motorway
Likelihood of appearance	Certain	There is a high likelihood this impact to occur
Magnitude	Major	High improvement of receptor quality

The initial significance of this impact is ***Large***

6.17.2. Summary of Impacts on Employment

- Construction Phase
  - o *Creation of local employment (direct and indirect) – **LARGE***
- Operational Phase
  - o *Creation of employment (direct and indirect) at local, national and transboundary levels – **LARGE***

6.18. Potential impact on Education and Training

6.18.1. Potential impact and likely significance

The following potential impacts on Education & Training have been identified for the construction and operational phases of the Project:

- Construction phase
  - o Capacity building through training
- Operational Phase
  - o Education & training benefits from employment opportunities

6.18.1.1. Construction Phase

Capacity building through training

It is expected that during the construction phase some level of capacity building will be provided (organized and un-organized) through transfer of new technologies and new skills. This will happen mainly as on-the-job training but also throught exposure to modern management and logistics procedures and by working with people with international expertise.

Joint venture cooperation between nternational contractors and local sub-contractors can result in transfer of skills which will strengthen local capacities.

Mott MacDonald

Estimation of magnitude

It is expected this impact will create minor benefits on education and training and consequently the magnitude will be minor.

The magnitude of the impact is as follows (Table 155).

Table 155 Characterisation of the Impact – Capacity building through training

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impact will improve current situation
Type of Impact	Indirect	Construction activities will have indirect impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Regional	Impacts extends across North-eastern region of Macedonia
Time when the impact occurs	Immediate	Effect will occur immediately following project activities
Duration	Medium -term	Based on estimation for construction activities duration it is estimated impact to last in medium-term (between two and ten years)
Likelihood of appearance	Probable	The impacts can be considered to have a medium likelihood of occurring
Magnitude	Minor	Minor improvement

The initial significance of this impact is **slight.**

6.18.1.2. Operational Phase

Education and training benefits from employment opportunities

Operation of the motorway will create possibilities for direct and indirect employment. Presently unemployment and dependency on state benefits are major problems for the population in the Project area. Accessibility to universities will improve the education levels of male and female population. However, the society is still patriarchal, especially in rural and undeveloped areas; therefore, the education opportunities will not be embraced by women in a short run.

Estimation of magnitude

It is expected that education and training will improve. Affected population will therefore have an improved access to employment opportunities. It is estimated that the impact will have a major magnitude.

The magnitude of the impact is as follows (Table 156).

Table 156: Magnitude of the Impact – Education and training benefits from employment opportunities

Criteria	Assessment Thresholds	
	Threshold	Descriptions
Characterization of Impact	Positive	Impact will improve current situation
Type of Impact	Indirect	Construction activities will have indirect impact upon receptor
Reversibility	Irreversible	The effect caused by impact is irreversible. Situation can not be returned into previous condition
Geographic Extent	Regional	Impacts extends across North-eastern region of Macedonia
Time when the impact occurs	Delayed	Effects delayed and occurs sometime after project activities
Duration	Long-term	Impacts extends throughout operation of motorway
Likelihood of appearance	Certain	The impacts can be considered to have a high likelihood of occurring
Magnitude	Major	Large improvement of quality of life

The initial significance of this impact is **large.**

6.18.2. Summary of Impacts on Education and Training

- Construction phase
  - *Capacity building through training – **SLIGHT***
- Operational Phase
  - *Education & training benefits from employment opportunities – **LARGE***

6.19. Vulnerable Groups

The representatives of vulnerable groups, in most of the cases are at the bottom of the social hierarchy and their ability to cope, resist and recover from impacts is very low. In term of the ethnic background there is likelihood representatives of Roma, Ashkali and Egyptian (RAE) community to be included with the higher percentage within the identified vulnerable groups which calls for dedicated measures to specifically target these communities. It can be concluded that the sensitivity 'to change' of vulnerable groups is very high.

A big number of representatives of vulnerable groups may lose their property (house and business activity) land, forestry, pastures, fields and/or orchards.

It is not possible to determine which profile of vulnerable groups and how many people will be affected due to the early stage of the design. It is certain, however, that impacts that affect other population will be multiplied for vulnerable groups since they face difficulty to adopt and respond to impact effects.

7. PRESENT INFORMATION GAPS AND ESIA UPDATE

This ESIA is developed for the Project Conceptual Design. At this stage information needed to assess comprehensively the Baseline Conditions of certain environmental and social resources is not available. The information gaps relate to the following receptors:

- Environmental Resources
    - Geology and Hydrology and Soils
        - locations of borrow pits and surplus material disposal sites;
    - Surface Water Resources"
        - Flood Risk;
        - Hydraulic analyses of storm water flows and run-off from the carriageway;
        - Presence of water supply and wastewater collection systems, as well as irrigation channels (both formal and informal) within the Project Footprint;
    - Groundwater Resources
        - groundwater table along the Alignment,
        - vulnerability of water bearing strata located on the south from the Alignment, from which groundwater is supplied for drinking water from private wells;
        - quality of groundwater used for drinking purpose; soil type, i.e. its resistance to pollution, in the areas where groundwater used for water supply is highly sensitive.
    - Air Quality Baseline information in the Project footprint and sensitive receptors
    - Noise and Vibration Baseline information in the Project footprint and sensitive receptors
- Social Resources
    - Number of people directly affected by the Project (temporary and permanent land acquisition)'
    - Number and profile of vulnerable people residing in the Project footprint
    - Information on the presence of Roma, Ashkali and Egyptian (RAE) community within the Project footprint and their socio-economic status.
    - The size of the land to be acquired for temporary and permanent Motorway structures
    - Number and legal status of the affected businesses located in the project footprint;
    - Presence of social services` facilities, such as primary schools, health facilities;
    - Locations of structures – interchanges, overpasses and underpasses, required to assess access and severance impacts

During the next stages of the design these gaps will be addressed and additional analyses (studies / surveys) will be carried out. Identified gaps are outlined and actions to update missing information upon the next design stages are presented in the table below:

Table 157: Data Gap and Update Actions

Issue	Gap	Update action	Project Phase
Environmental Resources			
Geology, Hydrogeology and Soils	Locations of borrow pits and surplus material disposal sites	Geo-mechanical investigations	Preliminary Design
	Locations of the construction compounds	Detailed Design	
Water resources	Flood Risk;	Detailed Hydrology and Hydraulic Analyses	Preliminary Design
	Drainage systems;		
	Design of Bridge (Abutments)	Preliminary and Detailed Design	
	Groundwater table along the Alignment; Vulnerability of water bearing strata located on the south from the Alignment	Geological and Hydro-geological Investigations	Preliminary Design
	Presence of water supply and wastewater collection systems, as well as irrigation channels (both formal and informal) within the Project Footprint;	Survey	Preliminary and Detailed Design
Air Quality	Air quality Baseline – identification of sensitive receptors	Survey	Preliminary Design
	Air emissions modeling to assess the effects on sensitive receptors in the Study Area	Modelling	Preliminary Design
Noise and Vibration	Identification of sensitive receptors	Survey	Preliminary design
	Modelling of noise emissions	Modelling	Preliminary design
	Location of noise bariers and its impact on land take along the alignment and at structures	A Detailed Motorway Noise and Vibration Study	Preliminary design
	Dertailed Design of Noise bariers	Detailed design of noise barieres	Detailed Design
Social Issues			
Demography	Information on the presence of RAE community within the Project footprint and their socio-economic status.	Socio-economic Survey	Preliminary Design
	Number and profile of vulnerable people residing I the Project footprint		
	Socio-economic status of people directly affected by the Project		
Facilities	Presence of social services` facilities, such as primary schools, health facilities		
	Water supply and sewerage systems		
Employment	Employment status of the directly affected		

<table>
<tr><th>Issue</th><th>Gap</th><th>Update action</th><th>Project Phase</th></tr>
<tr><td></td><td>population.</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Economic Activities</td><td>Number and legal status of the affected businesses located in the project</td></tr>
<tr><td rowspan="3">Land Use and Land Take</td><td>Locations of the construction compounds</td><td colspan="2" rowspan="2">Detailed design</td></tr>
<tr><td>Project (temporary and permanent land acquisition)</td></tr>
<tr><td>Number and size of affected land plots</td><td>Mapping and Census of affected land plots</td><td>Detailed design</td></tr>
<tr><td>Access and Severance</td><td>Locations of structures – interchanges, overpasses and underpasses, required to assess access and severance impacts</td><td colspan="2" rowspan="2">Preliminary and Detailed Design</td></tr>
<tr><td>Vulnerable groups</td><td>Level of vulnerability of the directly affected people</td></tr>
</table>

The ESIA and the Environmental and Social Management and Monitoring Plan (ESMMP) (please see chapter 9 below) will be updated along with the progress of the Preliminary and Detailed Design stages. A design change will be developed to an appropriate level of detail to allow provisional assessment within the design change management system. It will extend throughout the Preliminary and Detailed Design stages:

- The Preliminary Design and the ESIA / ESMMP/ ESAP/SEP/LARF and NTS update will be carried out by the IPF Consultant; In addition, detailed RAP will be prepared;
- The Detailed Design of structures; the ESMMP update and ESAP implementation will be carried out by the Contractor; the monitoring over the performance of the Contractor will be executed by theSupervision Engineer and their E&S team.

The design change management will be structured along the following processes:

- Design change screening and screening results;
- Supervision Engineer E&S Team's review
- Stakeholder Consultation
- Administration review and approval from MI

An indicative scheme of the design change management process is shown in the figure below.

Figure 104 Indicative Scheme of the Design Change and ESIA Update Process

Mott MacDonald

8. ENVIRONMENTAL & SOCIAL MITIGATION MEASURES AND RESIDUAL ENVIRONMENTAL & SOCIAL EFFECTS

Chapter 8 describes detailed mitigation measures in response to adverse effects arising from the Project activities. It also addresses enhancement measures to maximise benefits that the Project will generate for the economy and wellbeing of Kosovo* population.

The significance of residual impacts that will linger after the application of mitigation measures is then demonstrated: the applied method assesses the magnitude of the impact prior to and after the application of mitigation, as well as the environmental or social value, deriving the significance of each residual impact at the intersection of these inputs.

Some outlined measures aiming to mitigate impacts on environmental and social resources require further studies and/or are dependent on the progress of the design (please see above Chapter 8 Gaps and ESIA Update). They are currently based on best design and construction practices; however, such measures will be updated upon the availability of necessary information.

8.1. Environmental mitigation measures and assessment of residual effects

8.1.1. Soils, Surface Water And Ground Water

8.1.1.1. Mitigation Measures for Soils

Pre-Construction Phase

The Pre-Construction phase will comprise of **design** related activities and **development of relevant plans by the Contractor** prior to the start of construction.

During the **Preliminary Design** a detailed geo-mechanical investigation will be carried out to define:

- **erosion potential** of the sites where soil disturbance will occur due to the execution of Project activities, by examining the erodibility of the soil (type and structure), vegetative cover, topography, climate (rainfall and wind), and the nature of land-clearing. Erosion potential will also be affected by the type, nature and intensity of earthwork;
- **location of Surplus Material Disposal Sites:** the process of identification of these locations will include:
    - o preliminary sites will be proposed after the execution of the geo-mechanical investigations;
    - o final locations will be confirmed after an ecological survey intended to assess their impacts on sensitive habitats and water courses:

- for the selected sites necessary documentation will be prepared to define location, accesses, drainage and disposal method;
- The documentation will be revised (ecologist-approved).
- The documentation will be submitted to the relevant authorities MESP and municipalities to obtain permits;
- The approved documents and maps will be passed to the Contractor through contract documentation.

Measures to prevent soil, surface and groundwater contamination, as well as erosion, will be part of the following **plans to be developed by the Contractor**:

- Sedimentation and Erosion Control Plan;
- Safe Management of Hazardous Materials and Spill Prevention Program, and
- Waste Management Plan.

The **Sedimentation and Erosion Control Plan** will be developed by the Contractor before the start of construction activities in order to identify specific erosion control techniques for use at all the construction sites along the motorway Alignment. The Plan should be based on several principles:

- The Project site characteristics (topography, soils, drainage patterns, and covers) will be considered when implementing the plan. Wherever possible areas which are prone to erosion should be left undisturbed and undeveloped. Entrance and exits points for runoff should be protected from erosion and equipped with sediment controldevices;
- Minimizing the extent of the disturbed area and the duration of exposure and stabilize disturbed areas as soon as possible. Typically, if an area is not going to be worked on in more than 45 days, it should be protected by erosion control mats;
- Minimizing the use of heavy equipment and techniques that will result in excessive soil disturbances or compaction of soils, especially on unstable slopes;
- Establishing the drainage and runoff controls before starting the site clearance and earthworks. The existing vegetation should be retaining as much as possible;
- Where water would need to be removed from excavations, it should be transferred at the minimum practical distance to be discharged;
- Keeping runoff velocity as low as possible. For drainage ways such as ditches, high velocity can be reduced by a series of rock check dams which break the flow velocity. Overland flow velocity can be reduced by minimizing slope length and steepness;
- Diverting concentrated flows wherever possible away from sensitive areas;
- Using sediment control devices such as sediment control ponds to retain sediments from leaving the site;
- Selecting and implementing the most effective erosion control devices: i) temporary seedings; ii) temporary mulching; iii) permanent sodding; iv) temporary or permanent erosion control blankets; v) permanent vegetative buffer strips;

- Selecting and implementing sediment control devices such as: i) site fencing; ii) straw bales; iii) sediment basins or traps; iv) storm inlet traps; vi) rock check dams andv ii) interception berms / swales;
- De - compacting and restoring disturbed areas once construction is completed at a site, all areas that are not going to be occupied by permanent structures by tilling the land before proceeding to the vegetation reinstatement.

The **Spill Prevention Plan** should address issues such as:

- Keep all roads and hard standings clean and tidy to prevent the build-up of oil and dirt that may be washed into a watercourse or drain during heavyrainfall;
- Keep spill kits close to the construction sites in case there is an incidental spill off, so that it can be immediately cleanedup;
- Do not permit any refueling, storage, servicing or maintenance of the equipment within 100 m of drainages, water courses, alluvial plains or other sensitive environmental resources. If these activities have to be done at the construction site, all precautionary measures shall be taken to prevent leaks or spills from reaching the soil or nearby watercourses;
- Wherever possible these activities (refueling, storage, servicing or maintenance) should take place in construction camps adequately prepared for these purposes (adequately lined for preventing any soil and groundwater contamination, and equipped with culverts along the perimeters to collect water runoff that will be directed to wastewater treatment facilities);
- Do not allow ready-mix concrete trucks containing alkaline cement or residues of cement to enter any watercourse. Washout of the concrete trucks shall be performed at the concrete batching plant camp, where appropriate facilities will be provided. If the washout of concrete trucks were necessary at or near the construction site, this shall be done at distance greater than 200 m of any watercourse and never in a very high or high habitat sensitivity area. The washout area will be clearly signposted and drivers shall be aware of the designated locations for washout;
- Avoid setting up camps on alluvial terrains because of the high levels of the underground water table and the risk of pollution;
- Organize proper handling and storage of lubricants, solvents as well proper usage of construction equipment;
- Minimize the storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site. All hazardous substances either products to be used or waste, shall be stored in adequate places, far from sensitive areas (e.g. water courses, habitats with a rich biodiversity) and adequately equipped to prevent any soil, surface water or groundwater contamination);
- Undertake regular preventive maintenance of vehicles and construction machinery so as to reduce leakages of lubricants, motor oil and fuel.

The **Waste Management Plan** shall include the following tasks:

- Waste segregation, collection, transportation and disposal
  - Identification and classification of the different waste types that could be generated at the construction site (due to the materials used and waste generated in different sections) according to the Annex 1 of the national Law on Waste (Law No. 02/L-30) which is aligned with the EU Catalogue of Waste and specifies all relevant hazardous and non-hazardous waste streams;
  - Segregation of hazardous from non-hazardous waste streams at the construction site;
  - Immediate removal of waste material (concrete, iron, rocks, etc.) accidentally deposited, from highly sensitive habitats;
  - Collection and of municipal solid waste generated at the construction site and camps (food, beverages, packaging waste such as paper, bottles, glass, etc., glass bottles, batteries) according to national legislation (segregation of recycling waste materials from the waste stream that will be disposed of at the regional sanitary landfill in Pejë). Recyclable waste should be delivered to an authorized recycling company;
  - Sign a contract with an authorised company for the collection of the waste generated at the construction site, its transportation and disposal at the regional sanitary landfill in Pejë;
  - Segregate, collect and transport the inert waste to a site designated by the competent authority (the municipality, with an agreement obtained by the Ministry of Environment and Spatial Planning; sign a contract for the service with an authorised company, if the Contractor is not positioned to perform this activity;
  - Ensure that the contracts signed with the companies authorised for handing the recyclables will take into account an appropriate frequency of their collection so that the construction sites remain clean at anytime;
  - Segregate hazardous waste (motor oils, lubricants etc.) and deliver this waste to an authorized company for managing hazardous waste;
  - Establishing Temporary Hazardous Waste Storage Points in line with the national legislation specifying appropriate handling, labelling, packing, storage etc.;
  - Ensuring that the access to these temporary hazardous waste storage points will be allowed only to trained staff wearing appropriate protective clothes; take care that the entrance of all unauthorised staff and the general public will be prohibited;
- Acidental disposal of waste in sensitive areas:
  - Immediately removing any waste material (concrete, iron, rocks etc.) accidentally deposited in highly sensitive habitats;
- Spill Controll
  - Promptly cleaning up All waste spills;
- Closure and remediation:
  - Close and remediate the site used for the disposal of inert waste, in case it was created specifically for the Project purposes;
  - Close and remediate borrow pits, in case they were created specifically for the Project purposes;
- Topsoil:

- Reuse excavated soil and construction waste as much aspossible;
- Undertake selective removal and ensure for an appropriate storage of topsoil;
- Offer the humus from the topsoil to the affected land owners or any other land owner within the project corridor;
- Reuse the topsoil to restore cuttings, embankments, as well as to remediate the soil disturbed by the temporary works and facilities (access roads, construction camps, borrow pits, excess material disposal sites etc);
- Collect and store the removed topsoil on ridges which are protected rom weather agents, (wind and rain) so as to avoid any loss of the organic and biotic properties of the soil and / or erosion. The ridges shall be signaled and maintained in proper condition until the topsoil reuse takes place.

- Reporting:
  - Develop an Annual Report for non-hazardous waste management and submit the report to the Ministry of Environment and Spatial Planning for review and adoption, if applicable;
- Inspection:
  - Making available for inspections full records of the type of waste stream generated, quantity composition, origin, disposal destination and method of transport for all different waste streams;

Construction Phase

Suitable mitigation measures are defined to **prevent soil contamination** by chemicals and suspended particles, which are transported by runoff, leaching and erosion processes. These will have effect to the protection of soil, as well as surface and groundwater. **Erosion control** measures are proposed as well.

Measures to **prevent soil contamination** are intended to minimise the generation of contaminated stormwater. Suggested measures include:

- Minimise the quantity of uncontaminated stormwater entering cleared areas.
  - Construct diversion banks and intercept drains around the site while ensuring that the water discharging from such banks or drains is disposed of without causing erosion.
  - Wherever possible, the new stormwater drainage system should be installed before any land disturbance activities commence. If possible on-site inlets should not be connected until the site has been stabilised and rehabilitated.
  - Establish cut-off or intercept drains to redirect stormwater away from cleared areas and slopes to stable (vegetated) areas or effective treatment installations.
- Reduce water velocities
  - Minimise continuous slopes where flowing water can scour.
  - To prevent scouring, drainage lines may need to be lined or velocity-reducing structures, such as crushed rock or geotextile placed in the drainage line.

The following **erosion control** measures should be taken:

- Keep land clearance to a minimum.
- Avoid wherever possible clearing areas of highly erodible soils and steep slopes which are prone to water and wind erosion.
- Revegetate and mulch progressively as each section of works is completed. The interval between clearing and revegetation should be kept to an absolute minimum.
- Coordinate work schedules, if more than one contractor is working on a site, so that there are no delays in construction activities resulting in disturbed land remaining unstabilised.
- Program construction activities so that the area of exposed soil is minimised during times of the year when the potential for erosion is high, for example during summer when intense rainstorms are common.
- Stabilise the site and install and maintain erosion controls so that they remain effective during any pause in construction. This is particularly important if a project stops during the wetter months.
- Keep vehicles to well-defined haul roads.
- Keep haul roads off sloping terrain wherever practical.
- Designed the slope of a cut to minimise the angle of incline.
- Cultivating the cut surface will increase infiltration of rainfall and decrease the velocity of water across the slope during rain and therefore reduce erosion.

Construction workers will attend training, prior and during the construction works, to make them aware of the importance of soil, surface water and groundwater as valuable resources for humans and nature, and the need for protecting them.

Operational Phase

A Chemical Accident and Spills Management Program shall be developed for all motorway operations to prevent and mitigate the negative impacts to soil, surface water and groundwater that could arise from potential accidents and spills involving hazardous substances. This program will include an Emergency Response Plan as well. The program shall be prepared in close cooperation with the relevant authorities. The Chemical Accident and Spills Program should provide information that at a minimum will accomplish the following:

- Discuss the measure that will be taken to minimize the risks associated with spills and accidents involving hazardous materials. These measures should include: monitoring purchasing requirements, product substitutions, design features for containment, operational controls, work practices, labeling and storage requirements;
- Specify the document-control procedures for maintaining material inventories and MSDS (Material Safety Data Sheets);
- Assign an emergency response team involved in assessing the risk of hazardous material releases and working to avoid any harmful effects if any accidents happened. Their role will include evaluating the concentrations of the chemicals, where and how population might be

exposed and the potential toxic effects on the exposed people, soil and waters. They will plan and implement rapid clean up measures depending of the extent of the spills (bioremediation, floating booms and adsorbents, solid materials that capture the soil, chemical oxidation in order to break the chemicals down);
- The emergency calls and coordination with the national authorities relevant for Crisis Management will be essential;

8.1.1.2. Mitigation Measures for Surface Water

Pre-Construction Phase

During the next stages of the design, the **run-off drainage systems** and the design of the **bridge** over Drini I Bardhe River will be developed.

Drainage systems will be designed to collect run-off from the carriageway, convey, store ruun-off water to reduce peak flows and remove coarse sediment and oil related pollutants.

The hydraulic analyses for the Project have not been developed yet due to the early stage of the design. Analyses will cover calculation of runoff flows and will constitute part of the Preliminary and Detailed Design. Hydraulic analyses will provide input to the combined surface water channel and pipe drainage system in order to determine sizes of pipes, geometry and size of surface channels, and well as length of the road to be drained by the channel.

The location of and type of treatment systems (oil interceptors and/or attenuation ponds) will also determined based on.

- Underlying Geology and results of on-site geo-mechanical Investigations;
- Proximity of Groundwater Table;
- Long term maintenance and management of the drainage and run-off treatment system

The motorway drainage shall be directed to retention basins or grassed filter zones to trap sediments and other contaminants, rather than discharging directly to the water courses. These sediment and contaminant retention structures shall be constructed in the areas where habitats of very high or high sensitivity are located along the Alignment or in a close location downstream of the effluent discharge point.

The **bridge** will be designed and constructed so to limit effects on local hydrology:

- The bridge design will be designed to take into consideration the flooding regime:
- Single span bridges are the preferred structure for crossing streams as they cause the least disturbance to the waterway both hydraulically and environmentally;
- Multiple span bridges are acceptable on wide streams. Acceptable arrangements include:

- Piers located outside the normal low flow stream width. In this regard, a three span bridge would be a better solution than a two span bridge. The spans do not need to be of equal length;
  - Piers aligned parallel to the direction of flow;
  - Riprap provided around the piers to mitigate locals couring;
  - If piers/piles have to be constructed inside the normal low flow stream width, they should occupy less than 5% of the cross sectional area so as not to cause a significant change to the available waterway.
- The bridge abutments should be located so they do not significantly encroach into the waterway and thereby reduce the available waterway area. Abutments should also be located so as to avoid obstruction of movement of terrestrial fauna along the riparian zone (i.e. allow free movement of animals along the riverbanks);
- Rock beaching will be used on the batters to protect against abutment scour, as this area will generally not revegetate due to inadequate light and lack of rainfall. Beaching should generally extend 3 metres upstream and downstream of the bridge abutments;
- The batter is to be excavated to the depth of the beaching to maintain the waterway area. The slope of the batters should be in the range of 1V:1H to 1V:2H. In general, the beaching should extend at least 600 mm below the toe of the bank to mitigate undermining. Where the stream banks are stable, rock beaching may not be required.

Construction Phase

The construction of **drainage pipes and bridges** in water courses will be carried out during the dry season.

De-watering operations intended to build the bridge and culverts will take in consideration the following:

- To ensure that de-watering operations do not result in turbid water entering natural waterways:
- Treat contaminated water pumped into the stormwater system or a natural waterway to remove sediment if the turbidity exceeds 30 NTU.
- Ensure that the level of suspended solids in waters pumped into natural waterways never exceeds the regulatory water quality standard.
- De-water by pumping water, wherever practical, on to vegetated area of sufficient width to remove suspended soil, or to sediment control devices.
- Supervise all pumping and implement precautions to ensure that turbidity of pumped water is minimised.
- Monitor every hour during a pumping operation the turbidity of water pumped directly to a natural waterway or a drainage system discharging to a natural waterway

The areal extent of the construction area next to water courses will be only as large as that which is strictly necessary to adequately perform the construction works. The perimeter of the area will be marked with signaling ribbons that neither vehicles and machinery, nor workers, will trespass. No occupation of the stream bed or the banks will be allowed, unless there is no other reasonable alternative to carry out the construction work.

Domestic type wastewater generated in the construction camps will not be allowed to be discharged untreated into natural water courses. The camps will be provided a wastewater treatment system to treat effluents to admissible levels for discharge in the water body. The construction sites will be provided with chemical portable toilets and the waste adequately managed.

Operational Phase

A regular control and maintenance of drainage structures shall be conducted to check they do not become clogged with debris or sediments.

8.1.1.3. Mitigation Measures for Groundwater

Pre-Construction Phase

The Pre-Construction activities intended to mitigate impacts on groundwater will aim to assess the vulnerability of groundwater and design suitable drainage systems intended to prevent pollution from the discharge of run-off from the carriageway surface.

