

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT  
(ESIA) FOR PROJECT

**“REHABILITATION OF THE LOCAL ROAD  
CONNECTING FIER TO SEMAN BEACH”**

**REGIONAL AND LOCAL ROADS CONNECTIVITY PROJECT**

JANUARY 2017

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## 2. INTRODUCTION

### 2.1. BACKGROUND

Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. It identifies, describes and evaluates the direct and indirect effects of a project and its alternatives, including the 'do nothing alternative' on humans, flora and fauna, ground, surface and underground waters, on the atmosphere, landscape and other environmental components, and on the interaction of these factors, as well as on material goods and on the cultural, social and environmental heritage. It also evaluates the conditions for the production and use of works and equipment.

The ESIA also presents mitigation measures to be employed to help prevent or minimize the environmental and social impacts of the project. These are included in an environmental and social management plan (ESMP), included in this report. The ESMP consists of the set of mitigation, monitoring, and institutional measures to be taken in the design/preparation phase as well as during construction and operation of the planned facility or spatial intervention to eliminate, offset, or reduce adverse environmental and social impacts.

Environmental assessment in the EU, transposed in Albanian legislation, can be undertaken for individual projects, such as a dam, motorway, airport or factory, on the basis of Directive 2011/92/EU (known as 'Environmental Impact Assessment' – EIA Directive) or for public plans or programmes on the basis of Directive 2001/42/EC (known as 'Strategic Environmental Assessment' – SEA Directive). The common principle of both Directives is to ensure that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorization. Consultation with the public is one of the key features of environmental assessment procedures.

The Process of Environmental and Social Impact Assessment aims to provide a high level of protection of the environment. It also ensures public participation in decision-making and strengthening of the quality of decisions.

The project “Reconstruction of the road Fier-Seman” consists of the reconstruction of the road segment which starts at the train track in Fier town and continues up to the Police Station (Seman beach), at a length of 18.4 km. This segment connects the urban area part of Fier town (one of the largest towns in Albania,) to Seman beach. The road is located in a flat terrain of weak geological formations.

This is a high frequency road used by locals and tourists. It will serve the 17,000 inhabitants of the 20 villages of the area, which provide a considerable yearly agricultural production. This project is also an important axis for the development of tourism in Fier town and

surrounding areas, since it is expected to significantly improve the access to Seman beach, as well as the tourism visits to archaeological park of Apollonia. This archaeological park is located 3 km from this segment.

Currently the road is asphalted, but seriously damaged, creating difficulties of access for vehicles. During the summer season, the situation becomes worse due to vehicle influx.

The reconstruction of this road will increase the quality of life of surrounding communities and will boost the development of local and international tourism, as well as businesses, ecotourism, contributing to a general increase of well-being and quality of life of the area.

This ESIA is prepared in the preliminary design phase while the final design alternative is not chosen. Alternatives would be designed on public consultation meeting. ESIA will be revised and updated based on chosen option and in the phase of detailed design

## 2.2. CONTEXT OF THE REGIONAL AND LOCAL ROADS CONNECTIVITY PROJECT

The Albania Local Roads Connectivity Project (LRCP) is expected to be financed by an IBRD loan at the total amount of USD 50 mln. The duration of the project is expected to be 48 months. It will build on the lessons and results from previous World Bank-financed transport projects, including the Secondary and Local Roads Project, which was found to be "highly satisfactory" in post completion reviews.

### 2.2.1. Project stakeholders

Investments carried out by the investor (project implementing agency), ADF have been in compliance with Albanian Environmental Regulations and other donor policies, including World Bank's Safeguard Policies, EBRD/EIB, KfW, CEB, OFID, etc.

Key project stakeholders in the RLRCP project are foreseen to be partner municipalities as local government units in the role of beneficiaries and government institutions and ministries related to project investments, such as Ministry of Infrastructure, Ministry of Agriculture and Rural Development, Ministry of Tourism and Environment, National Agency of Protected Areas, Ministry of Culture, etc.

ADF has an Environmental and Social Unit comprising of head of the Unit, two full time social expert and three full time environmental experts. The staff has to date undergone two days training by World Bank safeguards experts. The staff will also in the future enroll in additional environmental and social trainings, such as safeguards training organized in the frame of this project, as well as the Project for Integrated Urban and Tourism Development, financed also by WBG through ADF as the implementing agency.

## 2.2.2. Components of the LRCP project

LRCP will focus on the role that improved roads can play in enabling connectivity driven economic gains, particularly in the agricultural and tourism sectors, both key drivers of growth in Albania.