Detailed Geological and Hydro-geological Investigations will be carried out during the Preliminary Design to determine:

- groundwater table along the Alignment
- vulnerability of the aquifer located on the south from the Alignment from which potable water is abstracted from private wells by the local population.

Drainage systems will be designed during the Preliminary Design to enable for appropriate collection of run-off from the carriageway, conveying, storing ruun-off water to reduce peak flows and removing coarse sediment and oil related pollutants.

Construction Phase

In the case of hitting the groundwater table during the excavation, cutting or any other works, the intercepted area will be sealed as soon as possible so as to avoid any major alterations to the natural groundwater levels and flow in the area.

The hazardous materials management and spill prevention plan to be developed (see mitigation measures for soil) should address the potential for indirect and direct groundwater contamination. Direct impacts could occur where the groundwater is encountered e.g. during the construction of pillars near a watercourse. The design recommendations for the bridge and culverts will also mitigate risks for groundwater.

Operational Phase

The implementation of the mitigation measures defined above for soils and surface water will mitigate impacts on groundwater during the operational phase.

Assessment of Residual Effects

The mitigations measures described above in sections 8.1.1.1, 8.1.1.2, and 8.1.1.3 are intended to avoid or minimize the impacts on soil, surface water, and groundwater. They also contribute to mitigate indirect effects on flora, fauna, habitats, and protected and designated areas that occur from contamination of soil, surface water and groundwater, as well as from erosion and sedimentation processes. The mitigation for each identified impact is as follows:

Construction phase

Soils

Impairment of soil quality (soil contamination) due to the introduction of pollutants

- The significance of this impact without mitigation measures was estimated to be Slight and the probable success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Sligh***t.

Soil erosion due to clearance of vegetation and earth movements

- The significance of this impact without mitigation measures was estimated to be moderate and the probable success of the mitigation measures is considered to be moderate. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Sligh***t.

Destruction of fertile top soil

- The significance of this impact without mitigation measures was estimated to be moderate, and the probable success of the mitigation measures is considered to be low. The magnitude of the impact with the implementation of mitigation measures is Moderate. The significance of the residual effect is considered to be ***Moderate***.

Surface water

Impairment of water quality due to the introduction of pollutants

- The significance of this impact without mitigation measures was estimated to be moderate and the probability of success of the mitigation measures is considered to be high. Therefore, the magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight***.

Leaks and accidental spills of fuel and lubricants from construction machinery

- The significance of this impact without mitigation measures was estimated to be moderate and the probability of success of the mitigation measures is considered to be high. Therefore, the magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight***

Groundwater

Impairment of groundwater quality due to the introduction of pollutants

- The significance of this impact without mitigation measures was estimated to be moderate and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight***.

Alteration of groundwater flow patterns during tunneling and cutting operations

- The significance of this impact without mitigation measures was estimated to be slight and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Neutral***.

Operation phase

Soils

Impairment of soil quality (soil contamination) due to the introduction of pollutants

- The significance of this impact without mitigation measures was estimated to be moderate, and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to ***be Sli***ght.

Soil erosion in earth banks devoid of vegetation

- The significance of this impact without mitigation measures was estimated to be moderate, and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Slight***.

Surface water

Impairment of water quality due to the introduction of pollutants

- The significance of this impact without mitigation measures was estimated to be moderate, and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Slight***.

Accidental spills of transported hazardous substances and lubricants

- The significance of this impact without mitigation measures was estimated to be moderate, and the probability of success of the mitigation measures is considered to be medium. Therefore, the significance of the residual effect is considered to be ***Moderate***.

Alteration of flow patterns and sendiment deposition during flooding Mlods

- The significance of this impact without mitigation measures was estimated to be slight and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Neutral***.

Groundwater

Impairment of groundwater quality due to the introduction of pollutants

- The magnitude of this impact without mitigation measures was estimated to be medium and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight***.

Alteration of groundwater flow patterns during earthworks

- The magnitude of this impact without mitigation measures was estimated to be negligible and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Neutral***

8.1.2. Air quality

8.1.2.1. Mitigation Measures for Air

Pre-Construction Phase

During the Pre-Construction stage (Preliminary Design) the following activities will be carried out to ensure that the Project will not introduce people into an area of poor air quality where previously there had been no relevant exposure:

- Design related activities
  - A survey on air quality will be undertaken with the aim to assess the baseline conditions and identify sensitive receptors;
  - Air quality modelling will be executed to assess the effects of the Project on sensitive receptors and the level of their exposure
  - Updating mitigation measures anticipated in the ESIA for both construction and operation phases
- Suitable plans to be developed by the Contractor:
  - Dust Management Plan
  - Construction Traffic Management Plan:

The Dust Management Plan will addres the following issues:

- Hoardings will be constructed around the construction sites to minimize the spread of dust.
- Accesses and construction sites will be kept moist to reduce dust formation. Water sprays will be implemented during drilling and excavation activities.
- In the dry season, hygroscopic additives will be used in water to increase its presence in the ground.
- Dust-generating activities will be slowed down in days of strong wind.
- In windy and dry conditions, earth stock piles will be moistened to prevent the lifting of dust particles.
- Ground will be moistened during loading and unloading of aggregates in trucks.
- Truck dumpers carrying spoil or other dusty materials will be covered with tarps.
- Work sheds will be large enough to allow stockpiling of the excavated tunnel material, access of trucks and truck loading operations.

The Construction Traffic Management Plan will comprise of the following measures:

- Vehicles and construction machinery will be required to be properly maintained and to comply with relevant emission standards.
- No unnecessary idling of construction vehicles at the construction sites will be allowed.
- Construction truck traffic will be optimized so as to get a minimum number of trucks carrying the maximum volume of materials. This will be addressed in the Construction Traffic Management Plan.
- The truck routes will be planned to avoid peak traffic hours or routes with heavy traffic.

Construction Phase

The mitigation measures during the construction phase include the implementation of the Dust Management Plan and the Construction Traffic Management Plan. A Supervision Engineer and their E&S team will ensure for their adequate implementation.

Operational Phase

An air quality monitoring as per Kosovan legislation and/or international good practice will be implemented during the operational phase.

The mitigation measures for the operational phase, if required, will be defined at the Preliminary Design stage.

Assessment of Residual Effects

Construction Phase

Impairment of air quality due to emission of construction-borne air pollutants

- The significance of this impact without mitigation measures was estimated to be moderate and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight.***

Operational Phase

Impairment of air quality due to emission of pollutants from the traffic along the motorway

- The significance of this impact without mitigation measures was estimated to be ***Slight***. No mitigation measures are required.

8.1.3. Noise and Vibrations

8.1.3.1. Mitigations measures for noise

Pre-Construction Phase

The following activities will be carried out during the Pre-Construction stage:

- A Detailed Motorway Noise and Vibration Study will be completed during the development of the Preliminary Design of the Project to:
  - Determine Noise Levels, sensitive receptors and the width of the buffer in which the noise limits will be exceeded (Survey)
  - Perform modelling of noise emissions and update the preliminary noise assessment;
  - Determine the specific and optimum noise abatement measures according to national and EU/WHO standards.
  - Define location of noise bariers and its impact on land take along the alignment and at structures
- A Detailed Design of noise barriers, including:

- height and length of noise barriers, taking into account maintenance and emergency access considerations, drainage (where appropriate), as well as aesthetics:
  - land acquisition requirements
- Construction Traffic Management Plan, to be developed by the Contractor, will establish speed limits for construction vehicles and machinery at the construction site and the haulage roads used, and organize traffic so as to avoid as much as possible populated areas;

Construction Phase

The main mitigation measures to reduce noise as well as vibration levels during construction will be as follows:

- All vehicles and machinery used at the construction sites will be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damage noise control devices shall not be operated until corrective measures have beentaken;
- Wherever possible all construction equipment will comply with the requirements of EU Directive 2000/14/EC on noise emission in the environment by equipment for use outdoors (there is a lack of national legislation on outdoor equipment emission noise levels). All the equipment shall bear the CE marking and the indication of the guaranteed sound power level and shall be accompanied by an EC declaration of conformity;
- The equipment will be fitted with appropriate noise muffling devices that will reduce sound levels;
- Every effort shall be carried out to comply with the correspondent noise limits for each area where the construction works will take place;
- Construction works will not be permitted during the night; the operations on site shall be restricted to the MIod 07.00 -19.00h;
- Affected local residents will to the best of the project's efforts be kept informed on due time of the planned works and the vibrationand noise levels and MIods during which they will occur;
- The location of noisy equipment will be chosen as far as possible from sensitive receptors (Residential Properties, workplaces, schools and hospitals). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time of exposure is as short as possible;
- Good management practice will be used to distribute heavy noise equipment along the route so as to avoid the cumulative effects of noise;
- In the case where noisy works would need to be performed at night or during a longer period than one day at a given site, a noise shield will be erected around the working area;
- Monitoring of vibrations during the performance of critical work processes (e.g. foundations of the bridge and similar) will be undertaken in buildings which are within a distance of 20-30 meters from the area where these works take place. Should buildings result damaged as a result of vibrations generated by the construction works, the damaged buildings will be repaired or compensation paid;

- Earth moving equipment operating on the construction site will be as far away from vibration-sensitive receptors as possible;
- Activities such as demolition, earthmoving and ground-impacting operations will be scheduled so as not to occur in the same time MIod. Unlike noise, the total vibration level produced could be significantly less when each vibration source operates separately;
- Decrease dynamic loads from construction sources such as:
    - o Blasting. Explosive type and weight, delay-timing variations, size and number of holes, distance between holes and rows, method and direction of blast initiation;
    - o Dynamic compaction. A smaller falling weight will produce smaller vibrations;
    - o Pile driving. Pre-drilling, pre-jetting, replacement of displacement piles with non-displacement ones, switch impact hammer to vibratory one, replacement of driven piles with augered cast in- place piles or drilled shafts;
    - o Select demolition methods not involving impact, where possible;
    - o Avoid vibratory rollers and packers near sensitive receptors.

Noise abatement measures to be implemented during construction also include:

- Installation of noise barriers (protective walls) with noise reduction potential by 5-15 dB (A).
- Installation of insulation of house windows and facade with noise reduction potential by10-30 dB (A) in cases when suitable effectiveness of noise barriers cannot be achieved.

Operational Phase

Monitoring of traffic noise as per Kosovan legislation and/or international good practice will be implemented during the operational phase. Appropriate maintenance activities will be carried out to uphold the barriers` effectiveness of sound attenuation.

Assessment of Residual Effects

Construction phase

Noise

Impairment of acoustic quality due to noise emissions from construction vehicles and machinery

- The magnitude of this impact without mitigation measures was estimated to be Large, and the probability of success of the mitigation measures is considered to be moderate. The magnitude of the impact with the implementation of mitigation measures is medium. Therefore, the significance of the residual effect is considered to be ***Moderate***.

Operational phase

Noise

Impairment of acustic quality due to traffic noise emission

- The magnitude of this impact without mitigation measures was estimated to be Large, and the probability of success of the mitigation measures is considered to be moderate. The magnitude of the impact with the implementation of mitigation measures is medium. Therefore, the significance of the residual effect is considered to be ***Moderate***

8.1.4. Landscape

8.1.4.1. Mitigation Measures for Landscape

Pre-Construction Phase

Further refining of the Motorway Alignment during the next design stages will take into consideration the following principles:

Minimise disturbance to existing local landforms and landscape settings within the corridor by:

- minimising extents of earthworks;
- reflecting existing landform as much as possible in earthworks:
    - o aesthetic integration of the structural parts of viaducts and the bridge (e.g. deck, pillars), using construction materials with colors and textures that blend well with those of the surrounding landscape;
    - o designing the excess material disposal sites so that the final contours are integrated with those of the unaffected part of the valley;
- avoiding sensitive habitats;
- minimising impacts on local hydrological systems;
- reducing fragmentation of local and regional flora and fauna corridors

Construction phase

During construction operations, the landscape impact can be mitigated by utilising techniques to screen the operations from observers the construction site, the camp and ancillary areas. For this, hard or soft screens can be installed around the perimeter of these sites.

Prior to the completion of the construction works, the following mjeasures will be applied:

- Shaping of the terrain around altered impacted areas so as to recreate the surrounding land morphology;
- Planting vegetation with autochthonous species present in area such as:
    - o Water courses and banks underneath the constructed bridge, as well as in the abutment areas;

   - Affected areas underneath the viaducts as well as above, in abutment zones;
- Vegetating the excess material disposal sites with autochthonous species adapted to the resulting valley conditions;
- Any borrow pits opened for the construction of the motorway, will be reinstated at the end of the construction works and replanted;

Operational Phase

No measures are foreseen during the operational phase.

Assessment of Residual Effects

Construction phase

Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities

- The magnitude of this impact without mitigation measures was estimated to be low and the probability of success of the mitigation measures is considered to be moderate. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Slight.***

Operational phase

Alteration of landscape scenery by the presence of the motorway structures

- The significance of this impact without mitigation measures was estimated to be slight, and the probable success of the mitigation measures is considered to be moderate. The magnitude of the impact with the implementation of mitigation measures is medium. Therefore, the significance of the residual effect is considered to be ***Slight***.

8.1.5. Habitats

8.1.5.1. Mitigation Measures for Habitats

Pre-Construction Phase

The design of the Bridge and Box and Pipe culverts will provide for connectivity of habitats and will not create obstacles for migration of animal species.

The bridge design will avoid loss or damage of plants, animals and their habitats; will not create a barrier to the movement of fish and other wildlife; will not prevent sediment and woody debris being moved downstream; will not prevent natural river movement; will not increase flood risk.

Box and Pipe culvers will:

- Be adapted to facilitate the passage of small animals.
- Be embedded into the streambed to at least 20 percent of the culvert height at the downstream invert
- Be used only on "flat" streambeds (slopes no steeper than 3 percent)
- Have openings with at least 1.25 times the width of the stream channel bed. This width is measured bank to bank at the ordinary high-water level or edges of terrestrial, rooted vegetation.
- Ensure that water depths and velocities at low flows, are the same as they are in natural areas upstream and downstream of the crossing.
- Use natural substrate within the crossing, matching the upstream and downstream substrates; the substrate should resist displacement during floods and should be designed so that appropriate material is maintained during normal flows.

Construction phase

Contractor access will be prohibited from all sensitive habitat areas, except what is necessary to create Motorway. Good construction controls will be built into the construction contract. Rehabilitation of all areas where vegetation was damaged will take place.

Areas necessary for construction, but not required for the operational phase of the road, should be rehabilitated, such as areas disturbed by construction of the bridges. Rehabilitation will aim to re-establish the original regional ecosystems present prior to disturbance and will be staged where necessary.

The mitigation measures to minimize the effect of fragmentation mainly consist of the establishment of enough wildlife crossings to increase the permeability of the motorway Alignment as follows:

- Afforestaion activites to be performed in line with No net loss principle, i.e prepartion of Revegetation Plan. Reparian vegetation along the Drini I Barde river to be restored.
- The undersides of bridge will be vegetated so as to create vegetal screens that hide the bridge structure (e.g. shrubs and small trees in the area of the abutments).
- Fenced areas will be vegetated with native plant species that are attractive to local fauna and with plantation patterns designed to lead the animals towards the wild life crossings.

The rehabilitation program should incorporate a wide variety of species typical of the regional ecosystem. The species composition for rehabilitation will depend on the type of ecosystem in question (mostly degraded oak forest). Appointed person or company for monitoring will be responsible to prepare the list of species for each rehabilitation site. Plant stock should be locally sourced, where possible, to maintain genetic identity of local communities. Recommened trees for re-vegetation are the following ones: *Quercus pubescens, Q. frainetto, Q. cerris, Fraxinus ornus,* *Carpinus orientalis, Pyrus amygdaliformis, Acer monspessulanum, A. tataricum, A. campestre, Crataegus monogyna, Ulmus minor, Prunus spinosa*, etc.

Operational phase

A regular control and maintenance of drainage structures shall be conducted to check they do not become clogged with debris or sediments. Regular maintenance activities will also include: protective fence maintenance, removal of food, waste, animal carcasses, etc. from roads, in order to reduce the attraction of scavengers.

8.1.5.2. Mitigation Measures for Protected and Designated Areas

The Project will not impact any protected or designated area. Therefore, no mitigation measures are planned.

Assessment of Residual Effects

Construction phase

Habitats

Loss of Habitats

- The significance of this impact without mitigation measures was estimated to be moderate and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is even lower. Therefore, the significance of the residual effect is considered to be ***Slight***.

Operational phase

Habitats fragmentation

- The significance of this impact without mitigation measures was estimated to be slight, and the probability of success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures is low. Therefore, the significance of the residual effect is considered to be ***Slight***.

8.1.6. Cultural Heritage

8.1.6.1. Mitigation Measures for Cultural Heritage

Pre Construction Stage

The road alingments at Conceptual Design stage already avoids known cultural heritage sites. Any further adjustments of the Motorway Alignment made during the next design stages will avoid any disturbance of these sites.

Construction phase

During the construction phase, accidental destruction of non-identified buried archaeological sites may occur as the clearance of vegetation, buildings, and fences proceed followed by earth movement operations, which might expose previously unknown buried archaeological (also paleontological) sites. In order to prevent unwanted destruction of archaeological sites, the following measures will be taken before and during construction:

- A Cultural Heritage Management Plan shall be developed for the project before construction works start in line with the provisions of the Law on Protection of Cultural Heritage and international treaties;
- The construction works will start only after all relevant permits are provided by the Ministry of Culture Youth and Sport;
- During the construction works taking place on an undisturbed terrain, an archaeological survey will be carried out to prevent any disturbance of unburried archeological artefacts. Surveys will be implemented by licensed archaeologists;
- In the event of the unexpected discovery of archaeological objects, the Contractor shall immediately inform the Ministry of Infrastructure and the Ministry of Culture, Youth and Sport and will follow their instructions. The construction works will be temporary stopped while the authorities decide if any research is needed or protection measures should be applied;
- Training shall be provided to construction workers before the start of earth works to improve their awareness on the importance of protecting Kosovo* cultural heritage.

Operational phase

The easier access to the area by the new motorway may facilitate poaching of archaeological sites. It is expected the authorities responsible for the protection of cultural heritage will provide with the most appropriate measures to prevent plundering of any archaeological site which will be potentially discovered during the construction.

Assessment of Residual Effects

The mitigations described above are intended to avoid or minimize the following impacts:

Construction Phase

Destruction of non-identified buried archaeological sites

- Cultural heritage and archaeological sites, either known or to be discovered, are resources of a high sensitivity. The significance of this impact without mitigation measures is estimated to be Large. The probable success of the mitigation measures is considered to be high; i.e. the unwanted destruction of archaeological (and/or paleontological) sites is effectively avoided. The magnitude of the impact with the implementation of mitigation measures becomes low. Therefore, the significance of the residual effect is considered to be ***Slight***.

Operational Phase

Plundering of archaeological sites

- The significance of this impact without mitigation measures was estimated to be Moderate, and the the probable success of the mitigation measures is considered to be moderate; the success would depend on the specific circumstances of the sites. Upon the application of mitigation measures prescribed by the Administration on cultural heritage protection, the magnitude of the impact should be low. Therefore, the significance of the residual effect is considered to be ***Slight***.

Assessment Summary Table

The findings of the assessment are summarised in the following table for each impact identified and assessed in each phase namely; Construction Phase and Operational Phase.

Table 158: Summary of Environmental Impacts during Construction and Operational Phase

ENVIRONMENTAL ASPECTS	CHARACTERIZATION OF IMPACT	TYPE OFIMPACT	REVERSIBILITY	GEOGRAPHIC EXTENT	TIME WHEN THE IMPACT OCCURS	DURATION	LIKELIHOOD OF APPEARANCE	MAGNITUDE OF IMPACT (WITHOUT MITIGATION)	SIGNIFICANCE OF EFFEC T (MITHOUT MITIGATION)	POBABLE SUCCESS OF MITIGATION	SIGNIFICANCE OF RESIDUA FFECT (WITH MITIGATION)
PRE-CONSTRUCTION AND CONSTRUCTION PHASE											
Soils											
Impairment of soil quality (soil contamination) due to the introduction of pollutants	N	D/C	R	L	I	MT	P	Minor	Slight	High	Slight
Soil erosion due to clearance of vegetation and earth movements	N	D	I	L	I	ST	P	Moderate	Moderate	Moderate	Slight
Destruction of top soil	N	D	I	L	I	LT	C	Moderate	Moderate	Low	Moderate
Surface water											
Impairment of water quality due to the introduction of pollutants	N	D/C	R	L	I	ST	P	Moderate	Moderate	High	Slight
Leaks and accidental spills of fuel and lubricants from construction machinery	N	D/C	R	L	I/D	ST	P	Moderate	Moderate	High	Slight
Accumulations of excessive amounts of sediments in watersheds	N	D/C	R	L	I	ST	P	Minor	Slight	High	Slight
Groundwater											
Impairment of groundwater quality due to the introduction of pollutants	N	D/C	R	L	D	MT	U	Moderate	Moderate	High	Slight
Alteration of groundwater flow patterns during excavation and cutting operations	N	D	R	L	I	ST	U	Minor	Slight	High	Neutral
Climate and Air Quality											
Impairment of air quality due to emission of construction-borne air pollutants	N	D/C	R	L	D	ST	C	Minor	Slight	Moderate	Slight
Landscape											
Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities	N	D	R	L	I	ST	C	Minor	Slight	Moderate	Moderate
Noise and Vibration											
Impairment of acoustic quality due to noise emissions from construction vehicles and machinery	N	D	R	L	I	ST	C	Major	Large	Moderate	Moderate
Habitats											
Habitat Loss (Direct Destruction)	N	D	I	L	I	LT	C	Minor	Moderate	High	Slight

ENVIRONMENTAL ASPECTS	CHARACTERIZATION OF IMPACT	TYPE OFIMPACT	REVERSIBILITY	GEOGRAPHIC EXTENT	TIME WHEN THE IMPACT OCCURS	DURATION	LIKELIHOOD OF APPEARANCE	MAGNITUDE OF IMPACT (WITHOUT MITIGATION)	SIGNIFICANCE OF EFFEC T (WITHOUT MITIGATION)	POBABLE SUCCESS OF MITIGATION	SIGNIFICANCE OF RESIDUA FFECT (WITH MITIGATION)
Cultural Heritage											
Destruction of non-identified buried archaeological sites	N	D	I	L	I	LT	P	Major	Large	High	Slight
OPERATIONAL PHASE											
Soil											
Impairment of soil quality (soil contamination) due to introduction of pollutants	N	D/C	R	L	D	LT	P	Moderate	Moderate	High	Slight
Soil erosion in cuts / fills devoid of vegetation	N	D	I	L	D	MT	P	Moderate	Moderate	High	Slight
Surface water											
Impairment of water quality due to the introduction of pollutants	N	D/C	R	L	I	LT	P	Moderate	Moderate	High	Slight
Accidental spills of transported hazardous substances and lubricants	N	D/C	R	L	I	LT	P	Moderate	Moderate	High	Slight
Alteration of flow patterns and sediment deposition during flooding	N	D	R	L	I	LT	P	Minor	Slight	High	Slight n
Groundwater											
Impairment of groundwater quality due to the introduction of pollutants	N	I/C	R	L	D	LT	P	Moderate	Moderate	High	Slight
Climate and Air Quality											
Impairment of air quality due to emission of air pollutants from traffic along the motorway	N	D	R	L	I	LT	C	Minor	Slight	High	Slight
Impacts on Climate Change	N	D	I	L	D	LT	C	Minor	Slight	High	Neutral
Landscape											
Alteration of landscape scenery by the presence of the motorway (cuts, fills and structures – bridge, viaducts, underpasses, overpasses, culverts etc.)	N	D	I	L	I	LT	C	Minor	Slight	Moderate	Slight
Noise and Vibration											
Impairment of acoustic quality due to traffic noise emission	N	D	R	L	I	LT	C	Major	Large	Moderate	Moderate
Habitats											
Habitat fragmentation	N	D	I	L	D	LT	P	Minor	Slight	High	Slight
Cultural Heritage											

ENVIRONMENTAL ASPECTS	CHARACTERIZATION OF IMPACT	TYPE OFIMPACT	REVERSIBILITY	GEOGRAPHIC EXTENT	TIME WHEN THE IMPACT OCCURS	DURATION	LIKELIHOOD OF APPEARANCE	MAGNITUDE OF IMPACT (WITHOUT MITIGATION)	SIGNIFICANCE OF EFFEC T (MITHOUT MITIGATION)	POBABLE SUCCESS OF MITIGATION	SIGNIFICANCE OF RESIDUA FFECT (WITH MITIGATION)
Plundering of the archeological sites	N	I	I	L	I	LT	P	Moderate	Moderate	Moderate	Slight

8.1.7. Land and Property

8.1.7.1. Mitigation Measures

Pre-Construction Phase

Land and Property issues that will be dealt with during the Preliminary Design stage include:

- Updating Baseline, assessment of impacts and mitigation measures for **Land Use** and **Land Take;**
- Updating LARF, SEP and grievance mechanisms;
- Undertaking a detailed socio-economic survey covering all affected people / households;
- Undertaking Census and record all individuals, households and businesses (formal and informal) that will be physicaly and/or economically displaced by a project; Conducting Valuation and Asset Inventory;
- Developing an Expropriation study;
- Prepare preliminary Resetlement Action Plan and Livelihood Restoration Plan in line with the EBRD PR 5 requirements;

The Detailed Design stage will include the following activities:

- Update and finalize Resettlement Action Plan;
- Duly compensate affected households for all their belongings and expenses connected with being resettled in accordance with the Resettlement Compensation Framework;

Construction Phase

During construction works, Land Take will be of temporary nature and will include land requirements for construction of project compounds, storage of construction materials, Borrow Pits & Surplus Material Disposal Sites etc.

In order to minimize the negative impacts, the following measures will be undertaken during construction:

- Implementation of Grievance mechanisms
- If required, additional assistance will be provided to the people who will be resettled for restoring their standards of living and further improve them where possible;
- Land will be reinstated/restored to its pre- construction conditions. Measures should correspond to the level of disturbances. It will include erosion control measures, re-contouring the land, replacing the topsoil, re-vegetation, restoration of habitats, regaining its previous use;
- Temporary land take from sensitive land uses will be avoided as far as possible.

- Property owners will be reasonably compensated in case of any damages during construction.

Assessment of residual effects

Pre - Construction and Construction phase

Temporary land loss and livelihood:

- Land, especially agricultural land as a receptor is considered to have a very high sensitivity/value. Magnitude of this impact without mitigation measures was estimated to be low. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures becomes negligible. The significance of the residual effect is considered therefore to be neutral/slight.

Loss of housing (including physical displacement) and Permanent Land Loss:

- Housing as a sub receptor has a very high sensitivity. Magnitude of the impact “loss of housing” without mitigation measures was estimated to be high. Land has a very high sensitivity, depending on the type of land and use. The magnitude of the impact of permanent land loss without mitigation measure was estimated to be high. The probable success of the mitigation measures is considered to be high. The magnitude of the impact with the implementation of mitigation measures becomes medium. The significance of the residual effect is then moderate.

8.1.8. Community Health, Safety and Security and Community Tensions

8.1.8.1. Mitigation Measures

Pre - Construction Phase

During the Pre-Construction phase adequate studies will be developed and will be integrated in the Project Design; in addition, the Contractor will prepare necessary plans and training programmes for workers and local residents to ensure community health, safety and security.

Further studies and the design include:

- Separate study on pedestrian/vehicle crossings (over/under crossings) will be developed and appropriate measures will be implemented in the design;

The Contractor will develop the following plans and training programmes:

- Health & Safety (H&S) Plan;
- Emergency Preparedness and Response Plan;

- Traffic Management Plan for safe access to construction sites with minimum negative impact on the existing roads and to ensure community safety and easy access to their properties (homes, land, gardens);
- Community health and safety educational programme, to inform the local community and drivers on potential adverse impacts as a result of changed traffic regime during construction and impacts of temporary land take;
- Training of workers on methods to avoiding conflicts with the local community members; workers will sign a labour code of conduct.
- Local Workforce Recruitment Plan in order to maximise the involvement of workers from project affected areas.

Construction Phase

Contractor will implement the following activities:

- Implement the plans developed during the pre-construction phase;
- The traffic flow through the site and within the urban areas will be coordinated with the responsible traffic engineers in the municipalities;
- Information about the project activities will be announced through the local radio/TV in order to manage traffic flows and speeds in areas affected by construction.
- Community representatives must be provided with an easy means to voice their opinions and to lodge complaints to the management. There must be a transparent and efficient process for dealing with community grievances.

Operational Phase

A Community Health and Safety Educational Programme will be developed for the motorway operation. MI will undertake a series of public relation activities, including school visits, safety centres, diversionary activities and communications programmes, in order to inform local citizens, passenger and workers about the dangers associated with the motorway operation, crossing at unauthorized locations, trespass and/or vandalism.

Assessment of Residual Effects

Pre – Construction and Construction Phase

Community Health, Safety and Security and Community Tensions:

Influx of temporary workers:

- The magnitude of the impacts without mitigation measures was estimated to be low. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures remains low. The significance of the residual effect is then neutral/slight.

Increased community exposure to disease:

- The magnitude of the impact without mitigation measures was estimated to be high. The probable success of the mitigation measures is considered to be moderate. The magnitude of the impacts with the implementation of mitigation measures becomes low. The significance of the residual effect is then moderate.

increased traffic and heavy vehicles on local roads

- The magnitude of the impact without mitigation measures was estimated to be high. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures becomes low negative. The significance of the residual effect is then slight.

Operational Phase

Impacts from better access to the larger towns and health services located in larger towns/cities

- These impacts are considered to have a high magnitude. The probable success of the enhancement measures to maximize anticipated benefits is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures remains high. The significance of the residual effect is therefore considered to be large.

Safety issues associated with crossing of motorway

- Crossing of motorway Alignment is considered to cause potentially a significant risk to community health and safety. The magnitude of this impact without mitigation measures is estimated to be high. The probable success of the mitigation measures is considered to be moderate. The magnitude of the impacts with the implementation of mitigation measures becomes low; the significance of the residual effect is therefore considered to be slight.

8.1.9. Access and Severance

8.1.9.1. Mitigation Measures

Pre - Construction phase

During the Pre-Construction Phase, the Contractor will develop a Traffic Management Plan that will cover, inter alia:

- Risk assessment which clearly identifies all risks from the construction works to the travelers, drivers, workers;
- Identification of the new access roads for construction vehicles and safety measures used for pedestrian access and crossings, minimizing and avoiding agricultural temporary land loss.

- Identification of all public roads and paths that will be affected and proposed for the transport routes during the construction (which sections will be closed and till when, where the traffic will be diverted etc.);
- Minimization of the traffic disturbance;
- Signing of the construction area, new directions, ring roads, access roads etc.;
- Public notification of any traffic-related concerns, such as road/streets closures.

Construction phase

The Contractor will implement the Traffic Management Plan during construction activities. The public will be duly informed about any changes of the traffic regime.

Operation Phase

It is anticipated that severance effects during motorway operation will be minimised during the design. MI will undertake a series of public relation activities, including school visits, safety centres, diversionary activities and communications programmes), in order to inform local citizens, passenger and workers about the changed access and associated benefits from the motorway operation.

Assessment of Residual Effects

Pre-construction and Construction phase

Impacts on access and severance effects

- It was estimated that the general public has a very high sensitivity to effects on access and severance. The magnitude of this impact without mitigation measures was considered to be minor. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures remains low. The significance of the residual effect is then neutral/slight.

Operation Phase

Impacts on access and severance effects

- Magnitude of this impact without mitigation measures was estimated to be moderate. The probable success of the mitigation measures is considered to be high; The magnitude of the impacts with the implementation of mitigation measures becomes low. The significance of the residual effect is then slight.

8.1.10. Economy

8.1.10.1. Enhancement Measures

Pre-Construction and Construction phase

During construction phase it is expected that related construction works will have significant positive impacts on local economy, and national economy. People will have to be informed in a timely manner about the possible impacts on economic activity and anticipated timing.

Operation Phase

During operational phase, new markets will be opened; new transport alternatives will be available which will significantly impact development of local and national economy.
Local and State governments must undertake activities for attracting direct foreign investments (activation of industrial free development areas, green field investments, agriculture and tourism).

Assessment of Residual Effects

Construction phase

Stimulation of economic growth at local levels:

- The magnitude of this impact without enhancement measures was estimated to be high. The probable success of the enhancement measures is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures remains high. The significance of the residual effect is therefore considered to be large.

Operation Phase

Effects on Local Economy

- The magnitude of this impact without enhancement measures was estimated to be high. The probable success of the enhancement measures is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures remains high. The significance of the residual effect is therefore considered to be large.

8.1.11. Employment

8.1.11.1. Enhancement Measures

Pre - Construction phase

The Contractor will develop a Local Recruitment Plan which will enable identifying and engaging local workforce to the maximum possible extent.

Construction phase

The Contractor will:

- Implement the Local Recruitment Plan;
- Ensure employment of local workforce with required skills,
- Engage woman workforce where appropriate.

Operation Phase

During the operational phase possibilities for direct employment will be created. In order to maximize the positive impacts, the following measures should be undertaken:

- Restructuring labour markets to increase flexibility and adjust to the new market demands; improve labour mobility;
- Reduce the number of people who are dependent on state benefits;
- Ensure an accessible and affordable childcare; it would enable that female have better access to new employment opportunities;
- Improve education services and access of affected people in the Project area to improved education opportunities;

Assessment of Residual Effects

Construction phase

Employment

- The magnitude of this impact without mitigation measures was estimated to be high. The probable success of the enhancement measures is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures remains high. The significance of the residual effect is therefore considered to be large.

Operation Phase

Employment

- The magnitude of this impact without enhancement measures was estimated to be high. The probable success of the enhancement measures mitigation measures is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures remains high. The significance of the residual effect is therefore considered to be large.

8.1.12. Education and Training

8.1.12.1. Enhancement Measures

Pre-Construction and Construction phase

It is expected that during the construction phase some level of capacity building will be provided (organized and un-organized) through transfer of new technologies and skills. This will happen mainly as on-the-job training; local workers will be exposed to an international expertise and modern management and logistics procedures. The Contractor will contribute in transfering of skills.

Operation Phase

Operation of the motorway will create possibilities for direct and indirect employment. The motorway will facilitate the access to improved education opportunities in larger centres.

In order to maximize the positive impacts, the following measures should be undertaken:

- Implement adequate measures to support education of vulnerable groups – recipients of social benefits, single parents etc.;
- Stimulate students to obtain higher education.
- Encourage education of women and their engaging in the labour markets.

Assessment of Residual Effects

Construction phase

Education and Training

- The magnitude of this impact without enhancement measures was estimated to be low. The probable success of the enhancement measures is considered to be moderate. The magnitude of the impacts with the implementation of enhancement measures will be medium. The significance of the residual effect is therefore considered to be moderate.

Operation Phase

Education & training benefits from employment opportunities, and Education & training benefits from improved access to education:

- The magnitude of these impacts without enhancement measures was estimated to be high. The probable success of the enhancement measures is considered to be moderate. The magnitude of the impacts with the implementation of mitigation measures remains high. The significance of the residual effect is therefore considered to be large.

8.1.13. Vulnerable Groups

8.1.13.1. Mitigation Measures

Pre-Construction phase

Vulnerable groups within the project area are likely to be affected more severely than the general population.

During the next stages (Preliminary and Detailed Design), the Alignment will be refined in order to avoid resettlement and minimise impacts on vulnerable groups. LARF will be updated; a Socio-Economic Survey will be carried out to identify the presence and socio-economic status of vulnerable groups. A Resettlement Action Plan will provide suitable compensation framework for vulnerable people that will be affected by the Project. Compensation will be defined in the Resettlement Compensation Framework.

Construction phase

Additional assistance may be provided to the vulnerable groups to restore their living standards and further improve them, where possible.

Operation Phase

Occurrence of impacts on vulnerable groups during operation is not expected. Therefore, there aren`t any mitigation measures foreseen.

Assessment of Residual Effects

Pre- construction and Construction Phase

Effects on the vulnerable groups

- Magnitude of this impact without mitigation measures was estimated to be large. The probable success of the mitigation measures is considered to be moderate. The magnitude of the impacts with the implementation of mitigation measures becomes medium. The significance of the residual effect is then moderate.

8.1.14. Workforce related impacts and issues

8.1.14.1. Mitigation Measures

Pre - Construction and Construction Phase

Occupational health and safety standards (PR 2) will apply to workers that will be engaged during the construction activities.

Wokers will enjoy rights with regard to the standards of Project compounds, employment standards and grievance.

Audits of the design and implementation of the worker's compound against the checklist in the EBRD & IFC guidance document will be implemented:

- prior to construction of the accommodation (i.e. an audit of the design);
- prior to opening of the workers` compounds;
- on an annual basis (each year after opening).

Audits will be undertaken by an independent third party. Any defects or issues (where relevant) identified in the audits will be addressed and their conformity with the audit will be reassessed.

Social Facilities and Services Plan for workers will be prepared in line with the following standards:

- Housing standards must include special attention to:
    - minimum space allocated per person,
    - supply of safe water in the workers' dwelling in sufficient quantities; adequate sewage and garbage disposal systems
    - management plans and policies on health and safety as well as responses to emergency situations will be developed and appropriate protection against heat, cold, damp, noise, fire, and disease- carrying animals and insects will be implemented;
- A separate bed for each worker must be provided. The practice of "hot bedding" should be avoided. The minimum space between beds should be 1 metre. Double deck bunks are not advisable for fire safety;
- Facilities located in hot weather zones will be ventilated and/or air conditioned.
- Both natural and artificial lighting must be provided and maintained in the facilities;
- Canteen, cooking and laundry facilities must be built of adequate and easy to clean materials; these are kept clean and sanitary conditions are maintained. If workers wish to cook their own meals, kitchen space will be provided separate from sleeping areas;
- A security plan including measures to protect workers against theft and attack is implemented. Security staff must be checked to ensure that they have not been implicated in any previous crimes or abuses;
- Adequate policies will be implemented to ensure local community safety and security;

Accommodation consultation and grievance mechanisms will be established by the Contractor:

- Processes and grievance mechanisms for workers to articulate their grievances must be provided and clearly explained to workers. Such mechanisms must be in accordance with EBRD's PR2;
- Workers' accommodation arrangements will not restrict workers' rights and freedoms Workers' must enjoy their fundamental human rights and freedom of association in particular;
- Mechanisms for workers' consultation will be designed; these mechanisms will be in accordance with PR2;

The Contractor will adopt and implement appropriate **Human Resources Policies**. They will be clear, understandable and accessible to workers. Managers and supervisors will be adequately trained.

These policies will ensure that:

- The Project will comply with all relevant national laws provisions related to the employment and will not employ children below the national minimum age of employment. The Contractor will have procedures in place to verify the age of all young workers (those between the minimum age of employment and the age of 18). Young people below the age of 18 years will not be employed in hazardous work and all work of persons under the age of 18 shall be subject to an appropriate risk assessment.
- The Contractor (and subcontractors) will ensure that all workers will establish the employment freely and voluntarily; The Contractor will not use any form of forced, bonded or involuntary prison labour.
- Principles of non-discrimination and equal treatment and opportunities will apply;
- Any harassment (including sexual harassment) will be prevented

The Contractor will prevent worker accidents:

- Emergency Preparedness Plan for accidents response for the construction stage will be developed by Contractor/s and approved by MI;
- Occupational Health and Safety Plan will be developed by Contractor and approved by MI;
- Construction Safety Plan will be developed by Contractor and approved by MI.

Operational Phase

MI will develop and implement an **Emergency Preparedness Plan** and **Safety Program** according to the best international practices MI to provide adequate training to workers, equipment, or take other necessary steps to maintain proper safety and security conditions.

Reporting on the plans` implementation will be as follows:

- Quarterly (reporting for the first year of operation.
- Biannually for the second and third year of operation.

Assessment of Residual Effects

Pre-Construction and Construction Phase

Workers' safety during the construction of motorway:

- It was estimated that magnitude of this impact without mitigation measures will be high. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures becomes low. The significance of the residual effect is then slight.

Operational Phase

Workers' safety during the operation of motorway:

- It was estimated that magnitude of this impact without mitigation measures will be high negative. The probable success of the mitigation measures is considered to be high. The magnitude of the impacts with the implementation of mitigation measures becomes low. The significance of the residual effect is then slight.

8.1.15. Assessment Summary Table

The assessment of impacts, and their residual significance after the implementation of mitigation measures is summarised in the table below.

Table 159: Summary of Social Impacts during Construction and Operational Phase

Social Aspect / Potential Impact(s)	Characterization of Impact:	Type of Impact	Reversibility	Geographic Extent	Time when the Impact Occurs	Duration	Likelihood of Appearance	Magnitude of Impact (without mitigation)	Significance of Effect (Without mitigation)	Probable Success of Mitigation	Significance of Residual Effect (with mitigation)
CONSTRUCTION PHASE											
Land and Property											
Temporary land loss	N	D	R	L	I	MT	C	Low	Slight	High	Neutral/Slight
Livelihoods (from temporary land loss)	N	I	R	L	I	MT	C	Low	Slight	High	Neutral/Slight
Permanent loss of housing											
Permanent land loss	N	D	I	L	I	MT	C	High	Large	High	Moderate
Community Health and safety											
Impacts from influx of temporary workers	N	D	R	L	I	MT	C	Low	Slight	High	Neutral/Slight
Impacts from increased community exposure to disease	N	D	I	R	I	MT	C	High	Large	Moderate	Moderate
Impacts from increased traffic and heavy vehicles on local roads during construction	N	D	I	R	I	MT	C	High	Large	High	Slight
Safety issues associated to the entrance of non-authorized people on the construction site	N	I	I	R	I	MT	P	Medium	Moderate	High	Neutral
Community tensions											
Effects of influxes of workforce into local communities	N	D	R	L	I	MT	P	Low	Slight	Moderate	Neutral/Slight
Community reactions construction works due to disturbance arising from construction activities	N	D/I	R	R	I	MT	C	High	Large	High	Moderate
Access&Severance											
Impacts on access and severance effects	N	I	R	L	I	MT	P	Low	Moderate	High	Neutral/Slight
Economy											
Simulation of economic growth at local levels	P	D	R	L	I	MT	C	High	Large	Moderate	Large
Employment											
Creation of local employment (direct and indirect)	P	D/I	I	N	I	MT	C	High	Large	Moderate	Large
Education and Training											

Social Aspect / Potential Impact(s)	Characterization of Impact:	Type of Impact	Reversibility	Geographic Extent	Time when the Impact Occurs	Duration	Likelihood of Appearance	Magnitude of Impact (without mitigation)	Significance of Effect (Without mitigation)	Probable Success of Mitigation	Significance of Residual Effect (with mitigation)
Capacity building through training	P	I	I	R	I	MT	P	Low	Slight	Moderate	Moderate
Vulnerable groups											
Decreased accessibility of services	N	D	R	L	I	LT	C	High	Large	Moderate	Moderate
Temporary and permanent Loss of Land and housing	N	D	I	L	I	MT	C	High	Large	Moderate	Slight
Workforce Related Impacts											
Workers' safety during construction of motorway	N	D	R/I	L	I/D	MT	P	High	Large	High	Slight
OPERATIONAL PHASE											
Community Health and safety											
Impacts from better access to the larger towns and health services located in larger towns/cities	P	D	I	R	I	LT	C	High	Large	Moderate	Large
Safety issues associated with crossing of motorway	N	D	I	R	D	LT	C	High	Large	Moderate	Slight
Community reactions due to disturbance arising from operation of motorway	N	D	I	L	D	LT	C	High	Large	Moderate	Moderate
Access&Severance											
Impacts on access and severance effects of general public, community services and business sector	N/P	D	I	L	D	LT	P	Low	Slight	High	Moderate
Economy											
Effects on local economy	P	I	I	L	D	LT	C	High	Large	Moderate	Large
Effects on national economy	P	I	I	N	D	LT	C	High	Large	Moderate	Large
Employment											
Creation of employment	P	D/I	I	G	D	LT	C	High	Large	Moderate	Large
Improvement in access to employment opportunities	P	D	I	N	D	LT	C	High	Large	Moderate	Large
Education and Training											
Education and training benefits from employment opportunities	P	I	I	R	D	LT	C	High	Large	Moderate	Large
Education and training benefits from improved access to education and employment opportunities	P	I	I	N	D	LT	P	High	Large	Moderate	Large
Vulnerable groups											

Social Aspect / Potential Impact(s)	Characterization of Impact:	Type of Impact	Reversibility	Geographic Extent	Time when the Impact Occurs	Duration	Likelihood of Appearance	Magnitude of Impact (without mitigation)	Significance of Effect (Without mitigation)	Probable Success of Mitigation	Significance of Residual Effect (with mitigation)
Livelihood	N	D	I	L	D	LT	C	High	Large	Moderate	Moderate
Workforce Related impacts											
Motorway workers' safety during operation of motorway	N	D	R/I	L	D	LT	P	High	Large	High	Slight

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

The Environmental and Social Management and Monitoring Plan (ESMMP) for the Project - Motorway Klinë - Zahac is presented in this Chapter. It summarises the organizational requirements, actions and monitoring plans during pre-construction, construction and operational phases, to ensure that the necessary measures, with respect to environmental, health and safety (H&S) and social aspects, are taken in consideration by the Project parties:

- Employer (Ministry of Infrastructure of Kosovo*),
- Contractor who will enter into a single contract with the Employer.
- Engineer, to be contracted out by the Employer to supervise the Detailed Design and, most importantly, the Project construction activities.

To ensure the compliance of the Contractor`s performance with EIB Environmental and Social Standards[96] and EBRD Performance Requirements[97], an Environmental and Social Advisor will be appointed.

The ESMMP covers a long-term and phased process; it 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. Following amendments, the updated ESMMP will need to be communicated to all relevant parties and stakeholders.

9.1. Responsibilities

9.1.1. Pre-Construction Phase

The ESMMP integrates measures identified in this ESIA, which need to be undertaken during the pre-construction phase.

This ESIA is subject to an Environmental Consent to be granted by MESP. The ESMMP will be updated if during the assessment of environmental compliance by MESP, additional requirements are identidied. MI will ensure that the required ESIA update is being made; after necessary adjustments, the Environmental Consent will be granted.

During the forthcoming Preliminary Design development, the ESIA and Design Consultants will interact to ensure optimal project design and prevent environmental damage and resettlement, caused by the Alignment set during the Conceptual Design stage. The Land Asquisition and Resettlement Framework (LARF) will also be updated to reflect the changes in the Alignment and results of the Social Survey following the refined Route.

[96] http://www.eib.org/attachments/strategies/environmental_and_social_practices_handbook_en.pdf
[97] http://www.eib.org/attachments/strategies/environmental_and_social_practices_handbook_en.pdf

Environmental and social mitigation and monitoring measures contained within the updated ESMMP, other relevant project documentation and approvals, will be part of the tender documentation for selection of the Contractor. The Detailed Design will be developed by the Contractor. Along with the design development, the Contractor will update the ESMMP and the Environmental and Social Management Plan (ESAP).

The implementation of the ESMMP as per the Detailed Design, will be a contractual commitment of the chosen Contractor. Its implementation will be controlled and approved by national competent authorities (MI) and the Supervising Engineer.

The Contractor will establish a **Construction Environmental & Social Management System (CESMS)** and develop a **Construction Environmental and Social Management Plan (CESMP),** which will have to be in place before the Project Commencement Date (start of construction). The CESMP will put into effect the mitigation measures by developing specific plans:

- Dust Management Plan;
- Construction Traffic Management Plan;
- Noise Control Plan;
- Erosion Control Plan;
- Spill Response Plan;
- River Crossing Plan;
- Groundwater Management Plan;
- Waste Management Plan;
- Traffic Management Plan;
- Chance Finds Procedure;
- Health & Safety Plan;
- Emergency Preparedness and Response Plan;
- Road Safety Audit;
- Workforce Management Plan.

The CESMS and the associated CESMP will be subject to approval by the MI. The Supervising Engineer will ensure that the CESMS is adequately implemented.

A detailed **Resettlements Action Plan** will be developed upon the completion of the Detailed Design and Households Survey/Inventories of all assets affected.

MESP will certify before the Project implementation that the Detailed Design and other relevant documentation is approved by relevant authorities and will issue a construction permit (Please see section “ESIA Procedure and Permitting).

9.1.2. Construction Phase

The requirements for environmental protection and social management contained within the ESAP, ESMMP, SEP, relevant project documentation and approvals, will be an obligatory part of the Particular Conditions of the Contract[98]. The Contractor will be obliged to adopt and follow relevant national legislation, Acts, Regulation, Degrees, relevant EU legislation, Good practice and International Organizations` standards during construction to minimize potential impacts on environmental and social receptors.

MI is ultimately responsible for the implementation of measures outlined within the ESMMP, with the objective of ensuring effective implementation of the ESAP, ESMMP, SEP, CESMS and other project requirements. MI will appoint adequate resources to undertake environmental and social reviews and audits of the Contractor during the construction phase and establish a Project Implementation Unit (PIU). Where responsibility for actions is assigned to the Contractor, the Contractor will be responsible for ensuring its sub-Contractors understand the requirements contained within the ESAP, ESMMP and have contract conditions in place to ensure applicable elements of the ESMMP are achieved.

The implementation of the CESMS will be monitored by MI and other competent authorities.

9.1.3. Operational Phase

The ESMMP details environmental and social measures for the operation of the motorway, including the requirement to establish and implement an **Operatonal Environmental and Social Management System and Monitoring Plan**. Details regarding the management of the operation of the motorway are not confirmed at this stage; however, MI will ultimately be responsible for the operational ESMMP. Therefore, the responsibility for implementation of measures during the operational phase is assigned to MI. MI will also be responsible for ensuring its Contractors (e.g. vegetation management Contractor, motorway maintenance Contractor/s) understand the requirements contained within the ESMMP (operational phase) and have contractual conditions in place to ensure that applicable elements of the ESMMP are achieved.

Should MI procure an Operator for the motorway, this Operator would also be obliged to adhere to the requirements within the ESAP, ESMMP, SEP and relevant project documentation and approvals. Furthermore, any Operator will be responsible for ensuring its sub-Contractors understand the requirements contained within the ESMMP (operational phase) and have contractual conditions in place to ensure applicable elements of the ESMMP are achieved.

[98] For the Project “Construction of Motorway Kline-Zahaq” a Contract will beimplemented.

9.1.4. Public Reporting

MI and its Contractors will be required to publicly report on the Environmental and Social performance of the project on at least an annual basis in the formats required as per national and IFI standards.

9.2. Structure of the ESMMP

It is a requirement of the potential Lenders` policy that the project is undertaken in line with national law and EU standards. The requirements described in this ESMMP, therefore, reference the Kosovo legislation and are supplemented, where necessary, with measures needed to meet EU, International law and conventions, EBRD and EIB Performance Requirements and other relevant international good practices.