The Project will finance the following components:

### **Component 1: Civil Works**

Accessibility improvement (Total cost USD 46.15 million). This component will finance (a) the rehabilitation and/or reconstruction within the right-of-way of regional roads in selected municipalities; (b) the preparation of detailed designs for the project roads, as needed. Civil works Supervision and Technical/Road Safety audits. The first year programme was selected per a multi-criteria prioritization process, considering tourism hubs, agriculture potential, beneficiary population and economic efficiency indicators. The remaining roads will be identified and prioritized during implementation; and (c) a Technical Assistance aiming to strengthen the linkage between road and agriculture products.

There is no geographical focus for the roads to be financed. Instead, the selection of roads will be subject to a rigorous multi-criteria prioritization process which will take into account connectivity between farms and markets and consider aspects of political economy, in order to optimize the economic impact and opportunities to link agricultural markets and tourism hubs. Initially, the Implementing Agency, in consultation with all municipalities will develop a long-list based on the priorities identified by the Local government units (LGUs). This will be followed by a multi-criteria analysis applied to the long-list of roads resulting from the first screening, where the framework criteria have been agreed with the World Bank. Design stage road safety audits and resilience audits will be financed in this component to ensure the sustainability of the new roads. During appraisal, attention will focus further on the financial situation of the LGUs, including an assessment of the technical capacity of the LGUs to provide sustainable road maintenance, addressing also the resilient transport dimensions. Such assessments will inform the direction of the sub-sector financing relationships between the LGUs and the Ministry of Finance.

a) Sub-component 1.1. Road Rehabilitation Works (Total cost USD 43.0 million). This sub-component covers the rehabilitation and/or reconstruction of an estimated 80 km of regional and local roads.

b) Subcomponent 1.2: Supervision and Technical Designs and Audits (Total cost USD 2.95 million). This sub-component will finance detailed design studies and preparation of bidding documents for the road projects starting in year 2 and supervision activities by the supervision engineer for all rehabilitation works under the project (detailed designs and bidding documents of year 1 are being financed from the ADF). This sub-component will also finance consultancy services for an independent road safety auditor, to be applied at both design and construction completion stage, are also included under this sub-component.

*Environmental and Social Impact Assessment for project "Rehabilitation of the road connecting Fier to Seman Beach"*

c) Sub-component 1.3: Improvement on Market Access (Total cost USD 0.20 million). This sub-component will include technical assistance related to the better utilization of roads for linking agricultural producers to local demand, including markets and tourism centres. The focus will be at projects road area.

### **Component 2: Road safety Initiatives (Total cost USD 1.20 million)**

This component will finance the works and goods of other roads that are identified through a technical assistance and not being supported under component 1.

a) Subcomponent 2.1: Road safety Technical Assistance (Total cost USD 0.20 milion). This sub-component will finance the works and goods of other roads that are identified through a technical assistance and not being supported under Component 1.

b) Sub-component 2.2: Road safety improvement works (Total cost USD 1.00 million). This sub-component will finance and implement safety features identified in the above TA on improving signage, pedestrian crossings, line-marking and road side furniture of regional and local network.

### **Component 3: Institutional strengthening for LGU (Total cost USD 0.65 million)**

This component aims at strengthening capabilities within the selected municipalities on issues related to road maintenance practices, development of transport plans and investment programs, and project impact assessment. This component is split into three sub-components, as detailed below:

a) Sub-component 3.1: Improvement of Road Maintenance Practices (Total cost USD 0.25 million). This sub-component will finance the provision of consultants' services for improvement of road maintenance practices, which will include a pilot of performance based contracts for selected municipalities.

b) Sub-component 3.2: Municipal Transport Plans (Total cost USD 0.25 million). This sub-component will finance the development of pilot transport plans for small and/or medium sized municipalities, identifying key actions to be adopted by the local municipalities in addressing transport issues .These could include road rehabilitation priorities, public transport solutions, public parking and terminals, safety measures, etc., to support future growth strategies as defined in the local planning instruments.

c) Sub-component 3.3: Project Impact Assessment (Total cost USD 0.15 million). This sub-component will finance project impact beneficiary surveys, and project impact assessment including social and economic impact, as well as spill-over effect to the agriculture sector.

### **Component 4: Implementation management (Total cost USD 2.00 million).**



This component includes incremental operational cost of ADF; development and maintenance of GIS and prioritization database for regional and local roads, midterm evaluation and capacity building initiatives for ADF.