The ESMMP has been structured as follows:

- Environmental and Social Management Plan with the following requirements
  - General Requirements for Environmental and Social Management
  - Socio-Economic Requirements
  - Environmental Requirements
  - Stakeholder Engagement Requirements
  - Land Acquisition, Involuntary Resettlement & Economic Displacement Requirements
- Environmental and Social Monitoring Plan

Table 160: Environmental and Social Management Plan

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
General Requirements: Environmental and Social Management			
MI (Employer) and the Contractor, the Supervising Engineer (hereinafter "Engineer") with the assistance of Consultants, will regularly review and update, when and where required, the ESMMP and SEP to ensure it is responsive to changes in project circumstances.	***Continual through all Phases (Preliminary and Detailed Design)***	***MI, Contractor***	***All Phases***
Applicable Standards			
The project will be managed, built and operated in a manner that is compliant with applicable national, EU and International law and conventions, and relevant EBRD and EIB requirements, policies and guidance	Continual through all Phases	MI, Contractor	All Phases
Applicable Project Documentation			
MI and Contractor will implement and comply with all measures specified within the relevant Project Documentation, including inter alia: • ESMMP • Environmental and Social Action Plan (ESAP) • Stakeholder Engagement Plan (SEP) • Resettlement Compensation Framework (RCF) • Project contractually binding documents, including the Employer Requirements • Environmental and Social Impact Assessment/Statements and related Decisions from the Competent Ministry/Authority	Performance monitoring demonstrates compliance with environmental and social requirements.	MI, Contractor, Engineer	All Phases
MI Environmental & Social Resources & Organisation			
MI will establish, within their organization, the Project Implementation Unit (PIU) and will engage sufficient resources for implementation of proper environmental & social management: • Reviews of the environmental and social performance of the Contractor, and suppliers during motorway construction and operation; • Co-ordinate the implementation of actions/measures under the ESMMP which are the responsibility of MI; • Regular reviews of compliance with the ESMMP obligations; and • Review and update to ESMMP and all other relevant documents to ensure it reflects project circumstance and complies with Lender Requirements.	MI to establish sufficient environmental and social management capacity and capability within the PIU for each phase	MI	All Phases
Environmental & Social Management Systems			

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
Construction Environmental & Social Management System (CESMS)			
As part of the Site Environmental and Social Management and Monitoring Plan the Contractor will develop and implement a Construction Environmental & Social Management System (CESMS) to support the implementation of the ESMMP & SEP and support good environmental & social management practices. The CESMS will be developed and implemented in-line with international standards (i.e. ISO 14001, EU EMAS & SA 8000) and include inter alia: • Organization, responsibilities and resources (including commitment that critical ESHS positions will be identified and maintained); • Construction Environmental & Social Management Plan, including supplementary plans (e.g. Waste Management Plans, Hazardous Materials Management Plans, Erosion Control Plan etc.); • Procedure which assesses ESHS risks; • Monitoring Plan; • Emergency Preparedness & Response Plan; • An audit process and programme (including performance audits, audits on labour&working conditions); • Training programme; and • Reporting of Environmental & Social performance. The Contractor shall appoint an appropriately qualified Environmental, Social, and Health & Safety (ESHS) Manager who will be responsible for the development and implementation of the CESMS and co-ordination to ensure the provisions of the ESMMP are complied with. The ESHS Manager shall have appropriate qualifications, training, authority & responsibility and resources. The ESHS Manager shall have assigned responsibilities including, but not limited to: • Implementation and maintenance of the CESMS (including audits, corrective actions, etc.); • Implementation of the ESMMP, ESAP and other relevant documents; • Implementation and co-ordination of Construction Environmental & Social Management Plan and associated management & mitigation plans; • Preparation of quarterly reports for compliance with ESMMP (and other applicable standards/documents) and related to CESMS and Construction Environmental & Social Management Plan; • Managing an incident reporting system (including near-misses); and • Preparation and submission of environmental monitoring reports to MI and reports as required to EBRD/Lenders which will include review of compliance with Site ESMMP obligations. In the event more than one main Contractor is appointed then one overarching Project CESMS should be established for all Contractors to adopt.	CESMP must be in place prior to construction commencement day. Draft Manual to be provided for review and approval by the Lenders` Advisor and MI.	Contractor, Engineer	Developed during Pre - Construction phase Implemented during Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
Sub-Contractor/Supplier Management			
Operational Environmental & Social Management System (OESMS)			
MI will develop and implement an Operational Environmental & Social Management System (OESMS) to support the implementation of ESAP, ESMMP & SEP and support good environmental & social management practices. The OESMS will be developed and implemented in-line with international standards (i.e. ISO 14001 & SA 8000) and include (but not be limited to) the following: • Organization, responsibilities and resources; • Operational Environmental & Social Management Plan, including supplementary plans e.g. Waste Management Plans, Hazardous Materials Management Plans, Erosion Control Plans etc.; • Operational Monitoring Plan; • Emergency Preparedness & Response Plan; • An audit process and programme, including performance audits and motorway safety audits; • Training programme; and • Reporting of Environmental & Social performance. MI shall appoint an appropriately qualified ESHS Manager who will be responsible for the development and implementation of the OESMS and co-ordination to ensure the provisions of the ESMMP are complied with. The ESHS Manager shall have appropriate qualifications, training, authority & responsibility and resources. The ESHS Manager shall have assigned responsibilities including, but not limited to: • Implementation and maintenance of the OESMS (including audits, corrective actions, etc.); • Implementation of the ESMMP; • Implementation and co-ordination of OESMP (and associated management&mitigation plans); • Preparation of quarterly reports for compliance with ESMMP (and other applicable standards/documents) and related to OESMS; • Managing an incident reporting system (including near-misses); and • Preparation and submission of environmental monitoring reports to MI and reports as required to EBRD/Lenders which will include review of compliance with ESMMP obligations.	OESMS must be in place prior to commissioning and operating of the motorway	MI	Developed prior the Taking over certificate; Iimplemented during Operation Phase
The motorway Contractor/Operator will apply contractual agreements for securing services of sub-Contractors and suppliers, which ensure they are obliged to comply with all environmental and social requirements contained with applicable Project documentation and standards. The Contractor/Operator will advise their sub-Contractors and suppliers of their Environmental, Social, Health & Safety (including Labour & Working Conditions) responsibilities, including relevant	Sub-Contractor & supplier agreements to contain ESHS requirements.	Contractor, MI, Engineer	All Phases

<table>
<tr><th>Receptor / Proposed mitigation measures</th><th>Target</th><th>Responsible institution/s</th><th>Timing</th></tr>
<tr><td>requirements within the ESMMP. Applicable ESHS requirements shall be contained within contractual agreements, including the requirement for sub-Contractors to pass requirements to any of their sub- Contractors and establish provisions for EHS reporting.</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Socio-economic requirements</td></tr>
<tr><td colspan="4">Land acquisition, involuntary resettlement & economic displacement; Information and consultation with affected people</td></tr>
<tr><td>All feasible alternative project designs should be explored to avoid or at least minimise physical and/or economic displacement.
The Project shall comply with and implement the RCF and associated RAP's and ensure all affected owners / users of land (including those who are using land informally) are appropriately informed, consulted and compensated for their assets and any losses:
• Primarily through negotiated settlements;
• At full replacement cost;
• Additional assistance to be provided to the people who will be resettled for restoring their standards of living and further improve them;
• Prior to displacement; and
• With any additional resettlement assistance needed
Any grievances are resolved on a timely basis, with evidence of formal and informal communication retained.
Resettlement Action Plans to be prepared by a suitably qualified specialist approved in consultation with EBRD based on Expropriation Studies, socio-economic surveys and a census. The RAPs are to be compliant with EBRD PR5 requirements and approved by EBRD/Lenders in advance of any land acquisition.
Affected persons shall be given the opportunity to participate in the negotiation of the compensation packages, eligibility requirements, resettlement assistance, suitability of proposed resettlement sites and the proposed timing.</td><td>Resettlement Action Plans to be prepared

Affected people are informed about final Project footprint. during design phase

All project affected people have restored their livelihoods and standards of living.

Monitor number and type of submitted grievances.</td><td>MI</td><td>Pre-Construction phase</td></tr>
<tr><td>Detailed socio-economic survey needs to be undertaken in order to recognize the real situation for all project affected people, taking into consideration those without legal rights over properties and belongings.
Census to be conducted in line with PR 5 requirements in order to facilitate the process and successful outcomes of resettlement and/or livelihood restoration.</td><td>Detailed survey and census to be conducted</td><td>MI</td><td>Pre-Construction phase</td></tr>
<tr><td>Resettlement Action Plans to be prepared based on Expropriation Study, Detailed survey and Census. MI shall ensure that the affected families are duly compensated for all their belongings and expenses connected with being resettled in accordance with the Resettlement Compensation Framework developed under this ESIA.</td><td>Resettlement Action Plan to be prepared</td><td>MI</td><td>Pre-Construction phase</td></tr>
<tr><td>With regards to the loss of gardens and agricultural production due to temporary land loss owners to be compensated according to the Resettlement Compensation Framework. When available and preferred by owners, other land (state</td><td>Support to affected families in restoring their life and</td><td>MI</td><td>Pre-Construction phase</td></tr>
</table>

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
owned) to be utilized for continuation of agricultural production.	standards		
Community Health and Safety			
Construction work shall commence on site only when the construction phase **Health & Safety** (H&S) **Plan** has been adequately developed by the Contractor and approved by MI's Representative.	H&S Plan will be developed	MI/Contractor /Engineer	Pre-Construction phase
Traffic Management Plan will be developed for the safe use of vehicles on and off site; driving standards; safe access to construction sites with minimum negative impact on the existing roads and in parallel for ensuring community safety and easy access to their properties (homes, land and gardens). Workforce transportation should be considered within TMP. For traffic control and safety, the information about the project activities and driving standards will be announced through the local radio/TV. MI and the Contractor/s will openly and transparently inform residents in the affected places and villages as a minimum on a quarterly basis regarding the planned activities and safety measures to be employed. The traffic flow through the site and within the urban areas will be coordinated with the responsible traffic authorities.	Development and implementation of the Traffic Management Plan	Contractor/Engineer/MI: will prepare Plan in discussion with MI (Approval by MI). The Police will be a consulted part in the development of the plan	Pre-Construction phase and Construction Phase
The main design studies for construction of the motorway alignment will be developed and revised by supervisor/s according to the national legislation on construction and best construction practice as well environmental requirements and pollution prevention principles. A separate study on the siting and types of pedestrian/vehicle crossings (over/under crossings) will be developed based on the site visits and consultations with project affected local communities. The bridge will be designed in accordance with national and international standards.	All main design studies for motorway construction prepared by designer to be reviewed by MI. Evidence of public consultation on crossing locations.	MI/Designer/Engineer	Construction Phase
A CONSTRUCTION Community Health and Safety Educational Programme will be developed to inform and build awareness and understanding of the local community and drivers on the construction hazards and potential adverse impacts during the construction phase and how to minimize the potential for an accident and/or injury to occur. The Programme will be linked to the SEP and utilise various communication methods to address the needs of vulnerable groups such as children and illiterate residents.	Development and implementation of a Community Health and Safety Educational Programme	MI/Contractor/ Engineer	Pre-Construction and Construction Phase
Workers must receive training and guidance on how to avoid conflicts with the local community members and sign a code of conduct, in order not to create conflicts with the local environment. Any damage or grievance shall be managed by the Grievance Process and any repair/compensation be made in a timely basis. Worker transportation and modes for workforce movements during construction works will be organised in a way that will minimize negative impacts on local residents.	Avoid conflicts between workers and local communities. No community related grievances.	MI/Contractor/Engineer	Pre-Construction, Construction Phase and Operations (security)
To avoid unauthorized entrance at worker camps and Contractor's facilities, the design, layout and site location of facilities should facilitate natural surveillance by police and the security guards engaged by Contractor/s. Worker camps not to be adjacent to local settlements. Adequate selection of qualified security guards and appropriate training. The project shall apply the Voluntary Principles on Security and Human Rights.	Avoid conflicts between workers and local communities. No community related grievances.	MI/Contractor	Pre-Construction, Construction Phase and Operations (security)
The design and location of motorway level crossings overpasses and underpasses must take into account the views and	Ensure all level crossings	Designer/Contractor/Engineer	Pre-Construction

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
concerns raised by local residents and other stakeholders. Evidence of consultation with stakeholders to be retained. Warning devices to be installed to warn pedestrians not to cross the motorway on the spots where it is not planned, special attention to be given to the areas where affected population lives nearby.	are either under and over passes. Warning devices within design and submitted to MI for approval/review.	(MI to: review, approve and implement)	Phase
A **Community Health and Safety Educational Programme** will be developed for motorway OPERATION	Development of a Community Health and Safety Educational Programme for start of motorway operation.	MI	Construction Phase (Prior to start of Operational Phase)
MI will undertake a series of public relation activities (must run and support a series of community activities, including school visits, safety centres, diversionary activities and communications programmes), in order to inform local citizens, passenger and workers about the dangers associated with the motorway operation, crossing at unauthorized locations, trespass and/or vandalism.	Public access to the information on motorway, informing local citizens, passengers and workers on the nature of the motorway operation, benefits and risks	MI	All phases
Community Issues			
Workers will receive training and guidance on how to avoid conflicts with the local community members and sign a labour code of conduct, in order not to minimise potential conflict and community tensions. Location of workers camps to be outside existing communities. Local Workforce Recruitment Plan to be developed in order to assure employment of much as possible local workforce. Modes for workforce movements (will be well organised and reviewed by MI and Contractors.	No community tensions	MI/ Contractor/Engineer	Developed during Pre - Construction phase Implemented during Construction Phase
Access			
A **Traffic Management Plan** should will be developed and implemented, and will cover inter alia: • The risks assessment that which clearly identifies all risks from the construction works to the travelers, drivers, workers will need to be developed. • Identification of the new access roads for construction vehicles and safety measures used for pedestrian access and crossings minimizing and avoiding agricultural temporary land loss. • Identification of all public roads and paths that will be affected and proposed for the transport routes during the construction (which sections will be closed and till when, where the traffic will be diverted).; • Minimization of the traffic disturbance; • The signing of the construction area, new directions, ring roads, access roads etc.;	Development and implementation of a Traffic Management Plan	MI/Designer/Contractor/ Engineer (The Police will be a consulted party in the plan and MI will work with the Police to achieve the correct implementation of the plan)	Developed during Pre - Construction phase Implemented during Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
• Public notification of any traffic-related concerns, such as road/streets closures. • The risks assessment which clearly identifies all risks from the construction works to the travelers, drivers, workers needs to be developed • Identification of the new access roads for construction vehicles and safety measures used for pedestrian access and crossings minimizing and avoiding agricultural temporary land loss • Identification of all public roads and paths that will be affected and proposal for the travelling route during the construction (which sections will be closed and till when, where the traffic will be diverted); • Minimization of the traffic disturbance; • The signing of the construction area, new directions, ring roads, access roads; • Public notification of any traffic-related concerns, such as road/streets closings; Risk assessment that clearly identifies all risks from the construction works to the travelers, drivers and workers will be developed.			
Vulnerable Groups			
All feasible alternative project designs should be explored to avoid or at least minimise physical and/or economic displacement. The Project shall comply with and implement the RCF and associated RAP's and ensure all affected owners' members of the vulnerable groups / users of land (including those who are using land informally) are appropriately informed, consulted and compensated for their assets and any losses. Further efforts should be undertaken to ensure that representatives of vulnerable groups are reached and are given the opportunity to participate in the negotiation of the compensation packages, eligibility requirements, resettlement assistance, suitability of proposed resettlement sites and the proposed timing. The level of literacy of the affected people should be taken into consideration in the communication methods and signage design.	Development and implementation of a Resettlement Action Plan and Communication Plan	MI /Contractor	Construction Phase
Workforce & Worker Accommodation			
To adopt and/or maintain appropriate **Human Resources Policies and procedures**. These policies will be clear, understandable and accessible to workers and comply with PR2 requirements.	Human Resources policies to be prepared and implemented	Contractor/ Engineer/ MI	Pre-Construction and Construction Phase
To develop policies to promote non-discrimination and equal treatment and to prevent harassment (including sexual harassment) and bullying in the workplace, and make sure that they are clearly communicated and accessible to management, supervisors and workers.			
To ensure that managers and supervisors are trained in the application of the HR policies.			

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
To ensure that job advertisements, job descriptions and applications do not refer to applicants'/workers race, gender etc. (except rare cases where legal exceptions apply).			
To ensure that decisions on hiring, working conditions, pay, benefits, training, promotion, termination, redundancy are not made on the basis of discriminatory grounds or on the basis of criteria which disproportionately impact on one group more than another.			
To ensure that women and men are paid the same wages for work of the same value, i.e. remuneration is based on the employee's skills, competence and responsibilities and other objective, non-gender related factors			
To monitor the workplace for any form of harassment and, where it is found, act quickly to address it. To ensure that workers are not asked about or required to undergo health or pregnancy testing, except where there is a genuine health and safety need.			
To take steps to enable workers with disabilities to retain their jobs and make accommodations required by national law for physically disabled persons.	Ensure workers camps are designed and constructed/operated according to EBRD guidance document	Contractor/ Engineer / MI	Pre-Construction Phase and then annually
Workers camps to be located outside communities and sensitive habitats.			
MI to undertake audits of the design and implementation of the worker's compounds against the checklist in the IFC/EBRD guidance document 2; audits will be scheduled as follows: • Prior to construction of the accommodation (i.e.an audit of the design); • prior to its opening; • on an annual basis (each year after opening).			
Audits of worker accommodation to be undertaken by MI against the IFC/EBRD worker accommodation guidelines. Any defects or issues (where relevant) identified in the audits to be addressed and then reassessed for compliance within one month of the audit.			
All workers will receive appropriate ESHS training in required languages. This will form part of the site/project induction process. The ESHS training will cover appropriate ESHS requirements including: The Code of Conduct, community interactions, the grievance mechanisms and biodiversity issues; prevention measures and awareness raising of potential diseases and health issues that may be introduced or effect the workforce and Emergency Planning and Response.	Site/Project Induction Information/ ESHS Training planned within CESMS & OESMS and grievance mechanism& Response	Construction: Contractor/ MI: Operation: MI	Construction Phase & Operation Phase CPCP
Social Facilities and Services Plan for workers to be prepared which regulates the following: • Housing standards must include special attention to minimum space allocated per person, supply of safe water in the workers' dwelling in sufficient quantities, adequate sewage and garbage disposal systems and appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals and insects	Delivery of Social Facilities and Services Plan, Management plans and policies, Security plan, Processes and grievance	Contractor/ Engineer; Approved by MI	Pre-Construction and Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
• Medical Risk Assessment and Medical Response Plan for on-site first aid requirements and medical emergencies in compliance with Lenders requirements. • For facilities located in hot weather zones, adequate ventilation and/or air conditioning systems must be provided. Both natural and artificial lighting must be provided and maintained in living facilities • A separate bed for each worker must be provided. The practice of "hot bedding" should be avoided. The minimum space between beds should be 1metre. Double deck bunks are not advisable for fire safety. • Canteen, cooking and laundry facilities must be built in adequate and easy to clean materials. Canteen, cooking and laundry facilities are kept in a clean and sanitary condition. If workers wish to cook their own meals, kitchen space will be provided separate from sleeping areas	mechanisms, Workers' consultation and grievance mechanism, Emergency Preparedness & Response Plan		
• There must be management plans and policies especially in the areas of overall operation of the facility, health and safety (with emergency responses), local community and security. • A security plan including clear measures to protect workers against theft and attack is implemented. Security staff must be checked to insure that they have not been implicated in any previous crimes or abuses. • Community representatives must be provided with an easy means to voice their opinions and to lodge complaints to the management. There must be a transparent and efficient process for dealing with community grievances. • Mechanisms for workers' consultation and grievances to be designed and implemented for the duration of the project. Processes and grievance mechanisms for workers to articulate their grievances must be provided and clearly explained to workers. Such mechanisms must be in accordance with PR2 • Emergency Preparedness & Response Plan for the construction stage.	Delivery of Social Facilities and Services Plan, Management plans and policies, Security plan, Processes and grievance mechanisms, Workers' consultation and grievance mechanism, Emergency Preparedness & Response Plan	Contractor/Engineer; approved by MI	Pre- Construction Phase and Construction Phase
Occupational Health and Safety Plan to be provided to ensure compliance with National and EU safety requirements. • All work activities carried out on site are to be properly planned and assessed so that all hazards have been recognized, those who may be at harm have been identified and adequate control measures implemented to reduce the risks for affected workers. • All workers are to be provided with suitable information, instruction, training and supervision as is necessary to ensure the health, safety and welfare of all persons working onsite. • Any lifting operations carried out on site will be properly planned, assessing the ground conditions and above ground obstruction in the immediate area. The equipment will not exceed the safe working load and be operated by a suitable competent operator. All loads will be secured and the lift control by a competent person at all times in direct communication with the crane operator at all times. • Any working at heights which can't be avoided will be carried out using suitable working platforms with adequate guard	Occupational Health and Safety Plan	Design and Contractor/Engineer; approved by MI	Pre- Construction Phase and Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
rails to prevent falls. Where a risk of falling may still be possible all workers must be provided with, and trained in the use of, suitable safety harnesses / fall arrest equipment to mitigate the consequences if a fall should occur. • All construction traffic on site will be restricted to a maximum speed of 10km/hr at all times on site. Any reversing will be carried out under the guidance of a suitable trained person wearing high visibility clothing. All traffic will have suitable warning devices to allow others of its approach and be suitable segregated from any pedestrians. • Any temporary work structures used during the construction phase will be designed and constructed under the guidance of a suitable Engineer. • All work activities on site are to comply with EU Directives and meet best international practice.			
Implementing strict and enforceable safety practices. The general Contractor and all sub-Contractors on a job site are required to provide a safe work environment and to warn employees of hazards there. They must hire responsible personnel to coordinate job safety, and to supervise compliance with legal rules and regulations.	Implementing strict and enforceable safety practices	Contractor/Engineer/ approved by MI	Pre- Construction Phase and Construction Phase
Construction and Electrical Safety Plan is to meet international best practice and ensure compliance with EU requirements and is to be approved by MI prior to works commencing. • Electricians are particularly at risk of death or serious injury from electric shock or burns if they fail to follow safe working procedures. It is therefore important to comply with all health and safety laws, in particular the ones to do with working safely. Electrical Contractors should not allow dangerous work practices, such as working with live electricity or switching electricity on before they have finished their work and everything has been installed correctly. • It is never absolutely safe to work on or near live electrical equipment. But sometimes electrical Contractors agree to switch the electricity on before they have finished their work, to make the jobs of designers, clients, main Contractors or people in the finishing trades easier. By doing this, except in some very specific circumstances where they have taken steps to prevent themselves and others getting injured, they are imposing the workers to life threatening situations. • The work cannot be done if the electricity is switched off, and it is reasonable to work on or near the live conductors, and suitable steps have been taken to prevent the person doing the work and others from getting injured. • All workers, supervisors and managers on construction sites should be made aware that it is not considered acceptable to work on, or, near live conductors solely on the grounds of convenience, or of saving time or cost. • When the electricity is switched on, the main Contractor is responsible for making sure that everyone working on site is aware of any live circuits in an area. They are also responsible for making sure that their electrical sub-Contractors use safe isolation procedures before working on any circuits that could possibly be live. The electrical Sub- Contractor has the same duty and responsibility to use safe isolation practices when required.	Construction and Electrical Safety Plan	Contractor/Engineer; approved MI	Pri- Construction Phase and Construction Phase
Environmental requirements			
General			
Construction workers will be given training sessions, prior and during construction works, to make them aware of the	High level or awareness on	Contractor, Engineer and MI	Pre-Constuction and

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
importance of soil, surface water and groundwater, flora, fauna, landscape, and archaeological remains as valuable resources for humans and nature, and the need for protecting them.	environmental issues in the construction workforce		Construction phase
Soils			
Sedimentation and Erosion Control Plan, will be developed in order to identify specific erosion control techniques for use at particular sites along the motorway alignment. The Plan will be based on several principles and approved by MI prior to construction: • Each site characteristics (topography, soils, drainage patterns, and covers) will be considered when developing the plan. Areas which are prone to erosion will be left undisturbed and undeveloped if possible. Entrance and exits points for run off will be protected from erosion and equipped with sediment control devices. • Minimize the extent of the disturbed area and the duration of exposure and stabilize disturbed areas as soon as possible. Typically, if an area is not going to be worked on in more than 45 days, it will be protected by erosion control mats. • The use of heavy equipment and techniques that will result in excessive soil disturbances or compaction of soils will be minimized, especially on unstable slopes. • The drainage and run off controls will be established before starting the site clearance and earth works. The existing vegetation will be retained as much as possible. • Where water would need to be removed from excavations, it will be transferred at the minimum practical distance to be discharged. • Concentrated flows if possible will be diverted away from sensitive areas. • Sediment control devices such as sediment control ponds will be used to retain sediments from leaving the site. • The most effective erosion control devices will be implemented: i) temporary seeding; ii) temporary mulching; iii) permanent sodding; iv) temporary or permanent erosion control blankets; v) permanent vegetative buffer strips • Sediment control devices to be implemented will include: i) site fencing; ii) straw bales; iii) sediment basins or traps; iv) storm inlet traps; vi) rock check dams and vii) interception berms/swales. • Once construction is completed at a site, the decompaction and restoration of the disturbed areas that are not going to be occupied by permanent structures will be carried out by tilling the land before proceeding to the vegetation reinstatement. • Each river or large stream will have a specific Crossing Plan defining the mitigation measures to be applied (see Surface water below).	Preparation and implementation of the sedimentation and erosion control plan minimize the loss of soil	Contractor, Engineer and MI	Developed during Pre - Construction phase Implemented during Construction Phase
Hazardous Materials Management and Spill Prevention Plan to address issues such as: • All roads and hard standings will be kept clean and tidy to prevent the build-up of oil and dirt that maybe washed into a	Preparation and implementation of the	Contractor, Engineer and MI	Developed during Pre - Construction phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
water course or drain during heavy rain fall. • The spill kits will be located close to the construction sites in case there is an accidental spill, so that it can be immediately cleaned up.	Hazardous Materials Management and Spill Prevention Plan to prevent the contamination of soil and waters with hazardous substances		Implemented during Construction Phase
• No refueling, storage, servicing or maintenance of the equipment will take place within 100 m of drainages, water courses, alluvial plains or other sensitive environmental resources. If these activities had to be done at the construction site, all precautionary measures shall be taken to prevent leaks or spills from reaching the soil or nearby watercourses. • These activities (refueling, storage, servicing or maintenance) will take place in designated repair and maintenance third party sites adequately prepared for these purposes (adequately lined for preventing any soil and groundwater contamination, and equipped with culverts to collect water runoff that will be directed to wastewater treatment facilities). • Ready-mix concrete trucks containing alkaline cement or residues of cement will not be allowed to enter any watercourse. Washout of the concrete trucks shall be performed at the concrete batching plant camp, where appropriate facilities will be provided. If the washout of concrete trucks were necessary at or near the construction site, this shall be done at distance greater than 200 m of any watercourse and never in a very high or high habitat sensitivity area. The washout area will be clearly signposted and drivers shall be aware of the designated locations for washout. • Setting up camps on alluvial terrains has to be avoided because of the high levels of the underground water table and the risk of pollution. • The proper handling and storage of lubricants, solvents will be organized as well proper usage of construction equipment. • The storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site will be minimized. All hazardous substances either products to be used or waste, shall be stored in adequate places, far from sensitive areas (e.g. water courses, habitats with a rich biodiversity) and adequately equipped to prevent any soil, surface water or ground water contamination). • Vehicles and construction machinery will be subject to regular preventive maintenance so as to reduce leakages of lubricants, motor oil and fuel.			
The Waste Management Plan will implement procedures for waste minimization, recycling, treatment and disposal in accordance with national and EU requirement and will cover the following: • The different waste types that could be generated at the construction site (due to the materials used and waste generated in different sections) shall be identified and classified according to the national List of Waste. • Complete separation of hazardous from non-hazardous waste streams at the construction site will be done. • The waste material (concrete, iron, rocks, etc.) accidentally deposited will be immediately removed from highly sensitive habitats.			
Soil Management Plan shall be prepared by Contractors and approved by the Engineer and MI. Selective removal	Selective removal and	Contractor, Engineer and MI	Developed during Pre

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
and storage of top soil will be conducted which will: • Topsoil will be stripped from the soil surface so as to serve for reuse in the restoration of disturbed areas not occupied by the motorway. • Topsoil will be reused to restore cuttings, embankments, wildlife crossings, construction and worker's camps, landfills, and borrow pits. • Temporary storage areas will be located along the strip of land along the alignment, near the sites where the soil was removed from, so that it can be reused in those same areas. • The layers of the stripped top soil will be placed aside, on the established storage areas, in the same order as the original soil levels. The topsoil removed will be collected on ridges to be built in flat areas so as to avoid the loss of the organic and biotic properties of the soil, and protected it from weather agents, mainly wind and rain, which cause the erosion of the soil ridge. The top soil storage areas shall be signposted and maintained in proper condition until the reutilization of the topsoil.	storage of topsoil to be conducted to minimize the loss of fertile soil and ensure its properties are preserved for its reuse in rehabilitated construction sites or elsewhere (e.g. agricultural amendment)		- Construction phase Implemented during Construction Phase
Suggested measures to prevent soil contamination during Construction phase: • Minimise the quantity of uncontaminated stormwater entering cleared areas. o Construct diversion banks and intercept drains around the site while ensuring that the water discharging from such banks or drains is disposed of without causing erosion. o Wherever possible, the new stormwater drainage system should be installed before any land disturbance activities commence. If possible on-site inlets should not be connected until the site has been stabilised and rehabilitated. o Establish cut-off or intercept drains to redirect stormwater away from cleared areas and slopes to stable (vegetated) areas or effective treatment installations. • Reduce water velocities o Minimise continuous slopes where flowing water can scour. o To prevent scouring, drainage lines may need to be lined or velocity-reducing structures, such as crushed rock or geotextile placed in the drainage line. Nothwithstanding, the following erosion control measures should be taken: • Keep land clearance to a minimum. • Avoid wherever possible clearing areas of highly erodible soils and steep slopes which are prone to water and wind erosion. • Revegetate and mulch progressively as each section of works is completed. The interval between clearing and revegetation should be kept to an absolute minimum. • Coordinate work schedules, if more than one contractor is working on a site, so that there are no delays in	Selective removal and storage of topsoil to be conducted to minimize the loss of fertile soil and ensure its properties are preserved for its reuse in rehabilitated construction sites or elsewhere (e.g. agricultural amendment)	Contractor, Engineer and MI	Designed at Pre - Construction phase Implemented during Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
construction activities resulting in disturbed land remaining unstabilised. • Program construction activities so that the area of exposed soil is minimised during times of the year when the potential for erosion is high, for example during summer when intense rainstorms are common. • Stabilise the site and install and maintain erosion controls so that they remain effective during any pause in construction. This is particularly important if a project stops during the wetter months. • Keep vehicles to well-defined haul roads. • Keep haul roads off sloping terrain wherever practical. • Designed the slope of a cut to minimise the angle of incline. Cultivating the cut surface will increase infiltration of rainfall and decrease the velocity of water across the slope during rain and therefore reduce erosion.			
A **Chemical Accident and Spills Management Program** will be developed for all motorway operations to prevent and mitigate the negative impacts to soil, surface water and groundwater that could arise from eventual motorway accidents and spills involving hazardous substances, and provide early response actions as well. The program shall be prepared in close cooperation with the municipality of Pejë and Klinë and responsible institutions. The Chemical Accident and Spills Program will provide information that at a minimum will accomplish the following: • Present the measures that will be taken to minimize the risks associated with chemical, fuel, oil spills and accidents. These measures will include issues like: monitoring purchasing requirements, product substitutions, design features for containment, operational controls, work practices, labeling and storage requirements. • Specify the document-control procedures for maintaining material inventories and MSDS (Material Safety Data Sheets). • Assign an emergency response team involved in assessing the risk of hazardous material releases and working to avoid any harmful effects if any accidents happened. The will evaluate the concentrations of the chemicals, where and how population might be exposed and the potential toxic effects on the exposed people, soil and waters. They will plan and implement rapid clean up measures depending of the extent of the spills (bioremediation, floating booms and adsorbents, solid materials that capture the soil, chemical oxidation in order to break the chemicals down). • The emergency calls and coordination with the national authorities' relevant for Crisis Management will be essential.	Chemical Accidents and Spills Management program to be prepared and implemented to prevent / manage spills and prevent the contamination of soil and waters with hazardous substances	Operator/MI	Operational Phase
Surface Water			
Drainage systems will be designed to collect run-off from the carriageway, convey, store ruun-off water to reduce peak flows and remove coarse sediment and oil related pollutants. The hydraulic analyses for the Project has not been developed yet due to the early stage of the design. It will cover calculation of runoff flows and will constitute part of the Preliminary and Detailed Design. Hydraulic analyses will provide input to the combined surface water channel and pipe drainage system in order to determine sizes of pipes, geometry and	Desining of structures should be performed to minimize effects on water flow, water quality and aquatic flora and fauna	Contractor, Revision Committee and MI	Pre - Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
size of surface channels, and well as length of the road to be drained by the channel. The location of and type of treatment systems (oil interceptors and/or attenuation ponds) will also determined based on. • Underlying Geology and results of on-site geo-mechanical Investigations; • Proximity of Groundwater Table; • Long term maintenance and management of the druainage and run-off treatment system			
The construction of drainage pipes and the bridge will be carried out during the dry seasons. The design of the drainage pipes will take account of projected maximum flood events and potential changes in future flow regimes due to climate change.	Construction of structures in water courses to be done during dry seasons to minimize effects on water flow, water quality and aquatic flora and fauna	Contractor, Engineer and MI	Construction Phase
The extension of the construction area next to water courses will be only that strictly necessary to adequately perform the construction works. The perimeter of the area will be marked with signaling ribbons that neither vehicles and machinery nor workers will trespass. No occupation of the stream bed or the banks will be allowed, unless there is no other reasonable alternative to carry out the construction work.	Any extension of the construction area next to water courses only occurs when signed off by MI	Contractor, Engineer and MI.	Construction phase

The following guidelines will be taken into account in the construction of bridges:
• Single span bridges are the preferred structure for crossing streams as they cause the least disturbance to water courses both hydraulically and environmentally.
• Multiple span bridges are acceptable on wide streams. Acceptable arrangements will include:
  • Piers located outside the normal low flow stream width. In this regard, a three span bridge may be preferable to a two span bridge. The spans do not need to be of equal length.
  • Piers aligned parallel to the direction of flow.
  • Riprap provided around the piers to mitigate local scouring.
  • If piers/piles have to be constructed inside the normal low flow stream width, they would occupy less than 5%of the cross sectional are not going to cause a significant change to the available water way.
  • The bridge abutments would be located so they do not significantly encroach into the waterway and thereby reduce the available waterway area. Abutments will also be located so as to avoid obstruction of movement of terrestrial fauna along the riparian zone.
  • Rock beaching will be used on the batters to protect against abutment scour, as this area will generally not revegetate due to inadequate light and lack of rainfall. Beaching should generally extend 3 meters upstream and downstream of the bridge abutments.
  • The batter is to be excavated to the depth of the beaching to maintain the waterway area. The slope of the batters would be in the range of 1V:1H to 1V:2H. In general, the beaching should extend at least 600 mm below
	Design & Construction to follow stated guidelines	Contractor, Engineer and MI	Developed during Pre - Construction phase
			
			Implemented during Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
the toe of the bank to mitigate undermining. Where the stream banks are stable, rock beaching may not be required.			
The motorway drainage outflow after its prior treatment in oil interceptors will be directed to retention basins or grassed filter zones to trap sediments and other contaminants, rather than discharging directly to the water courses. These sediment and contaminant retention structures will be constructed in the areas where habitats of high sensitivity are located along the alignment or in a close location downstream of the effluent discharge point.	Designing & Construction to follow stated guidelines	Contractor/Engineer/MI	Developed during Pre - Construction phase Implemented during Construction Phase
Domestic type wastewater generated in the construction camps will not be allowed to be discharged untreated into natural water courses. The camps will be provided a wastewater treatment system to treat effluents to admissible levels for discharge in the water body. The construction sites will be provided with chemical portable toilets and the waste adequately managed.	No untreated wastewater discharge in watercourses	Contractor/Engineer/MI	Developed during Pre - Construction phase Implemented during Construction Phase
Regular control and maintenance of drainage structures and retention basins will be conducted to check they are not clogged with debris or sediments	No blocked drainage structures	MI	Operational Phase
Groundwater			
Detailed **Geological and Hydro-geological Investigations** will be carried out during the Preliminary Design to determine: • groundwater table along the Alignment • vulnerability of the aquifer located on the south from the Alignment from which potable water is abstracted from private wells by the local population. Drainage systems will be designed during the Preliminary Design to enable for appropriate collection of run-off from the carriageway, conveying, storing ruun-off water to reduce peak flows and removing coarse sediment and oil related pollutants.	No significant contamination of groundwater	Contractor/Engineer/MI	Developed during Pre - Construction phase Implemented during Construction Phase
Hazardous Materials Management and Spill Prevention Plan to be developed (see mitigation measures for soil) and will address the potential for direct groundwater contamination for activities where the groundwater may become exposed to the atmosphere (e.g. during the construction of pillars near a water course).	No significant contamination of groundwater	Contractor/Engineer/MI	Developed during Pre - Construction phase Implemented during Construction Phase
Where the groundwater table is encountered during excavation, the intercepted area will be sealed as soon as possible so as to re-establish the normal hydrogeological flow regime.	No major alterations of groundwater flow	Contractor/Engineer/MI	Construction Phase
The implementation of the mitigation measures defined above for soils and surface water will mitigate impacts on groundwater during the operational phase.	No major alterations of groundwater flow	Operator/MI	Operational Phase
Air Quality			

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
A survey on air quality will be undertaken with the aim to assess the baseline conditions and identify sensitive receptors; Air quality modelling will be executed to assess the effects of the Project on sensitive receptors and the level of their exposure Updating mitigation measures anticipated in the ESIA for both construction and operation phasesThe mitigation measures for the operational phase, if required, will be defined at the Preliminary Design stage. •	No major alterations of air quality	Contractor/MI	Pre - Construction phase
Measures to be implemented to minimize dust emissions and included with a Dust Management Plan: • Hoardings will be constructed around the construction sites to minimize the spread of dust. • Accesses and construction sites will be kept moist to reduce dust formation. Water sprays will be implemented during drilling and excavation activities. • In the dry season, hygroscopic additives will be used in water to increase its presence in the ground. • Dust-generating activities will be slowed down in days of strong wind. In windy and dry conditions, earth stock piles will be moistened to prevent the lifting of dust particles.	**Dust Management Plan** to be prepared and implemented	Contractor/Engineer/MI	Developed during Pre - Construction phase Implemented during Construction Phase
• Ground will be moistened during loading and unloading of aggregates in trucks. • Truck dumpers carrying spoil or other dusty materials will be covered with tarps. • Work sheds will be large enough to allow stockpiling of the excavated tunnel material, access of trucks and truck loading operations.	**Dust Management Plan** to be prepared and implemented	Contractor/Engineer//MI	Construction Phase
Measures to be implemented to minimize emissions of combustion gases: • Vehicles and construction machinery will be required to be properly maintained and to comply with relevant emission standards. • No unnecessary idling of construction vehicles at the construction sites will be allowed. • Construction truck traffic will be optimized so as to get a minimum number of trucks carrying the maximum volume of materials. This will be addressed in the Construction Traffic Management Plan. • The truck routes will be planned to avoid peak traffic hours or routes with heavy traffic.	Minimise emission of combustion gases and no breach of limit values.	Contractor/Engineer/MI	Construction Phase
An air quality monitoring as per Kosovan legislation and/or international good practice will be implemented during the operational phase.	No major alterations of air quality	Operator/MI	Operational Phase
Noise and Vibrations			
A Detailed Motorway Noise and Vibration Study will be completed during the development of the Preliminary Design of the Project to:	Noise emissions from the Project meet Kosovo and	Contractor/MI	Pre - Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
O Determine Noise Levels, sensitive receptors and the width of the buffer in which the noise limits will be exceeded (Survey) O Perform modelling of noise emissions and update the preliminary noise assessment; O Determine the specific and optimum noise abatement measures according to national and EU/WHO standards. O Define location of noise bariers and its impact on land take along the alignment and at structures	EC guideline limits		
A Detailed Design of noise barriers, including: O height and length of noise barriers, taking into account maintenance and emergency access considerations, drainage (where appropriate), as well as aesthetics: O land acquisition requirements	Noise emissions from the Project meet Kosovo and EC guideline limits	Contractor/Revision Committte/MI	Pre - Construction Phase
Construction Traffic Management Plan, to be developed by the Contractor, will establish speed limits for construction vehicles and machinery at the construction site and the haulage roads used, and organize traffic so as to avoid as much as possible populated areas	Noise emissions from the Project meet Kosovo and EC guideline limits	Contractor/Engineer/MI	Pre - Construction Phase
All construction equipment will comply with the requirements of EU Directive 2000/14/EC on noise emission in the environment by equipment for use outdoors (there is a lack of national legislation on outdoor equipment emission noise levels). All the equipment shall bear the CE marking and the indication of the guaranteed sound power level and shall be accompanied by an EC declaration of conformity. The equipment will be fitted with appropriate noise muffling devices that will reduce sound levels. Construction works shall not be permitted during the night; the operations on site shall be restricted to the 07.00 -19.00 h. All vehicles and machinery used at the construction sites shall be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damage noise control devices shall not be operated until corrective measures have been taken. The construction traffic plan shall establish speed limits for construction vehicles and machinery at the construction site and the haulage roads used, and organize traffic so as to avoid as much as possible populated areas. Affected local residents will be kept informed on due time of the planned works and the vibration and noise levels and Periods during which they will occur. The location of noisy equipment will be chosen as far as possible from sensitive receptors (Residential properties, workplaces, schools and hospitals). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time of exposure is as short as possible. Good management practice will be used to distribute heavy noise equipment along the route so as to avoid the cumulative effects of noise. In the case where noisy works would need to be performed at night or during a longer Period than one day at a given site, a noise shield shall be erected around the working area.	Noise emissions from the Project meet Kosovo and EC guideline limits	Contractor/Engineer/MI	Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
Monitoring of vibration during the performance of critical work processes (e.g. foundation of piles and catenary masts) should be undertaken in buildings which are within a distance of 20-30 meters from the area where these works take place. Should buildings result damaged as a result of vibrations generated by the construction works, the damaged buildings will be repaired or compensation paid.	No lasting damage to the buildings	Contractor/Engineer/MI	Construction Phase
Operate earthmoving equipment on the construction site far away from vibration-sensitive receptors as possible. Activities such as demolition, earthmoving and ground-impacting operations shall be scheduled so as not to occur in the same time Period. Unlike noise; the total vibration level produced could be significantly less when each vibration source operates separately. Decrease vibration from construction sources, including: • Blasting. Explosive type and weight, delay-timing variations, size and number of holes, distance between holes and rows, method and direction of blast initiation. • Dynamic compaction. A smaller falling weight will produce smaller vibrations. • Pile driving. Predrilling, presetting, replacement of displacement piles with non-displacement ones, switch impact hammer to vibratory one, replacement of driven piles with augured casting-place piles or drilled shafts. • Select demolition methods not involving vibration impact, where possible. • Avoid vibratory rollers and packers near sensitive receptors.	No lasting damage to the buildings	Contractor/Engineer/MI	Construction Phase
• All vehicles and machinery used at the construction sites will be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damage noise control devices shall not be operated until corrective measures have beentaken; • Wherever possible all construction equipment will comply with the requirements of EU Directive 2000/14/EC on noise emission in the environment by equipment for use outdoors (there is a lack of national legislation on outdoor equipment emission noise levels). All the equipment shall bear the CE marking and the indication of the guaranteed sound power level and shall be accompanied by an EC declaration of conformity; • The equipment will be fitted with appropriate noise muffling devices that will reduce sound levels; • Every effort shall be carried out to comply with the correspondent noise limits for each area where the construction works will take place; • Construction works will not be permitted during the night; the operations on site shall be restricted to the MIod 07.00 -19.00h; • Affected local residents will to the best of the project's efforts be kept informed on due time of the planned works and the vibrationand noise levels and MIods during which they will occur; • The location of noisy equipment will be chosen as far as possible from sensitive receptors (Residential Properties, workplaces, schools and hospitals). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time of exposure is as short as possible;	Noise emissions from the Project meet Kosovo and EC guideline limits	Contractor/Engineer/MI	Construction Phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
• Good management practice will be used to distribute heavy noise equipment along the route so as to avoid the cumulative effects of noise; • In the case where noisy works would need to be performed at night or during a longer period than one day at a given site, a noise shield will be erected around the working area			
Proposed noise mitigation measures leading to the decrease of noise exposure include measures implemented at the source of noise and measures that intercept the noise between the source and the receptor: Between source and receptor: • Noise barriers (protective walls) with noise reduction potential by 5-15 dB (A). • Insulation of house windows and facade with noise reduction potential by10-30 dB (A).	Noise impacts meet national and EU legislative limits	Contractor/Engineer/MI	All phases
Monitoring of traffic noise as per Kosovan legislation and/or international good practice will be implemented during the operational phase. Appropriate maintenance activities will be carried out to uphold the barriers` effectiveness of sound attenuation	Noise impacts meet national and EU legislative limits	Operator/MI	Operational Phase
Landscape			
Minimise disturbance to existing local landforms and landscape settings within the corridor by: • minimising extents of earthworks; • reflecting existing landform as much as possible in earthworks: O Aesthetic integration of the structural parts of viaducts and the bridge (e.g. deck, pillars), using construction materials with colors and textures that blend well with those of the surrounding landscape; O Designing the excess material disposal sites so that the final contours are integrated with those of the unaffected part of the valley; • avoiding sensitive habitats; • minimising impacts on local hydrological systems; • reducing fragmentation of local and regional flora and fauna corridors	No significant visual impacts	Contractor /MI	Pre - Construction Phase
The landscape impact can be mitigated by hiding from observers the construction site, the camp and ancillary areas. For this, screens will be installed around the perimeter of these sites.	No significant visual impacts	Contractor/Engineer/MI	Construction Phase
Shaping of the terrain around altered impacted areas so as to recreate the surrounding land morphology. During further design areas where potential visual and/or shading issues for residential areas/properties could occur will be reviewed and measures incorporated into design and/or mitigation measures identified and implemented.			
Vegetation with autochthonous species present in the surrounding area of: • Slopes of the cuttings and embankments. Vegetation measures are generally recommended for 2H:1V slopes.	No significant visual impacts	Designer/Contractor/Engineer/MI	Pre – Constuction

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
• Water courses and banks underneath the bridge, as well as in the abutment areas. • Affected areas underneath the viaducts as well as above, in abutment zones. • Aesthetic integration of the structural parts of viaducts and bridges (e.g. deck, pillars), using construction materials with colors and textures that blend well with those of the surrounding landscape			and Constuction Phase
Design of the surplus material disposal sites so that the final contours are integrated with those of the unaffected part of the waste receiving valley.			
Vegetation of the surplus material disposal sites with autochthonous species adapted to the resulting valley conditions.			
If borrow pits are open for the construction of the motorway project, these will be reinstated at the end of the construction works.			
Vegetation with autochthonous species present in the surrounding area of: • Slopes of the cuttings and embankments. Vegetation measures are generally recommended for 2H:1V slopes. • Water courses and banks underneath the bridge, as well as in the abutment areas. • Affected areas underneath the viaducts as well as above, in abutment zones. • Aesthetic integration of the structural parts of viaducts and bridges (e.g. deck, pillars), using construction materials with colors and textures that blend well with those of the surrounding landscape			
Biodiversity (Habitats)			
The implementation of the mitigation measures identified for habitats, soils, water and groundwater, and landscape will serve to ensure the integrity and conservation objectives of all the protected and designated areas in the motorway corridor area. These measures include: • The construction of drainage pipes and the bridge will be carried out during the dry season. • The extension of the construction is next to water courses will be only that strictly necessary to adequately perform the construction works. No occupation of the stream bed or the riverbank will be allowed, unless there is no other reasonable alternative to carry out the construction work.	Ensure the integrity and conservation values of natural sites	Contractor, /MI/ the relevant Kosovo nature conservation/protection authority Engineer.	Developed during Pre - Construction phase Implemented during Construction Phase
The design of the Bridge and Box and Pipe culverts will provide for connectivity of habitats and will not create obstacles for migration of animal species: • Bridge will be designed and constructed so as to cause the least disturbances to the waterway and banks. • Retention basins or grassed filter zones to trap sediments and other contaminants will be constructed in the areas where habitats of very high or high sensitivity are located along the alignment or in a close location downstream of the effluent discharge point.	Ensure the integrity and conservation values of natural sites	Contractor, /MI/ the relevant Kosovo nature conservation/protection authority Engineer.	Designed during Preliminary and Detailed Design phases Implemented during all phases

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
• Untreated wastewater will not be allowed to be discharged into natural watercourses. • Disturbed areas not to be occupied by permanent motorway structures will be reinstated by shaping the terrain to that of the surrounding land morphology and using autochthonous plant species present of the surrounding area. • The surface for carrying out the clearance of vegetation will be limited to the strip of land needed for the occupation of the permanent way and the right of way of the future motorway corridor and the adjacent working width for buildings. • The path of the haulage route shall avoid areas of highly sensitive vegetation • New worker's camps and auxiliary facilities will be constructed in areas of vegetation with negligible sensitivity vegetation. • All equipment and personnel movements will occur within the established construction works site and hauling roads, especially in zones of high and very high sensitive vegetation. • Training will be delivered to constructions workers before construction works start and during construction to increase their awareness and responsibilities with regards to the surrounding natural values. • The speed of vehicles in the area of construction works and hauling roads will be limited to a maximum speed (30 km/h).			
Areas necessary for construction, but not required for the operational phase of the road, should be rehabilitated, such as areas disturbed by construction of the bridges. Rehabilitation will aim to re-establish the original regional ecosystems present prior to disturbance and will be staged where necessary. The rehabilitation program should incorporate a wide variety of species typical of the regional ecosystem being rehabilitated. The species composition for rehabilitation will depend on the type of ecosystem in question (mostly degraded oak forest). Appointed person or company for monitoring will be responsible to prepare the list of species for each rehabilitation site. Fenced areas will be vegetated with native plant species that are attractive to local fauna and with plantation patterns designed to lead the animals towards the wild life crossings. Plant stock should be locally sourced, where possible, to maintain genetic identity of local communities. Recommened trees for re-vegetation are the following ones: Quercus pubescens, Q. frainetto, Q. cerris, Fraxinus ornus, Carpinus orientalis, Pyrus amygdaliformis, Acer monspessulanum, A. tataricum, A. campestre, Crataegus monogyna, Ulmus minor, Prunus spinosa, etc.	Ensure the integrity and conservation values of natural sites	Contractor, /MI/ the relevant Kosovo nature conservation/protection authority /Engineer.	Designed at Preliminary and Detailed Design phase Implemented at Construction phase
Afforestaion activites performed in line with no net loss principle, i.e prepration of Revegetation Plan. Reparian vegetation along the Drini I Barde river to be restored. The undersides of bridge will be vegetated so as to create vegetal screens that hide the bridge structure (e.g. shrubs and small trees in the area of the abutments). Fenced areas will be vegetated with native plant species that are attractive to local fauna and with plantation patterns	Ensure the integrity and conservation values of natural sites	Contractor, /MI/ the relevant Kosovo forestry and nature authority and Engineer.	Designed during Preliminary and Detailed Design phases Implemented during Construction phase

Receptor / Proposed mitigation measures	Target	Responsible institution/s	Timing
designed to lead the animals towards the wild life crossings.			Continious monitoring during all phases.
Mitigation measures to minimize the effect of fragmentation mainly consist of the establishment of enough wildlife crossings to increase the permeability of the motorway Alignment as follows: • Culverts along the motorway Alignment will be adapted to facilitate the passage of small animals (maintained during the operational phase); • Regular maintenance activities, such as: protective fence maintenance, removal of food, waste, animal carcasses, etc. from roads, in order to reduce the attraction of scavengers.	Ensure the integrity and conservation values of natural sites	Contractor, /MI/ the relevant Kosovo nature conservation/protection authority and Engineer.	Designed at Preliminary and Detailed Design phase Implemented at Construction phase
Cultural Heritage			
Chance Find Procedure to be established and implemented prior to construction works commencing. In accordance with ERD PR 8 requirements. In the event of the unexpected discovery of archaeological objects the Contractor shall immediately inform MI and the Ministry of Culture, Youth and Sport and follow their instructions. The construction works will be temporary stopped while the authorities decide if any research are needed or any protection measures should be applied. The Contractor shall follow the instructions provided by the authorities responsible for the protection of cultural heritage.	Implement a Chance Finds Procedures	Contractor, /MI/Competent Authorities, Engineer	Pri- Construction Phase and during Construction Phase
Cultural Heritage training shall be provided to construction workers before the start of earth works to foster their awareness on how to identify artefacts and the importance of protecting Kosovo cultural heritage, including existing cultural monuments and archaeological sites and to be discovered sites.	All staff, particularly those operating excavation equipment to be trained in the chance finds procedure.		
MI to undertake the necessary works as directed by the authorities responsible for the protection of cultural heritage to protect any archaeological finds from damage and plunder.	No damage of discovered cultural heritage sites		

Table 161: Environmental and Social Monitoring Plan

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
Top soil	All construction sites and top soil stockpiles.	Visual inspection of: • disturbed areas for top soil erosion • Top soil stockpiles for erosion.	Monthly with selected areas inspected after heavy rainfall events at the discretion of the environmental manager	To minimize the loss of top soil.	Design and Build Contractor /Engineer/ MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
	All waste storage areas	Visual inspection of areas for spills and leaks which might impact top soil quality (and ultimately potentially groundwater)	Monthly	To avoid soil (and surface water and groundwater contamination).		
Surface water	At all construction sites in vicinity of surface watercourses (up to 200 meters at each side of the banks)	Visual checking of: Construction sites for drainage pipes, oil interceptors and bridges. Retention basins or grassed filter zones. Chemical analysis of outfalls from wastewater treatments which discharge to surface water. Analysing water parameters of Drini I Bardhe River at chainage 13+550	Start-up of activities involving works near and at watercourses. Monthly regular monitoring during construction phase Quarterly monitoring of the quality of Drini I Bardhe River in compliance with law.	To minimize the risk of pollution of surface water To avoid affections to flow and sedimentation patterns. To avoid health risks to residents.	Design and Build Contractor/Engineer. MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
Ground water	At all construction areas where the motorway alignment	Visual checking of groundwater discharges during excavation works for contamination and	Daily or more frequently in excavations to identify	To enable groundwater flows can be sealed to avoid affecting hydrogeological flow patterns.	Design and Build Contractor / Engineer MI (Employer)	

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
	runs on alluvial and colluvial terrains and in cuttings	ensuring that these are sealed efficiently.	groundwater flows.		Audits by Environmental Inspector from MESP and each municipality concerned	
	Springs and wells nearby the alignment	Measurement of groundwater quality parameters, as defined in the legislation in force, Visual assessment (or measurement) of spring flow rates	The Design and Build Contractor shall measure baseline parameters before commencement of the works and shall perform quarterly monitoring	Assessing impact on the chemistry and flow rate of springs Assessing impact on wells	Design and Build Contractor/Engineer MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
Air Quality - Dust	On site along the motorway alignment	Visual checking of dust emissions from construction sites. Air monitoring procedures will be implemented at sensitive receptors	At least monthly during construction works. Increased frequency during dry season.	Minimization of particulate air pollution.	Design and Build Contractor/Engineer MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
Air Quality – Combustion Gases	On site along the motorway alignment	Visual checking of gas emissions for signs of incomplete emissions Air monitoring procedures will be implemented at sensitive receptors	Monthly during construction works	Meeting air quality standards and minimizing impacts to workers and neighbouring sensitive receptors	Design and Build Contractor/Engineer MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
Noise	All construction sites, camps and ancillary areas.	Monitor complaints of affected population	At start up and then monthly at sensitive areas	To minimize noise pollution from construction activities	Design and Build Contractor /Engineer, MI (Employer) Audits by Environmental Inspector from MESP and each municipality concerned	
Landscape	Construction sites, camps and ancillary areas	Visual assessment of landscape impact	At start up and then monthly	To ensure that landscaping is effectively managed and minimize temporary visual impacts during	Design and Build Contractor /Engineer/MI (Employer)	

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
				construction	Audits by Environmental Inspector from MESP and each municipality concerned	
Habitats	Along the motorway alignment.	Visual inspections of all sensitive habitats.	Monthly	To reduce as far as possible impact and disturbance on sensitive habitats.		
Cultural heritage	Along the motorway alignment.	Visual inspection of all identified cultural heritage sites.	Quarterly unless more frequently required around sensitive locations	Preservation of archaeological sites	Design and Build Contractor/ Engineer/ MI (Employer) Competent authorities	
SOCIAL ASPECTS						
Resettlement	Each resettled household	Input and output indicators specified in the RCF Assess resettled household to ensure that the resettlement has been undertaken in compliance with RCF and RAP, and EBRD PR 5, has been done in accordance with RCF and RAP. Complaints from residents through the grievance mechanism.	As detailed in RCF /RAP	To ensure that the RCF and RAP have been undertaken effectively.	MI	
Community Health & Safety	Communities adjacent to the construction sites	Safety barriers and signage. Monitoring of Community health and safety educational program to ensure that it is effective. Monitoring accidents and near misses. Complaints from residents through the grievance mechanism.	Prior to the start of the construction phase Daily checking of construction sites boundaries.	Mitigating health and safety risks to residents.	MI	
Influx	At the construction camps	Monitoring of protection measures for workers	Monthly and in response to grievances	Ensuring health and well being	Design and Build Contractor/Engineer/	

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
		including monitoring of workforce accommodation.			Environmental Inspector from MESP and each municipality concerned	
Occupational health and safety measures for workers	At the construction sites	Monitoring compliance with applicable standards and national legislation for worker PPE and safety equipment	Before the start of the project activities Every working day	To avoid occupational injuries and / or professional illnesses	Design and Build Contractor/Engineer/ Environmental Inspector from MESP and each municipality concerned Labour Inspector in charge for Occupational & Health issues (No:04/L-161)	
Local employment	At the construction sites	Monitoring of number of locals employed on the project.	Before the commencement of construction works. Monthly during the construction Period.	Ensuring local communities benefit from employment opportunities.	Design and Build Contractor	
Project stage: Operation						
ENVIRONMENTAL ASPECTS						
Soil	Along the motorway alignment	Visual inspection of the motorway for spills and leaks which might impact soil quality (and ultimately potentially groundwater)	Before operational activities and Periodically during operation: quarterly for the first year and then annually thereafter	To avoid soil (and surface water and groundwater contamination).		MI/ Sub-contractor
Groundwater quality	Springs and wells nearby the alignment	Chemical analysis of groundwater water (hydrocarbons, etc.)	Ones before putting the motorway in operation and Periodically during the operation: once a year	Assessing impact on the chemistry of wells	/	MI/institute for Public Health
Air Quality – Combustion Gases	Areas with sensitive residential receptors and passenger	Air monitoring procedures will be implemented at stations and along the alignment at sensitive	Before operational activities and Periodically during	Meeting air quality standards and minimizing impacts to passengers and neighbouring sensitive		MI/Sub-contractor

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
	service locations (restaurants, stops, Gas-stations)	receptors	operation: twice a year during stage 1 and once a year	receptors		
Noise	Areas with sensitive receptors along the alignment	Day and night measurement of noise levels at sensitive receptors	Before operational activities and twice a year during operation	Meeting noise quality standards		
Vibrations	Areas with sensitive receptors along the alignment	Measurement of vibration at sensitive receptors	Before operational activities; once a year during operation or upon appearance of damages in neighbouring buildings	Assessing impacts on buildings		
Landscape	Entire motorway alignment, particularly: Slopes of cuttings and embankments; Water courses and banks underneath the bridge;	Visual inspection for signs of erosion, poor vegetation cover, poor maintenance conditions of motorway elements.	At the end of construction activities Once a year during spring time	To ensure that landscaping is effectively managed		
Landscape cont.	Bridge abutments; Areas underneath viaducts; Structural parts of viaducts and the bridge, surplus material disposal sites and borrow pits	Visual inspection for signs of erosion, poor vegetation cover, poor maintenance conditions of motorway elements.	At the end of construction activities Once a year during spring time	To ensure that landscaping is effectively managed		
Habitats	Animal crossings	Animal surveys to assess the use of animal crossings	During the design phase Before the commencement of the operational phase Periodicaly during the	To assess the impact on habitat fragmentation		

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
			operational phase: twice a year (in spring and autumn)			
Cultural heritage	Archaeological sites found during the construction phase	Visual inspection of sites to observe signs of plundering	Periodicaly during the operation of the motorway: once a year			Ministry of Culture, Youth and Sport – Government of Kosovo
Stakeholder Engagement	Along alignment	Number of: public meetings held, people attended, issues discussed, comments & grievances about, manner comments addressed.	Regular monitoring on monthly basis	To allow and provide full engagement of stakeholders during all phases of the project		MI and audits from Municipality of Klinë and Pejë
Stakeholder Engagement	Along alignment And Affected Settlements	Number & types of grievances received including: Categorization of grievances (those related to land acquisition, economic displacement, health and safety, construction nuisances, Community impacts, etc.), average time to respond, outstanding grievances, etc.	Regular monitoring on monthly basis	To allow and provide full engagement of stakeholders during all phases of the project		MI and audits from Municipality of Klinë and Pejë
Land Acquisition, Involuntary Resettlement & Economic Displacement	MI offices, Legal and property offices/ on site	Activities related to land acquisition should be recorded in an appropriate manner to allow for data processing, monitoring and reporting, for example: number of people / households affected, type of impact- temporary or permanent land acquisition, type of compensation packages or assistance provided, identified and assisted vulnerable groups,	Regular monitoring on monthly basis	To assure that affected families are receiving necessary support in restoring their life and standards from temporary and permanent land take		MI/Sub- Contractor

Receptor/Parameter to be monitored	Monitoring Location	Monitoring Parameters	Frequency of monitoring	Reason for monitoring	Responsibility	
					Designing phase, construction works	Operations of the motorway
		number of negotiated settlements, number of court or administrative appeals, etc.)				
Social Monitoring	Design and Build Contractor's offices	Record the number of job vacancies resulting from the Project and the number of vacancies taken up by residents of affected local communities.	Quarterly	To assure proper management of Local Recruitment plan		
Social Monitoring	Municipality premises	Monitoring effects on population by reporting on a number of question for the impairments and improvements of the life from project realization and specific problem identified by local residents.	Quarterly	To assure that the project realization will improve life of the residents		
Labour & Workforce Monitoring		Monitoring of protection measures for preventing workers' accidents during operational phase, worker and labour inspections and disputes	Regularly on daily basis	To assure that all required standards are fulfilled		
Labour & Workforce Monitoring	Along the alignment	Monitoring the safety of workers (alcohol testing)		To prevent worker's accidents		MI/Sub- Contractor
Community health and safety educational program developed for the motorway operation		Checking that the program is prepared and implemented. Visual monitoring of the implementation through media and other education forms.	Regular monitoring on monthly base	To avoid accidents that may occur during the operation of motorway		

10. NON-TECHNICAL SUMMARY

10.1. Introduction

The Ministry of Infrastructure (MI) of Kosovo* is planning to undertake a Project to improve part of the national road N9 by constructing an offline Motorway section Kijevë – Klinë - Zahaq (31km). The Project is in line with the overall plan for improvement of the national road network, outlined in the national Multi-Modal Strategy (2012-2021) and Action Plan (2012-2016)[99]. The Project is part of SEETO[100] Route 6 B.

Figure 105 Location of the Project on SEETO Route 6 B

[99] http://www.seetoint.org/wp-content/uploads/downloads/2014/01/Kosovo_Multimodal-Transport-Strategy-2012-2021.pdf

[100] Core Transport Network and in the South-East Europe Transport Observatory (SEETO).

The European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), in line with their policies[101] and strategic Agreements with Kosovo*[102], are promoting and supporting regional transport integration and development of strategic connections with neighbouring countries. This includes the development of Route 6 B, which runs from Pejë to Pristina, connecting to Corridor VIII in FYR Macedonia in the south and to Corridor X in Serbia via Route 7 in the north; it also links Pristina, via Pejë (an administrative and economic centre of Kosovo's western region), to route 4 in the Eastern part of Montenegro.

The Route of the Project Motorway Kijevë – Klinë – Zahaq, is shown in Figure 2 below.

Figure 106 Section of Route 6 B, motorway Kijevë – Kline – Zahaq

---

[101] EIB Transport Lending Policy (http://www.eib.org/infocentre/publications/all/eib-transport-lending-policy.htm) and EBRD Strategy for Kosovo*(http://www.ebrd.com/downloads/country/strategy/kosovo-strategy.pdf)

[102] EIB Framework Agreement with Kosovo* (http://www.kuvendikosoves.org/common/docs/ligjet/Law%20on%20ratification%20of%20Agreement%20between%20Kosova%20and%20European%20Investement%20Bank.pdf)

The EBRD has determined that the Project is a Category “A” Project according to its Environmental and Social Policy (ESP 2014)[103], thus requiring a participatory ESIA process. Similarly, EIB has acknowledged that the Project requires a full ESIA, as defined in its Environmental and Social Handbook[104,105]. EIB and EBRD are working with the MI to ensure that the Project’s environmental and social risks are appraised and managed in accordance with their Policies.

This Non-Technical Summary (NTS) describes the Project[106] and summarises findings of the environmental and social investigations conducted and the risks identified. In addition, it presents knowledge gaps and requirements for the ESIA update upon a design change management process. A Stakeholder Engagement Plan (SEP) has been developed for the Project describing the planned stakeholder consultation activities and engagement process. A Land Acquisition and Resettlement Framework (LARF) has also been developed to set out MI’s commitments to national and EIB/EBRD land acquisition related requirements. An Environmental and Social Action Plan (ESAP) has been developed for the Project to assure Project activities will be in line with the EBRD’s Environmental and Social Policy (ESP 2014) and Performance Standards (PRs). Project preparation documents, including the Environmental and Social Impact Assessment (ESIA), NTS, ESAP, SEP and LARF, are published on the MI website (http://mi-ks.net/en/information).

10.2. Background

10.2.1. Rationale of the project

Kosovo* is aspiring for EU membership, and is engaged in the development of its national road network in conjunction with plans adopted by the EU, such as the Trans-European Network Transport (TEN-T) network development plans up to 2020. EU transport development plans call for the development and improvement of multimodal corridors to accept anticipated increases in transport (such as an anticipated increase in freight transport of more than 2/3 by 2020), and to reduce the density of traffic flows.

The major transport axes in Kosovo* are shown in Figures 1 and 2 above. The network is linked to the Pan-European Corridors (Corridor VIII/east-west and Corridor X/north-south), and the Trans-European networks. The motorway section which this Project will develop is connecting to corridors X[107] and VIII[108]. The Project is also part of the Kosovo* Spatial Plan. The development of the Route 6 B will connect the eastern and western parts of the country, and will improve cross-border links of

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

[104] http://www.eib.org/attachments/strategies/environmental_and_social_practices_handbook_en.pdf

[105] VOLUME II: EIB ENVIRONMENTAL AND SOCIAL PRACTICES AND PROCEDURES.

[106] The Project is currently developed at the level of Conceptual Design. Next stages will include the development of Preliminary and Detailed Design.

[107] Corridor X runs from Salzburg – Ljubljana – Zagreb – Belgrade – Nis – Skopje – Veles – Thessaloniki

[108] Corridor VIII runs from Durrës - Elbasan - Skopje - Sofia - Plovdiv - Burgas - Varna.

Kosovo*, Serbia and Macedonia with Montenegro. Connectivity of these countries with Albania will also improve.

The rationale for the project also includes:

- The existing traffic flows (i.e. AADT 11,549 at Zahaq - entrance to Pejë) already exceeded the threshold level for highways; projected traffic flows show increases of 41.8 % and 37.0 % in 2020 and 2035 respectively. The Project will reduce traffic congestions;
- 20 settlements along the Existing alignment are affected by exceedance of noise levels and reduction in air quality. Measured Noise limits are found to be outside the defined limits; measured maximum values of PM_{10} are also above the allowed thresholds; the average values of all measured parameters, however, were found to be within the allowed limits. Reduction of air pollutants` emissions and traffic noise along the existing road N9 is expected, due to the transfer of the main traffic to the new motorway.
- A poor separation of different traffic forms is found in and outside settlements. In many settlements bisected by the road N9 route, no separation exists between the road and pedestrians' areas, exits to residential and commercial buildings, parking lots etc The Project will contribute to a significant improvement of road safety.
- Reduced travelling time and improved access to services and facilities across Kosovo is foreseen. The motorways will also offer rest and relaxation as well as facilities for refueling to the passengers on longer distances.

10.2.2. Project Development and Planning History

The Spatial Plan of Kosovo* (2005 – 2015), aims to connect Kosovo to the main road corridors of the region and the rest of Europe and strengthen internal traffic connections. Route 6 and 7 are considered of prime importance to the Government of Kosovo* as they constitute the main links to the neighbouring capital cities and to the regional transport network in South East Europe. At the same time, these Routes connect main cities and economic centres within other settlements in Kosovo.

The Project has been considered by previous planning activities, including: Feasibility Study for developing Routes 6 and 7 (COWI, 2006); Detailed Designs for upgrading sections of the road N9 Kijevë-Dollc[109] and Klinë -Pejë[110]. The Detailed Designs presented an extension of the existing road N9 and its conversion into a motorway with a 2x2 lane profile. An offline solution was proposed for the section starting near Kijevë and connecting, after 6,2 km, to the existing road N9. The route deviated from the existing road N9 Alignment to avoid sensitive areas (existing buildings and cultural heritage sites).

[109] 2014, SOE 3D Project, Pristina

[110] 2010, IDEAL Project Pristina

In 2016 a Pre-Feasibility Study was developed to analyse, among others, the comparative advantages and disadvantages of four alternative Alignments, including those defined by the Detailed Designs in 2010 and 2014 respectively.

Figure 107 Kosovo* Road network and the Project Approximate Location

Details with respect to consideration of alternatives and Route selection are provided below.

10.2.3. Route Selection and Consideration of Alternatives

During the feasibility stage of the project following alternatives have been identified and assessed:

- Zero Alternative (“Doing Nothing” Scenario)
- Widening of the existing road (for which detailed design has been prepared, please see above section 1.3.1, “Project History”),
- Southern Alternative
- North Alternative 1
- North Alternative 2

The purpose of this assessment was to determine, at an early stage in the Project, if the alternative Alignments could provide a high class safe transport, having the capacity to fulfil forecast traffic demand and an optimal environmental and social impact. Four alternative routes were analysed: Existing Alignment (road N9), Southern and Norther Alignment 1 and 2. For offline Alignments it was considered that the current traffic will transfer to the motorway, while the existing road N9 will service the local transport and adjacent properties.

The following criteria have been applied:

- Engineering solution (design speed, structures, flood damage risks etc.)
- Environmental Impact or Mitigation (number of crossings over water courses, area of sensitive habitats, noise and air pollutants` emission)
- Social Impact (number of directly affected settlements, road safety issues, accessibility of services and facilities etc.).
- Compliance with the requirements of EU Regulation 1315 (i.e. High Class Road)

Each Alignment was compared for its ability to meet the specific criterion:

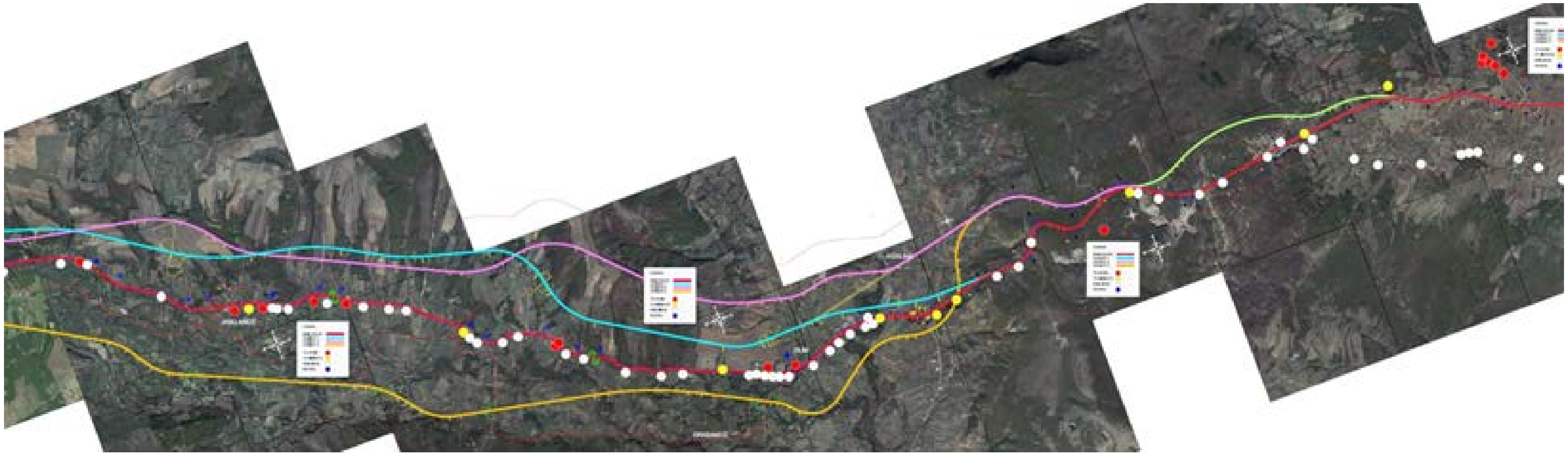
- Score 1 for meeting the criterion fully.
- Score 2and 3 for appropriately meeting the criterion
- Score 4 for being totally unable to satisfy, or in any reasonable way partially meet the criterion

The considered section of the Existing Alignment (road N9) is approximately 30km long; Various "hotspots" have been identified within the immediate vicinity of this Alignment, raising environmental and social concerns. These "hotspots" have been identified as per category (residential buildings, businesses, cultural heritage, sensitive habitats etc.). Numerous properties adjacent to the alignment were to be affected by noise and air pollution. Due to lowering speed limits (60kph) in crossed settlements, a high class road will not be achieved. In the absence of an alternative road, access to properties and community services of larger towns will be impeded for the population and vulnerable groups during construction.

The Southern Alignment is an offline solution situated to the south of the existing road; there aren't any "hotspots" found within the Alignment's footprint, however, some flood risks were anticipated for the section running onto the Bistrica e Pejës River flood plain as well as sensitive habitats were to be disturbed.

Both Northern Alignments are running offline (to the north of the existing road); there aren`t any "hotspots" found within the Alignment's footprint, the environmental and social risks are considered to be minimal.

The map with all the considered alternatives is shown in Figure 4.



	Avoid – monument, graveyard, church, rare plant
	Mitigate – forest, pasture, river habitat
	School
	Quarries, borrow pits, dump sites
	Buildings, Non-Residential Properties (businesses) likely to be impacted

Red – online of existing road
Other – offline alternatives

Figure 108: Road "Kijëvë – Dollc (Klinë) – Zahaq" Alternative Alignments with Indicated Environmental and Social "Hot Spots" for the Existing Alignment

The summary of the assessment of alternatives is heighted in Table 1 below.

Table 162: Analyses of Alternatives - Summary

	Southern Alternative	Northern Alternative 1	Northern Alternative 2	Existing Design
Acceptable Engineering solution	Yes 1	Yes 1	Yes 1	No 4
Acceptable Environmental Impact or Mitigation	No 4	Yes 1	Yes 1	No 4
Acceptable Social Impact	Yes 1	Yes 1	Yes 1	No 4
Fulfils requirements EU Regulation 1315 ie High Class Road	Yes 1	Yes 1	Yes 1	No 4
Score	7	4	4	16

The two North Alignments (1 and 2) were very similar and therefore they were submerged and refined into one Alignment. The single North Alignment showed significant technical and engineering, as well as environmental and social advantages to the Existing Alignment. Therefore, it was selected as the best alternative.

10.3. Project Description

The Project includes several phases of implementation: design, construction and operation. At the time of publication of this NTS (December 2016), the Project is in the conceptual design stage. The next stages will include Preliminary and Detailed Design, land acquisition and development of tender documents. It is intended that construction will commence in first quarter of 2018 with an anticipated 2.5 years` construction period, meaning that the road should be operational by mid-2021.

The ESIA conducted covers all the phases of the project; an ESIA update is planned along the next design stages to incorporate any changes of the Alignment and associated structures throughout a design change management system to be established. Since this new road is a strategic component of Kosovo* roads` network, a decommissioning phase had not been considered or assessed. Any future decommissioning of the road will require a detailed decommissioning plan which sets out commitments on removal and disposal of infrastructure components, restoration of topsoil and vegetation, and the rehabilitation of the landscape.

10.3.1. Section Kijevë – Klinë - Zahaq

The current N9 road between Kijevë – Klinë - Zahaq is a 2-lane single carriageway pavement over its full length 930km), with a width of between 6.5 m and 7.0 m. The Project (planned motorway) will be a dual-lane carriageway designed to comply with national and international standards and specifications, with a design speed of 100-120 Km/hr. The Alignment of the Project is located at a distance of up to 1.5 km and runs to the north of the existing road N9. The existing road N9 will be used as a parallel and secondary road. No interventions to the existing road are planned within the scope of the Project.

The Project will form part of the east-west Route 6, between Pristina and the border with Montenegro. Pristinë and Pejë are the primary urban centres along the corridor. The motorway crosses the territory of the municipalities Klina and Peje.

The Alignment starts near Kijevë (38 km west of Prishtinë) north to the village of Kijevë and ends at the village of Zahaq, 7 km east of the town of Pejë. It extends through two valleys: Fusha e Kosovës, formed by the Drenica creek, (a tributary of the Sitnica River) and Dukagjini Valley, shaped by the rivers Drini I Bardhe and Bistrica e Pejës. Bistrica e Pejës River runs in parallel with the Alignment. It approaches the river to a distance of 200 m and crosses over its upper terrace at the section Km 16+000 – Km 17+000. The existing road N9 is located in between the new motorway and the river.

The initial section of the Alignment rests upon a flat plateau; the terrain then gradually descends towards the Drini I Bardhe riverbed and then ascends mildly to higher elevations towards Pejë. The difference between the lowest (370 m) and the highest (615m) elevations of the corridor is 245m. The typical land use pattern presents as agricultural and pasture land with some meadows and patches of forest.

Land use on flat and open terrain predominantly centres around agricultural plots and orchards. Pastures and scattered forests are the prevailing feature of hilly terrain. According to available information, most of the land is privately owned.

13 settlements are located along the motorway Project: Dollc, Zajm and Drenoc (bisected) and Drsnik, Jabllanicë, Kliçinë, Leshan, Lugagji, Gllaviqicë, Ramun and Zahaq; the Route also crosses the northern part of the villages Pjetërq I Epërm, Pjetërq I Poshtëm; the barrier effect for this section is negligible. The Route crosses one regional (R 104) and several local roads; connecting to the existing road is enabled via interchanges while the continuity of the network of local roads is ensured by either underpasses or overpasses.

A Right-of-Way (or ‘road reserve’) 20 m each side of the Project will be established with restrictions being placed on certain activities within a buffer of 60 m width.

All Project associated structures are indicative due to the early design stage. Nevertheless, the following main structures are part of the Project:

- bridge near Klinë (km 13+550) over Drini I Bardhe (100 m) (Table 2)
- Viaducts at km 25+000 km 27+000 (to cross over ravines) (Table 2).
- A system of side ditches and 43 pipe / box culverts to drain the pavement surface waters and cater for crossing watercourses is foreseen (Table 2); oil interceptors and/or attenuation ponds at the discharge points to the final recipients are not analysed yet at this stage of the design;
- six grade separated interchanges are planned at chainages km 2+900, km 6+740, km 12+900, km 14+950, km 20+050 and km 28+100 (Figures 5 and 6).
- Overpasses / underpasses are placed at chainages: Km 0+450 (road is branching from the existing road N9 and providing access to a few Residential Properties); Km 3+200 (connects the existing road N9 with the village Uje Mire); Km 3+800 (connects villages Drsnik and Qabiq); Km 9+011 and Km 9+888, (connects quarries which are located at either side of the Route); Km 10+134 (connects the existing road N9 with Drsnik), Km 12+548 (the road connects N9 with Drsnik), Km 13+116 (connects N9 and Perline), Km 13+409 (connects N9 and Klinë), Km 13+924 (connects N9 and Klinë), km 14+486 (connects N9 and Perline) and km 14+955 (N9 and Perline); km 13+380 (links the existing road N9 and Klinë); km17+126, km 17+287, km 18+597, km 19+423, km 19+792, km 19+928, km 20+272, km 22+368, km 17+712, km 19+225, km 20+650, km 21+301 and km 22+857 (connects the existing road N9 with the network of local roads leading to agricultural properties and the settlements Jagode and Paskalice); Km 23+551, Km 28+431, Km 24+409, Km 25+659, Km 26+366, Km 28+169 and Km 29+635 (connections between the existing road N9 and the properties in settlements Nabergjan and Budisalc) (Figures 5 and 6).

Table 163: Position of bridges, viaducts and culverts along the Alignment

No.	Type of object	Chainage	No.	Type of object	Chainage
47.	Pipe culvert, d=1000mm	Km 0+850	48.	Pipe culvert, d=1000mm	km 18+320
49.	Box culvert, h / b = 3.00 m / 2.00 m	km 1+300	50.	Box culvert h / b = 3.00 m / 2.00 m	km 18+830
51.	Box culvert h / b = 3.00 m / 2.00 m	km 2+200	52.	Pipe culvert, d=1000mm	km 19+170
53.	Pipe culvert, d=1000mm	km 2+600	54.	Pipe culvert, d=1000mm	km 20+070
55.	Pipe culvert, d=1000mm	km 4+400	56.	Pipe culvert, d=1000mm	km 20+650
57.	Pipe culvert, d=1000mm	km 5+130	58.	Box culvert h / b = 3.00 m / 2.00 m	km 21+050
59.	Pipe culvert, d=1000mm	km 5+650	60.	Pipe culvert, d=1000mm	km 21+700
61.	Pipe culvert, d=1000mm	km 5+900	62.	Pipe culvert, d=1000mm	km 21+970
63.	Pipe culvert, d=1000mm	km 6+600	64.	Pipe culvert, d=1000mm	km 22+670
65.	Box culvert h / b = 3.00 m / 2.00 m	km 6+920	66.	Pipe culvert, d=1000mm	km 22+800
67.	Box culvert h / b = 3.00 m / 2.00 m	km 8+520	68.	Pipe culvert, d=1000mm	km 23+450
69.	Box culvert h / b = 3.00 m / 2.00 m	km 12+650	70.	Pipe culvert, d=1000mm	km 24+150
71.	Pipe culvert, d=1000mm	km 12+900	72.	Viaduct, L=250m	km 24+900
73.	Bridge, L =100m	km 13+550	74.	Pipe culvert, d=1000mm	km 25+430

No.	Type of object	Chainage	No.	Type of object	Chainage
75.	Pipe culvert, d=1000mm	km 14+050	76.	Box culvert h / b = 3.00 m / 2.00 m	km 26+130
77.	Box culvert h / b = 3.00 m / 2.00 m	km 14+400	78.	Viaduct, L=450m	km 26+850
79.	Pipe culvert, d=1000mm	km 14+700	80.	Pipe culvert, d=1000mm	km 27+430
81.	Pipe culvert, d=1000mm	km 16+180	82.	Box culvert h / b = 3.00 m / 2.00 m	km 27+770
83.	Box culvert h / b = 3.00 m / 2.00 m	km 16+730	84.	Pipe culvert, d=1000mm	km 28+000
85.	Pipe culvert, d=1000mm	km 17+200	86.	Pipe culvert, d=1000mm	km 28+600
87.	Pipe culvert, d=1000mm	km 17+670	88.	Pipe culvert, d=1000mm	km 28+900
89.	Pipe culvert, d=1000mm	km 17+940	90.	Pipe culvert, d=1000mm	km 29+200
91.	Box culvert h / b = 3.00 m / 2.00 m	km 18+150	92.	Pipe culvert, d=1000mm	km 29+970

Excavated material from cuts balances the quantity of material required for the embankments. Between km 8+000 and km 12+500 the motorway passes through hilly terrain, which requires significant cuttings, particularly in the section km 10+000 to 12+500. This section of the Alignment descends from the hills down to the plain east of Klinë, at a gradient of 5%; the cuttings will be in the order of 40m high. The majority excavated material will be excess to requirements (Cuts=7.600.000,00m^3 and Fills =2.700.000,00m^3)

The disposal sites for the surplus material are not defined yet and it is expected that, following the geo-mechanical investigations, their locations, accesses, drainage and disposal method will be defined at the Preliminary Design stage.

Existing borrow pits will be used to obtain aggregate for the construction of the road; requirement for new borrow pits will be defined during the Preliminary Design stage. The Contractor will finally select the borrow pit locations during the Detailed Design phase. Approvals for operation of new borrow pits will be applied in line with the Law on Mines and Minerals.

Hydrographical and hydrological analyses have not been conducted in the catchment of the proposed road section for the Drini I Bardhe and Bistrica e Pejës rivers and its tributaries. To reduce flood risk, flood modelling will be carried out for the 50, 100 and 1000 year floods during the Preliminary Design stage, to set the alignment above the 1000-years` flood line.

The Alignment and the indicative locations of associated structures (underpasses, overpasses, interchanges, bridge, culverts and surplus material disposal sites) is shown in Figures 5 and 6.

Figure 109 Outline of the Section Km 0+000-Km17+000

Figure 110 Outline of the Section km17+000-km 31+000

10.4. Construction of the Motorway

The construction schedule shall include the following activities:

- Site Establishment Works: clearance of vegetation; stripping and stockpiling of topsoil; construction of temporary access roads to facilitate excavations for shaping the major cuts; establishment of the construction camp(s) and storage compounds as well as vehicle and equipment maintenance areas; stockpiling aggregate and allocating routes for heavy truck movements;
- Construction of Major Road Elements: bridges and culverts, underpasses/overpasses and interchanges, appropriate traffic management and sediment control; erection of fences;
- Construction of the Motorway: shaping cuts (including blasting activities, where appropriate), construction of embankments, shaping of slopes, execution of bonding layer, execution of the upper wearing course;
- Site Remediation: removal of redundant erosion and sedimentation controls and landscaping (including hydro-mulching and seeding of cuts/fills; establishing fast growing cover crops on leftover surplus material disposal sites).

For the construction, the following materials will be used: gravel, geo-composite, concrete, reinforcement and zinc - plated net, plant seeds and topsoil. The removed topsoil shall be preserved so it can be used for re-vegetation. The fill, the sub-base and the base will be made of gravel mostly obtained from the cuts.

Construction camps will be established outside settlements and will avoid sensitive habitats. There will be at least one Construction Site Manager, Site Engineer and Site Supervisor employed and approximately 40-60 workers will work on the construction of the motorway. The workforce will be managed in accordance with the Kosovo* labour laws and health and safety regulations. The majority of labourers are likely to come from local villages. The total construction phase will take around 2.5 years. Construction is planned to begin in the first quarter of 2018.

10.5. Summary of Environmental, Social Legal and Policy Framework

10.5.1. Kosovo Legal Framework for Environmental and Social Protection

The environmental legal framework within Kosovo* contains overarching laws covering areas for: Environmental Protection, Water, Waste, Nature Protection, Noise Protection, Air Quality, Integrated Prevention and Pollution Control (IPPC) and Cultural Heritage, which transpose the main obligations of the environmental EU Directives.

The key legislation for protection of the environment, is the Law on Environmental Protection (03/L-025). The requirements of the EU EIA Directive 85/337/EEC (as amended by Directive 2014/52/EU) have been transposed within the Law on Environmental Impact Assessment (No. 03/L-214).

With regards to social aspects, there are national laws covering Health Protection, Occupational Health & Safety, Labour Relations, Occupational Safety, Employment, Social Protection, Land Acquisition, Cadastre etc.

The law on Road and Traffic Safety, Law on Roads, Cultural Heritage, Expropriation of immovable properties etc., are of particular interest for the project.

Kosovo* has not been recognised by treaty depositaries as a state that can ratify treaties and international conventions. However, most of the International Conventions with regard to the Environment, Public Participation and Labour issues have been translated in the Kosovo* national legislation.

10.5.2. Summary of ESIA Procedure and Permitting Process

The Environmental Impact Assessment procedure has been referenced into the Law on Environment Protection (Chapter II, Articles 9, Chapter IV, Article 29 and Chapter VI, Article 57) and prescribed on the Law on Environmental Impact Assessment (EIA) (No. 03/L-214). The public disclosure is regulated with the Administrative Instruction for information, public participation and interested parties (No: 09/2011).

The procedures for the EIA approval are defined in Chapter III of the Law on Environmental Impact Assessment (No.03/L-214). EIA procedure includes the following phases: (1) screening; (2) scoping; (3) review of EIA Report and (4) Public Consultation.

The period pf Public Consultation, according to the Administrative Instruction on information, public participation and interested parties in the environmental impact assessment procedures (No.09/11) is 30-40 days. The public consultations for the Project will adhere to the principles of EIB/EBRD and will last 120 days.

In regards to the Permitting process, responsible institution is the MESP. It is in charge of issuing various consents, approvals and permits at different stages of the Project planning process such as:

- Environmental Consent (approval of the ESIA Study), in accordance with the EIA law;
- Approval of the Infrastructure Plan, required by the Law on Spatial Planning for the transport infrastructure;
- Water Permit upon bridge construction, opening new mines (quarries) and / or waste disposal sites;
- IPPC permit, required by the Law on IPPC, for newly opened quarries with the capacity of 100,000 tonnes per year (for underground exploitation) or 25 ha (open-pit mining);
- Construction Permit.

In addition, the Independent Commission for Mines and Minerals is in charge of issuing Licenses for operation of new borrow pits.

10.5.3. Legal Framework for Land Acquisition

The procedure of land expropriation and resettlement in Kosovo is regulated primarily by the Law on Expropriation of Immovable Property No. 03/L-139, adopted in 2009, and amended by the Law on Expropriation of Immovable Property No. 03/L-205. The Law outlines the procedure, including remedies, to safeguard individuals from disproportionate interferences with the right to immovable property.

The other relevant laws regulating the expropriation are: Law on Property and Other Real Rights (No. 03/L-154); Law on Amending the Law on Protection and Promotion of Rights of Communities and their Members in Kosovo (No. 03/L-047); Law on the Use of Languages (No. 02/L-37); Law on Anti-Discrimination (No. 2004/3); Law on Gender Equality (No. 2004/2); Law on Spatial Planning (No. 04/L-174); Law on Construction (No. 04/L-110).

EBRD Requirements

Land acquisition for the Project shall be undertaken in line with EBRD's Environmental and Social Policy (20014), Performance Requirement (PR) 5, which covers Involuntary Resettlement and Economic Displacement. According to PR5, people with and without legal title, who are directly affected by the Project, are entitled to compensation. PR5 also requires a process of consultations with the affected people, to ensure that the final agreed price corresponds to the EBRD requirement of replacement value thus enabling the project affected persons to purchase property of similar quantity and quality.

PR5 contains the following four key objectives for land acquisition and involuntary resettlement, which are applicable to this Project:

- All feasible alternative project designs should be explored to avoid or at least minimise physical and/or economic displacement, while balancing environmental, social and financial costs and benefits;
- Adverse social and economic impacts from land acquisition or restrictions on affected persons` use of and access to land should be mitigated 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 informed participation of those affected;
- To improve or, at a minimum, restore the livelihoods and standards of living of displaced persons and standards of living of displaced persons to pre-project levels, through measures that can be wage-based and/or enterprise-based, so as to facilitate sustainable improvements to their socio-economic status;
- To improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites

10.6. Stakeholder Engagement Activities during the ESIA development

Interaction with the local government /affected municipalities took place at several occasions. and for two main purposes:

- Introducing the Project to authorities and general public and collecting their views
- Gathering relevant information on Baseline Conditions of environmental and social resources.

The interaction with stakeholders (2015 and 2016) included the following:

- Presentation of the Project to the Mayors and relevant public administration of affected municipalities (Klina and Peje), May / June 2015;
- Presentation of the Project to national authorities (Ministry of Environment and Spatial Planning, Kosovo Environmental Protection Agency, Institute of Hydrometeorology and Ministry of Culture, Youth and Sport), May / June 2015;
- Workshop on Potential Project Alternatives, October 2015;
- Consultations with the regional employment centres in Klina and Peja, December 2015;
- Survey of households and businesses, aiming to supplement statistical information on affected communities;
- Workshop on Considered Project Alternatives and Preliminary Environmental and Social Impact Assessment, (Pre-Feasibility stage), February 2016;
- Scoping Workshop, to present the Project, considered alternatives and the scope of Environmental and Social Impact Assessment (ESIA) to the identified national and local stakeholders;

During the period of March-May 2016 the social survey was conducted. At the time when the survey was designed, there was no final decision on the preferred alternative so the survey was undertaken to gather data on both alternatives.

The target groups (covering 335 representatives of affected communities) were the following:

- Households of the affected settlements for two alternatives (existing road N9 and Northern Alternative) separately
- Businesses located in the footprints of both alternatives
- Representatives of affected Settlements

All previous stakeholder engagement activities fed into the preparations of the Scoping Workshop. The objectives of the scoping workshop were to:

- To introduce the Project and initial findings on Environmental and Social Baseline Conditions;
- Understand the local circumstances regarding the social and economic development of the region / municipalities and opportunities for further development after the Project implementation;

- Discuss the possible environmentally sensitive areas along the motorway corridor and any “hot” environmental issues already identified earlier; and
- Discuss the best suitable consultation methods and ways in which the public can participate in open, proactive manners.

The stakeholders who attended the Scoping Workshop were supportive to the Project. Some concerns were raised with regard to ensuring connectivity of planned roads in the Municipality of Klinë to the motorway and the road N9. During the next stages it will be assured that the detailed design will align the existing and planned roads so as to enable continuous traffic flows in the area.

A Stakeholder Engagement Plan (SEP) has been prepared to identify the key project stakeholders and plan for stakeholder engagement activities throughout the project life. Stakeholder engagement will be implemented as an ongoing process including public disclosure and consultation of appropriate information so as to enable meaningful consultation with stakeholders and potentially affected parties. They will be able to raise comments or complaints in line with the procedures set out in the SEP.

The responsible person for the implementation of the Stakeholder Engagement Plan is:

Ministry of Infrastructure – Kosovo*,

Mr Rame Qupeva, Head of Road Infrastructure Department

Address: Ex-Germia Building,
10000, Prishtina,
Republic of Kosovo
E-mail: mi.info@rks-gov.net
Tel/fax: +381 (0)38 211 494
Tel.: +381 (0)38 200 28 ext. 505

MI will consider every complaint, and will monitor the implementation of the grievance mechanism and draft appropriate reports which will be made publicly available on its website.

Workers will have a separate grievance mechanism as a part of the human resources management function. A grievance mechanism will also be established for the employees of construction companies.

10.6.1. Land Acquisition and Resettlement Planning Process

A Land Acquisition and Resettlement Framework (LARF) has been prepared. It sets out the commitments of MI relating to land acquisition, resettlement and livelihood restoration which will ensure compliance with both applicable Kosovo* legislation and the requirements of the EIB/EBRD policies outlined above.

The LARF includes a Project description, analysis of expropriation law and policy related to land acquisition, the principles and the course of compensation, an entitlements matrix and information on the consultations process and grievance mechanism.

The information to execute land acquisition is not available at the Conceptual Design stage. At the Detailed Design level, a separate Land Expropriation Study and Topographical Study will be prepared that will provide exact area and costs of the land intended for expropriation. A detailed census of inventory and a socio-economic study will also be carried out to identify all the affected people, affected property, and to develop a better understanding of the scale and nature of the impacts. Compensations for the residential and non-residential buildings to be demolished (if any) will also be determined. Special attention will be paid to the needs of vulnerable groups. The studies will inform the subsequent preparation of a specific and detailed Resettlement Action Plan (RAP). Land acquisition and resettlement will be carried out in accord with the RAP.

10.7. Summary of Baseline Environmental and Social Conditions

10.7.1. Environmental Baseline

Setting

The section of the route between km 0+000 and 15+000 spreads through the Drenica Valley. It is a long valley through which the Drenica creek, a tributary of the Sitnica River, flows. The valley forms the north-western part of the Fusha e Kosovës and stretches from the left bank of the Sitnica westward to the border with the Dukagjini Valley. The section of the Route between km 15+000 and 31+000 passes through the Dukagjini plain that begins at the Mokna Mountain in the north and continues down to the Sharri Mountains in the south. Dukagjini region (plain) is formed by the valleys of the rivers Drini I Bardhe and Bistrica e Pejës. The land use pattern, morphological conditions and visual aspects determined the presence of three types of landscape units: Agricultural landscape on wavy terrain (semi-natural landscape), Agricultural landscape on floodplains (anthropogenic landscape) and Landscape consisting of hilly thermophilous broadleaf forest (semi-natural and natural landscape). An overall medium sensitivity is attributed to these landscapes due to the evident landscape modification by anthropogenic influence.

Biodiversity

Both natural and anthropogenic habitats are present along the route. A classification of habitats and mapping was conducted using the standard EUNIS[111] criteria (Figure 7).

The natural and semi natural habitats are: **Thermophyllous forests of Oriental hornbeam and White oak, Grasslands and Meadows, Riparian willow and poplar woodlands,** as well as **Italian and Turkey oak forests; Aquatic Habitats** are presented by **Large rivers.**

Anthropogenic habitats are: **Agricultural land, Abandoned Arable Land, Ruderal Vegetation, Orchards, Black Locust's (Robinia pseudoacacia) stands, Mixed stands of native and introduced tree species, Lines of trees, Settlements and industrial sites.**

111 http://eunis.eea.europa.eu/habitats.jsp

The first section (Kijevo-Klinë) is characterized by dominance of agricultural land with scattered patches of Italian and **Turkey oak forests, Oriental hornbeam and White oak**. The second section (Klinë -Pejë) is dominated by agricultural land with **Italian and Turkey oak forest** patches and **poplar and willow woodlands** in the Plain of Bistrica River (Bistrica e Pejës). Human settlements and business are present in both sections.

There aren`t any protected or designated areas located within the project corridor. There is only one monument of nature which is found within the corridor of 2x500 meters measured from the motorway axis. It is single tree which is known by the authorities in charge of the project. It is not expected that the motorway can impact this monument of nature either during the construction activities or operation.

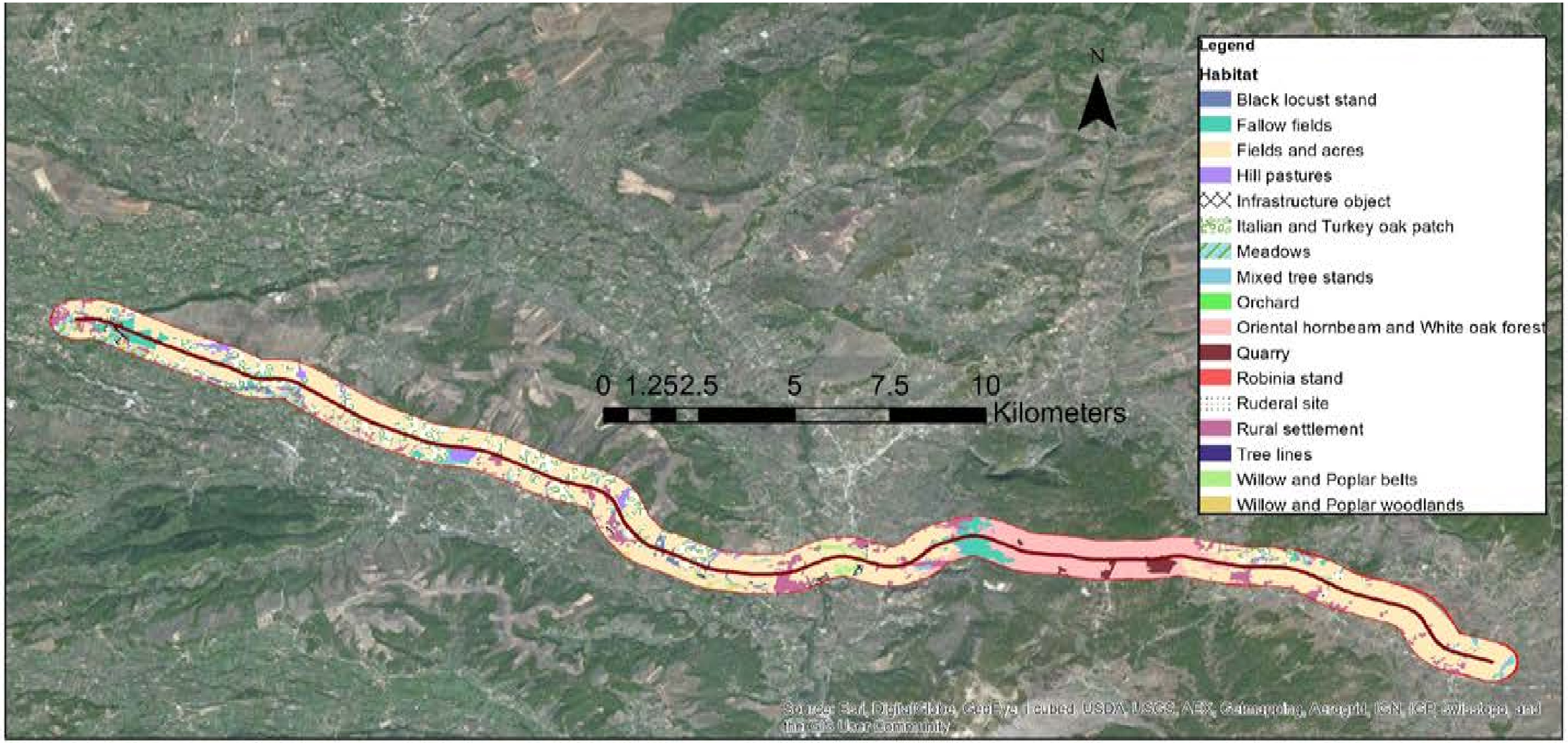


Figure 111 Overview of habitats within the Project Corridor

Sensitive habitats identified along the route are Riparian willow and poplar woodlands. The exact area of their potential destruction is not known. During the next design stages considerable efforts will be made to avoid and/or minimise their destruction.

Water Resources

Drini I Bardhe River is of good quality at the source, but it deteriorates in the downstream sections. At the confluence of Klinë River, which is located 1km upstream of the crossing points of the motorway and the Drini I Bardhe River, the water quality has already worsened. At the monitoring stations Drini I Bardhe-Klinë and Drini I Bardhe-Gjonaj, allowed limits for IV class have been exceeded for COD-Cr, Ammonium NH4-N and Orthophosphate (in 2013 and 2014). This situation continues down to Vllashnje at the point of flow into Bistrica i Prizrenit[112]. The main polluting source is the urban wastewater and to a lesser extent diffuse pollution from agriculture.

Groundwater quality in the Project area is not monitored at present. A significant share of the affected population is supplied with potable water from private wells, (which are located in the south of the Alignment); therefore, groundwater is highly sensitive to run-off discharge from the carriageway. A survey will be executed at the Preliminary Design stage to identify the population using private wells for water supply. It shall be coupled by sampling of drinking water and the samples will be checked against the parameters set in the Administrative Instruction of Kosovo for the quality of drinking water.

Air Quality and Noise

Baseline air quality and nose levels have not been measured in the Project area. Instead, air pollution dispersion model ImmProg2000[113] and a Traffic Noise Screening (TNS) procedure, that is based on the computerized Federal Highway Administration's (FHWA) STAMINA2.0 noise prediction model[114], have been applied.

The air pollution dispersion model has been used to identify sensitive receptors; these are found within a buffer of 100m at either side of the alignment.

The TNS screening has generated predicted noise levels, which are found to be in the range of 68-70 dB(A) at a distance of 15m from the Alignment The screening tool provided information regarding the noise abatement with distance, showing that in 80 m from the Alignment the noise levels will be within the permissible limits for residential areas (55 dB(A). Consequently, all receptors located within a buffer of 80 m are sensitive to excessive noise.

Cultural Heritage

[112] Report on the state of water in Kosovo, Pristina 2015, Ministry of Environment and Physical Planning

[113] http://www.airinfo.ch/ImmProg2000E.htm

[114] Federal Highway Administration. *Noise Barrier Cost Reduction Procedures: STAMINA2.0/OPTIMA User's Manual,* 1982; U.S. Department ofTransportation, Demonstration Products Division, Arlington, Virginia, FHWA-DP-58-1.

All known Cultural Heritage sites have identified (within a buffer of 1 km) and had been mapped out. Their location and distance to the motorway of each site is shown in Figures 8 and 9 below:

Figure 112: Cultural Heritage Sites in the Buffer of 1 km of the Motorway

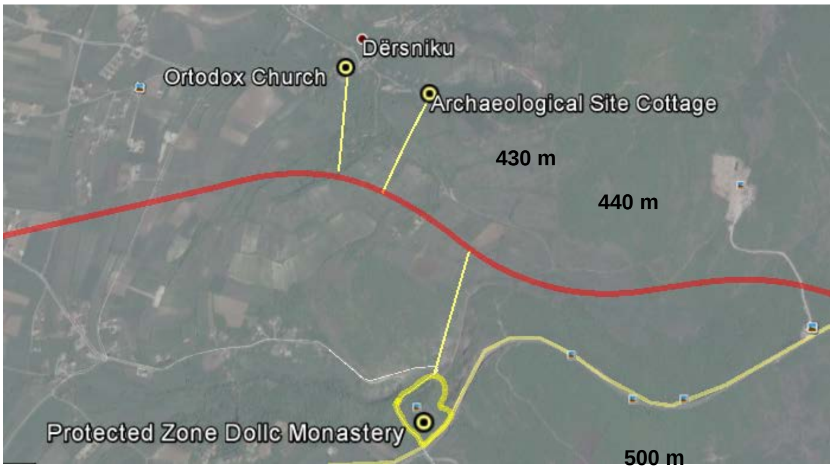


Figure 113: Cultural Heritage Sites in the Buffer of 1 km of the Motorway

None of these will be directly affected by the construction of the motorway. The Contractor will avoid locating Project compounds within or close to these areas.

A reasonable assumption can be made that during the construction activities artefacts of cultural significance will be found. In such cases, all works shall be suspended to enable an archaeological monitoring survey to take place.

10.7.2. Social Baseline

The project is located in the territory of municipality of Klina and Peja. It affects 13 settlements. The Alignment avoids densely populated areas, bypassing the villages Drsnik, Jabllanicë, Kliçinë, Leshan, Lugagji, Gllaviqicë, Ramun and Zahaq. It bisects Dollc, Zajm and Drenoc and crosses a small cluster of houses in the northern part of the village Pjetërq I Poshtëm. The total number of the population residing in the affected settlements is 8,743. Land Use on the project footprint is dominantly Agricultural land with 1,842.5 ha or 58.71% while Artificial areas and human settlements are covering 265.5 ha or 8.46%.

The education level of population115 is with completed primary and secondary education (11.2% and 14.2%), while the religious affiliation is mostly Muslim (80%) and Catholic (17%). The vast majority of population, i.e. 96.55% is with the Albanian ethnic background whereas 4.45% belong to other ethnic groups; out of the others, Egyptian, Ashkali and Roma are represented with the highest share (2.34%).

The major problem in the majority of settlements is the lack of controlled water supply systems and sewerage. In some municipalities, the local roads are not in good shape.

The source of income for households in the affected areas primarily derives from private employment, family-run agricultural production and seasonal work, to a lesser extent. Households do not commercially exploit wood-harvesting, however it drives down total living costs by providing cheap access to heating. Unemployment in the affected municipalities amounts to 47%. Of the total number of able-bodied females, 14.23% are actively employed, whereas among males that proportion is 38.85% of the total number. The unemployment rate in the area significantly outstrips the national average which stands at 24.7%. In the last 5-year period, migration of younger inhabitants in villages found along the Alignment section nearer to Pristina has been especially acute. Villages situated near Pejë have not undergone a similar trend.

The majority of businesses are located along the existing road. Commercial establishments which provide service to passengers (car shops, petrol stations, restaurants, motels etc.) are considered to be “avoided communities”, due to the fact that the major traffic will transfer onto the planned motorway.

[115] Statistical information has been obtained from the preliminary Socio-economic Survey, which was executed in the first quarter of 2016.

The presence / absence of active businesses in the Project footprint will be validated at the Preliminary Design stage, for the refined Route.

Vulnerable groups identified on the project affected settlements are Unemployed/Job seekers/Long term unemployed, People with debt; Young People under the age of fifteen and People at social assistance. Some people with chronicle diseases and with disabilities were also identified. At this point, there is no information about the profile and extent of vulnerability of persons affected by the Project. The presence of Egyptian. Ashkali and Roma ethnic groups in the Project footprint is also yet to be confirmed.

10.8. Environmental and Social Benefits, Impacts and Mitigation Measures

10.8.1. Assessment of Impacts and Benefits

During the ESIA process, the environmental and social impacts were assessed. Assessment topics included: ambient air, water, noise and vibration, biodiversity & habitats and landscape; local communities, employment and livelihoods, access and severance, cultural heritage, community, health, safety and security (including road safety and emergency response) and labour and workforce issues. For each impact, a significance level was determined. The significance of residual impacts that will linger after the application of mitigation measures (residual impacts) is then demonstrated.

The benefits of the Project are summarised below:

- Short-term Local Employment During Construction: The Project could provide short-term opportunities for local employment during the construction period.
- Economic Growth & Improvement of Access: The Project is expected to improve connections with the major economic centres in Kosovo and neighbouring countries, and is an opportunity to stimulate growth and attract further investment.
- Improved education and training for local workforce and improved access of local population to education in Pristinë and Pejë.
- Improved Journey Times & Opportunity to Reduce Rate of Out-Migration: The Project will improve journey times regionally and locally and improve access to employment. This may help reduce out-migration from the local area, which is understood to be a current challenge of the affected Municipalities.
- Improvement of Living Conditions & Community Safety Benefits: The Project will improve the living conditions and community safety of the local communities in area by providing them with improved links to key community services in Pristinë and Pejë. Settlements located along the existing road N9 will see clear improvements in quality of life, air and noise pollution, as well as community safety from the traffic diverting to the new Motorway and bypassing these communities.
- Road Safety Improvements: Road safety improvements will result from better alignment and separation of the Motorway and local traffic.

The potential adverse effects are summarised in the table below along with the proposed key mitigation measures and an assessment of the residual level of effects assuming measures are implemented:

Table 164: Summary of Impacts, Gaps / ESIA update, Mitigation Measures and Residual Impacts` Significance

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
Environment			
Soils and Geology	Construction phase • Impairment of soil quality due to introduction of pollutants; • Soil erosion due to clearance of vegetation and earth movements; • Soil loss and degradation due to opening borrow pits and forming excess material disposal sites • Destruction of fertile top soil. Operation phase • Impairment of soil quality (soil contamination) due to the introduction of pollutants from road surface runoff; • Soil erosion in cuts / fills devoid of vegetation.	Gaps: • Soil erodibility and erosion potential; • Locations of borrow pits and surplus material disposal sites; ESIA Updates: • Detailed geo-mechanical investigations **Mitigation measures:** Pre-Construction phase: plans to be developed by the Contractor: • Sedimentation and Erosion Control Plan; • Safe Management of Hazardous Materials and Spill Prevention Program, and • Waste Management Plan Construction phase • Minimise the quantity of uncontaminated storm water entering cleared areas • Reduce water velocities • erosion control measures Operation Phase • Develop and implement a Chemical Accident and Spills Management Program	Negative risk of **slight significance** reduced further with proper design and management controls during construction and operation.
Water Resources	Construction Phase: • Impairment of water quality due to the introduction of pollutants • Leaks and accidental spills of fuel and lubricants from construction machinery • Accumulations of excessive amounts of sediments in watersheds Operation phase • Impairment of water quality due to the introduction of pollutants in the runoff • Accidental spills of transported hazardous substances and lubricants • Alteration of flow patterns and sediment deposition during flooding periods	Gaps: • hydraulic analyses; flood risk • groundwater vulnerability; quality of groundwater used for water supply using private wells ESIA Updates: • hydro-geological analyses and sampling of groundwater quality **Mitigation measures:** Pre-Construction phase • Proper design of drainage and the bridge over Drini I Bardhe Construction phase • Management and control measures to prevent erosion and discharge of pollutants Operation Phase • Maintenance of the drainage systems	Negative impacts of **moderate significance** reduced with proper design and management controls during construction and operation
Air Quality	• Construction phase: emissions of dust from working areas, access roads, stockpiles and during loading/unloading activities; emissions from batching plants; exhaust emissions from construction machinery; emissions due to peaks in traffic	Gaps: • Baseline air quality within the Project footprint ESIA Updates: • baseline air quality measurement and modelling • update of air quality assessment and mitigation **Mitigation measures:**	During construction - Negative impacts of already **slight significance** reduced

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
	movements. • Operation phase: Emissions of particulates, gases, volatile organic compounds, and other hazardous air pollutants may result from increased road traffic. However, the traffic will increase along the existing road N9 without the Motorway Project.	Pre-Construction phase: plans to be developed by the Contractor: • Dust Management Plan • Construction Traffic Management Plan Construction phase • Standard construction measures to reduce dust (wetting down dusty areas, covering vehicles, etc.). Operation Phase • The Project generally moves through-traffic farther from settlements, and may reduce emissions levels at key community receptors. • Air quality monitoring	further with effective contractor management. Slight significance impacts during operation expected; the impact`s significance should be checked during the next design stages.
Noise &Vibration	• Construction phase: Increased noise levels from construction plant and activities, especially blasting and rock breaking during excavations. • Operation phase: Noise levels increasing from increased traffic flows within a buffer of 80 meters along the alignment. The Project generally moves through-traffic farther from settlements and may reduce levels at sensitive community receptors.	Gaps: • Baseline noise within the Project footprint ESIA Updates: • Detailed Noise and Vibration Study: noise measurement and modelling; update of noise assessment and mitigation; land take requirements for noise barriers. **Mitigation measures:** Pre-Construction phase: • A detailed design of noise barriers • Contractor to develop a Construction Traffic Management Plan Construction phase • Management controls typical for construction work including: notification to local communities, and use of protective equipment • Erection of noise barriers Operation Phase • Maintenance of noise barriers. • Noise monitoring	During construction - Negative impacts of **moderate significance** reduced to **slight significance** with effective contractor management. **Moderate** significance impacts during operation expected. the impact`s significance should be checked during the next design stages
Biodiversity	Construction phase: • Habitats loss (direct destruction) Operation phase: • Habitats fragmentation	Gaps: there aren`t any gaps. ESIA Updates: No update is needed. **Mitigation measures:** Pre-Construction phase: • The design of the Bridge and Box and Pipe culverts to provide for connectivity of habitats and avoid creating obstacles for migration of animal species • The Contractor to develop a revegetation plan Construction phase • Contractor access prohibited from all sensitive habitat areas, except what is necessary to create Motorway. Good construction controls built into construction contract. • Afforestaion activites to be performed in line with No net loss principle, i.e prepartion of Revegetation Plan. Reparian vegetation along the Drini I Barde river to be restored Operation Phase • A regular control and maintenance of drainage structures shall be conducted to check they	Negative impacts of **slight significance** further reduced with proper design and management controls.

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
		do not become clogged with debris or sediments. Regular maintenance activities will also include: protective fence maintenance, removal of food, waste, animal carcasses, etc. from roads, in order to reduce the attraction of scavengers.	
Landscape &Visual	• Construction Phase: Alteration of landscape scenery by the presence of construction works, construction camps and other auxiliary facilities • Operation phase: Alteration of landscape scenery by the presence of the motorway (cuts and the structures – bridge, viaducts, underpasses, overpasses, culverts etc.).	Gaps: there aren`t any gaps. ESIA Updates: No update is needed. **Mitigation measures:** Pre-Construction phase: Designers to implement the following principles: • minimising extents of earthworks; • reflecting existing landform as much as possible in earthworks: • avoiding sensitive habitats; • minimising impacts on local hydrological systems; • reducing fragmentation of local and regional flora and fauna corridors Construction phase • Screening of construction sites at sensitive locations (e.g. near villages), camps and areas, and management of temporary stockpiling locations on site. • Shaping of the terrain around altered impacted areas so as to recreate the surrounding land morphology; • Vegetating the surplus material disposal sites with autochthonous species adapted to the resulting valley conditions; • Any borrow pits opened for the construction of the motorway, will be reinstated at the end of the construction works and replanted; Operation Phase • No measures are foreseen.	Negative risk of **slight significance** reduced further with proper design and management controls.
Cultural Heritage	Construction phase • Destruction of non-identified buried archaeological sites; Operation phase • Plundering of archaeological sites	Gaps: there aren`t any gaps. ESIA Updates: No update is needed. **Mitigation measures:** Pre-Construction phase: • All permits to be obtained; • Develop Cultural Heritage Management Plan; • Training to construction workers Construction phase • archaeological monitoring survey to be conducted; • Implement Cultural Heritage Management Plan; Operational Phase • Administrative measures to prevent plundering of archaeological site discovered along the motorway alignment	Negative risk of **moderate significance** reduced further with proper management controls to **slight significance**.
Social			
Land acquisition	Construction phase • Temporary Impacts on Land Property	Gaps: • Number of people directly affected by the Project;	Negative risk of **large significance** would

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
and property	o Loss of land o Livelihoods Permanent Impact on Land and property o Loss of housing o Loss of land	• The size of land to be acquired for temporary and permanent Motorway structures • Locations of the construction compounds <u>ESIA Updates:</u> • Update of the baseline socio-economic surveys; • Update LARF and grievance mechanisms; develop SEP; • Consultation with affected land owners/users including those with legal and no legal rights to the land they own or use/occupy. **Mitigation measures:** <u>Pre-Construction phase</u>: • Detailed socio-economic survey; • Development of Expropriation study; • Census; Valuation and Asset Inventory; • RAP and LRP; • Implement Resettlement Compensation Framework <u>Construction phase</u>: • Implementation of Grievance mechanisms • Provide additional assistance for resettlement, if required;	reduce to **moderate significance** with implementation of LARF and SEP
Potential Impacts on Community Health, Safety and Security	Construction phase • Impact from the influx of temporary workers • Impact from increased community exposure to diseases • Impact from increased traffic and heavy vehicles on local roads during the construction • Safety issues associated to the entrance of non-authorized people on the construction site Operation phase • Impact to the better access to the larger towns and health services located in larger towns	<u>Gaps</u>: there aren`t any gaps. <u>ESIA Updates:</u> No update is needed. **Mitigation measures:** <u>Pre-Construction phase: plans and training programmes to be developed by the Contractor:</u> • Health & Safety (H&S) Plan; • Emergency Preparedness and Response Plan; • Community health and safety educational programme; • Training and guidance to workers in how to avoid conflicts with the local community; <u>Construction phase</u> • Monitor implementation of the plans developed during pre-construction phase; • Announce information on project in media for the purpose of traffic control and safety; • Control and coordinate traffic flow; • Consider avoidance of unauthorized persons' entry in construction site <u>Operational Phase</u> • Develop and implement community health and safety programme; • Undertake public relation activities on dangers of motorway; • Publish information on safety performance;	Negative risks of **moderate significance** reduced further with proper management controls to **slight significance**.
Community Tensions	Construction phase • Effects of influxes of workforce into local communities • Community reactions due to disturbance arising from construction workers	<u>Gaps</u>: No gaps identified <u>ESIA Updates:</u> No need for update **Mitigation measures:** <u>Pre-Construction phase:</u>	Negative risk of **large significance** reduced further with mitigation measures to **moderate significance**.

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
		• Local Workforce Recruitment Plan • Prepare and implement training and guidance for workers; • Worker camps will be located outside the communities; <u>Construction phase:</u> • Strengthen public/administration awareness	
Access and Severance Effects	Construction phase • Impacts on access and severance effects Operation phase • Impacts on access and severance effects	<u>Gaps</u>: Locations of structures – interchanges, overpasses and underpasses <u>ESIA Updates</u>: • Socio-economic Survey to assess severance effects; **Mitigation measures:** <u>Pre-Construction phase:</u> • Traffic Management Plan; • Prepare the plan for signing of the construction area, new directions, ring roads, access roads; <u>Construction phase:</u> • Implement Traffic Management Plan & Risk Assessment document; • Minimise traffic disturbance; • Put signs on construction area, new directions, ring roads, access roads; • Public notification of any traffic-related concerns;	Negative risks of **moderate significance** reduced further with proper design to **slight significance**.
Economic Impact	Construction phase • Stimulation of economic growth at local level Operation phase • Effects on local economy and national economy	<u>Gaps</u>: Number and legal status of the affected businesses located along the existing road N9 <u>ESIA Updates:</u> Update baseline, impact and mitigation measures for economic impacts, including avoided communities **Mitigation measures:** <u>Pre-Construction and Construction phase:</u> • Inform people in a timely manner about the possible impacts on economic activity <u>Operation phase:</u> • Implement support activities for avoided communities (businesses) located along existing N9 such as advertising panels.	Positive impact on economy enhanced by specific measures
Vulnerable Groups	Construction phase • Decreased accessibility of services • Temporary Loss of Land Operational Phase • Livelihood	<u>Gaps</u>: • Information on the presence of RAE community within the Project footprint and their socio-economic status. • Number and profile of vulnerable people residing in the Project footprint; • Socio-economic status of vulnerable people) directly affected by the Project <u>ESIA Updates:</u> • Update Baseline, assessment of impacts and mitigation measures for vulnerable groups; • Update of the baseline socio-economic surveys; • Update LARF, SEP and grievance mechanisms; **Mitigation measures:**	Negative risk of large significance with implementation of mitigation measures is changed to moderate negative significance.

Topic	Summary of Impacts	Summary of Gaps / ESIA Updates and Key Mitigation/Management Measures	Residual Impact Significance
		Pre-Construction phase: • RAP/LRP; • Communication with representatives of vulnerable groups (update SEP) • Compensation in line with RCF; • Provide additional assistance if required. Construction phase: • Undertake measures for land reinstatement; • Continue with additional assistance Operation phase: • Undertake public information notices and public awareness activities	
Workforce Issues	Construction phase • Workers` safety during construction Operational Phase • Workers' safety during operation of motorway	Gaps: Worker construction compounds to be determined avoiding productive forest or community land ESIA Updates: No Updates **Mitigation measures:** Pre-Construction phase: • Human Resources Policies and training of contractors` managers and supervisors; • Audit of design and implementation of the worker's compound against the checklist in the EBRD & IFC guidance document; • Social Facilities and Services Plan for workers • Accommodation consultation and grievance mechanisms • Emergency Preparedness Plan for accidents response Construction phase • Implement the policies, plans and training programs Operation phase • Update the Emergency Preparedness Plan and Safety Program according to the best international practices and carry out regular reporting.	Negative risk of large significance with implementation of mitigation measures is reduced to slight negative significance.

10.9. Environmental and Social management and Monitoring

10.9.1. Environmental and Social Management

Measures to manage the environmental and social effects of the Project are included in the ESIA and the Environmental and Social Action Plan (ESAP). The key elements have been summarised up in the table above. MI is required to develop a Commitments Register, to document all design, construction and operation related mitigation measures cited in the ESIA, NTS, LARF, SEP and ESAP documentation, and identify how the commitments are addressed, and which party (e.g. MI, Contractor, third parties etc.) is responsible.

An Environmental and Social Management System (ESMS) will be developed for the construction and operation of the motorway. This will include a Construction Environmental and Social Management Plan (CESMP), which will draw together all the management requirements to minimise disturbance to environmental and social receptors during construction (including habitats, watercourses, land and livelihoods, community relations, etc.). An Operational Environmental and Social Management Plan (OESMP) will be produced to address mitigation and monitoring actions which will continue during road operation.

10.10. Environmental and Social Monitoring

Monitoring will form an important part of the ESMS. During both construction and operation, certain activities, indicators and environmental and social resources will be monitored. Pre-Construction monitoring will include levels of noise and air quality at representative road side receptors. Monitoring during construction will include water quality in the Drini I Bardhe and Bistrica e Pejes River, as well as on temporary land take, and indicators of problems from influx of workforce into the area. Operations phase monitoring will include levels of noise and air quality at representative road side receptors, for a period of 2 years' post-construction, and monitoring of all vegetation rehabilitation for 2 years.

Monitoring and management actions for the stakeholder engagement and the land & resettlement planning are proposed within the SEP and LARF. There will also be an ongoing requirement for MI and (during construction) the Contractor to monitor stakeholder, individuals and community grievances and take appropriate management action should trends be identified or key issues occur.

Monitoring reports will be required from the Contractor and Operator during the construction and operational phases. These will be submitted to the relevant inspection authority. The monitoring results will be useful for assessing the long term cumulative effects, if any. If ongoing problems occur, adaptive mitigation measures can be developed and implemented.

10.11. Further Information and Contact Details

Project preparation documents are available on the MI website: (http://www.mi-ks.net).

Contact details for the Project are:

Ministry of Infrastructure – Kosovo*,

Mr Rame Qupeva, Head of Road Infrastructure Department

Address: Ex-Germia Building,
10000, Prishtina,
Republic of Kosovo
E-mail: mi.info@rks-gov.net
Tel/fax: +381 (0)38 211 494
Tel.: +381 (0)38 200 28 ext. 505

11. REFERENCES

- Report on the Number of Road Traffic Accidents for the Period January (December 2014)
- Audit Report Traffic Police Operations and Road Traffic Safety (March 2015)
- The Kosovo Agency of Statistics report on migrations (2014)
- Kosovo Snapshot, the World Bank Group report (April 2015)
- EBRD Environmental and Social Policy, 2014
- Kosovo Environmental Strategy (KES) and National Environment Action Plan (NEAP), 2011 – 2015
- Environmental Impact Assessment / Strategic Environment Assessment that Integrates Climate Change and Biodiversity, SLED Project (2014-IC-108): Booklet on the EIA process (5 November 2014)
- European Investment Bank Corporate Operational Plan (EIB COP), 2010
- EIB Environmental and Social Practices Handbook, Version 9.0 of 02/12/2013
- International Labour Organization (ILO) Conventions' fundamental principles and standards
- Feasibility Study and environmental assessment of the two Routes (6 and 7) (COWI, 2006)
- Detailed Design of Road M9, section Kline-Pejë (2010, IDEAL Project Prishtinë)
- Detailed Design of Road M9, section Kijevë-Dollc (2014, SOE 3D Project, Prishtinë)
- Pre-Feasibility Study (2016, IPF3 consortium Mott MacDonald, Technical Assistance), assessment of the existing designs of 2010 and 2014 for two sub-sections
- IFC & EBRD Workers Accommodation Guidance, 2009
- Design Manual for Roads and Bridges (DMRB), 1998
- Design Manual for Roads and Bridges (DMRB); Volume 11: Environmental Assessment: Section 2 (2008);
- IFC EHS Guidelines for Construction Materials Extraction
- IFC General EHS Guidelines
- Feasibility Study, ESIA and update of the Detailed Design for the construction of the road N9 Prishtinë – Pejë (SEETO Route 6 B), section from Kijevë - Klina to Zahaq (30Km) in Kosovo

- Municipal Development Plan of Peje (2006 – 2025)
- Municipal Development Plan of Klina
- Municipality profile of Klina, Publication of Klina Municipality
- Local development Plan of Peja Municipality
- Landscape Protection Management & Planning for the Municipality of Klina, 2015
- Erosion Map of Kosovo
- European Soil Database v2.0
- Rexhepi 1978: 8
- Fesibility Study Wind Park "Zatric" Rahovec, Kosovo (2013)
- Results of the EU funded project managed by the European Commission Liaison Office (ECLO) – Institutional support to the Ministry of Environment and Spatial Planning (MESP) and River Basin Authorities
- International Journal of Natural and Engineering Sciences 2 (3): 105-109, 2008, Sabri AVDULLAHI* Islam FEJZA Ahmet TMAVA Arfim SYLA
- Occurrence of Heavy Metals in Drini Bardhë River, February 2015
- Overview of measured parameters at the stations relevant for the motorway route and corresponding classes (according to the UNECE instructions), Kosovo Environmental Protection Agency
- KOSOVO FLOOD RISK MANAGEMENT FRAMEWORK, an Action Plan for Policy, Procedures and Coordination, February 2011
- ImmProg2000 dispersion model http://www.airinfo.ch/ImmProg2000E.htm
- Strategy and Action Plan on Air Quality, Ministry of Environment and Spatial Planning, 2011
- Federal Highway Administration. Noise Barrier Cost Reduction Procedures: STAMINA2.0/OPTIMA User's Manual, 1982; U.S. Department of Transportation, Demonstration Products Division, Arlington, Virginia, FHWA-DP-58-1 (computerized noise prediction model for various scenarios)
- Guidelines for Community Noise http://www.who.int/docstore/peh/noise/noiseindex.html
- Results from using the Federal Highway Administration (FHWA) STAMINA2.0
- Open interactive map with marked non-compliant landfills https://www.letsdoitworld.org/wastemap/
- Archaeological objects in Municipality of Klina, *Data source: Institute for Monument Protection, Prishtina*

- Archaeological Sites in the Municipality of Klina, *Data source: Institute for monument protection, Prishtina*
- Archaeological Sites Location in Municipality of Peja, *Data source: Development Plan of Peja*
- Protected Zone of Dollc Monastry, *Data source: Development Plan of Klina*
- Cultural Heritage Sites in the Section Zajm – Grabanice, *Data Source: Project based, for ESIA needs*
- Cultural Heritage Sites in the Section Jablanice – Gllavigjice, *Data Source: Project based, for ESIA needs*
- Cultural Heritage Sites in the Section near Zahaq, *Data Source: Project based, for ESIA needs*
- Cultural Heritage sites in Vicinity of Project Corridor, *Data Source: Project based, for ESIA needs*
- Spatial Plan of Kosovo, 2011
- The Ahtisaari Plan, formally the Comprehensive Proposal for the Kosovo Status Settlement (CSP)
- Waste Management Report for 16 Municipalities, USAID, 2016.
- Kosovo Agency of Statistics
- Official Gazette of the Republic of Kosova / No. 1 / 09 January 2014, Pristina, Law No. 04/L-205 On The Employment Agency of the Republic of Kosovo
- White Paper-Kosovo Social Inclusion Challenges
- Social Survey Data, 2016
- Kosovo Forest Agency data
- Inventory Document, FAO Kosovo Forest Inventory Project, 2003
- The *ImmProg2000* dispersion model on emissions of dust, NO_x, SO_2 based on the average speed
- Kosovo SME promotion Programme, 2014-2015
- Kosovar Migration Report
- Municipality survey, ESIA purposes, 2015
- General Overview – Kosovo at a glance, Ministry of Trade and Industry data
- Spatial Plan of Kosovo, Spatial Development Strategy (2010 – 2020), June 2010