### 2.3. THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FOR RLRCP

For the purpose of the Regional and Local Roads Connectivity Project, the Environmental and Social Management Framework (ESMF) document has been prepared. The main purpose of the ESMF is to be a tool for ensuring that the infrastructure sub-projects implemented through the project comply with the existing laws, regulations and practices in Albania, as well as with the World Bank's Operational Policies and Procedures on Environmental Assessment (EA), Natural Habitats, Involuntary Resettlement and Cultural Heritage, that the environmental and social risk for the sub-projects is minimized so it will not have a lasting adverse impact on the country's population, nor on the natural environment or properties of particular cultural or historical value. ESMF defines procedures for sub-projects' environmental review while defining eligibility, classification, corresponding mandatory EAs, rights and obligations of the immediate stakeholders.

The Environmental Screening is carried out by ADF at an early stage in their sub-project review procedures to determine the appropriate environmental risk category for the proposed sub-projects, and may require the contracting of external expertise. Following screening, an Environmental Assessment (EA) in line with the environmental classification of the sub-borrower/sub-project is recommended. The EA is a part of the Design contract with ADF (borrower/implementing agency), prepared by ADF or ADF consultant, in coordination with the beneficiary (local self-governing unit -LGU). When the design is finished, the beneficiary applies for an environmental permit and pays the tariff, based on a signed Investment Agreement with ADF. Law on Environmental Impact Assessment No 10 440, dated July 7, 2011 requires preparation of Preliminary EIA for the types of works the Project envisages. This ESIA will be submitted for an approval to MoE since this project does not require an environmental permit, but only an approval of the preliminary EIA.. At the end of the application procedure, if the ESIA is satisfactory to the MoE, an environmental authorization/approval is issued.

The implementation of the Environmental and Social Management Plan (ESMP) will be monitored by the ADF team.

Upon clearance from WB of the ESIA and sub-project to be included as an investment within the RLRCP, and ESIA public consultation, yet prior to publication of the Bid Notification, an Investment Agreement will be signed with the beneficiary of the subproject. ESIA and/or ESMP is an integral part of sub-project bidding and contracting documentation. The MoE approval of ESIA must be issued before the start of works.

The national environmental regulation, through the Environmental Impact Assessment No 10 440, dated July 7, 2011, requires preliminary EIA for this type of projects (road rehabilitation). Depending on the type of ESIA required, the beneficiary will pay the tariff for environmental permit/authorization to the Ministry of Environment and Tourism/National Environmental Agency, as well as apply for receiving the environmental permit<sup>1</sup>. The environmental permit must be issued before the works contract signing<sup>2</sup>. Any required modifications/improvements required by the permitting authority, will be the responsibility of the design contractor to reflect.

## 2.4. ENVIRONMENTAL AND SOCIAL LEGAL AND REGULATORY REQUIREMENTS

### 2.4.1. LAW ON ENVIRONMENTAL PROTECTION

Environmental legislation is governed by the Law on Environmental Protection No. 10431, dated June 9, 2011. This Law sets out principles, requirements, responsibilities, rules and procedures to ensure a higher level of environmental protection and includes dispositions for environmental impact assessment as a tool for environmental protection, aiming to identify and define the possible direct and indirect effects on the environment mainly to prevent these effects.

This Law establishes national and local policies on environmental protection, requirements for the preparation of environmental impact assessments and strategic environmental assessments, requirements for permitting activities that affect the environment, prevention and reduction of environmental pollution, environmental norms and standards, environmental monitoring and control, duties of the state bodies in relation to environmental issues, role of the public and sanctions imposed for violation of the Law.

### 2.4.2. LAW ON PROTECTED AREAS

The new law no. 81/2017 “on the Protected Areas” regulates the nomination, conservation, administration, management, sustainable use of environmentally protected areas and their natural and biological resources, based on the principle of sustainable development, to fulfill standard environmental, economic, social and cultural functions in favour of communities, as well as definition of roles and responsibilities of public institutions and private

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<sup>1</sup> The process might take up to 6 weeks to be approved.

<sup>2</sup> Issuance of the environmental permit may be subject to review and resubmission, therefore postponing the works.

physical/juridical entities on the protection and sustainable administration of PA, through: a) identification, definition and widening of environmentally protected areas; b) guarding, protection, rehabilitation and recovery of ecosystems and natural habitats, species, landscapes within protected areas; c) sustainable use of environmentally protected areas by integrating its elements in strategic planning and decision-making.

National Agency for Protected Areas (NAPA) manages the network of protected areas and other natural networks as Natura2000 under management plans drawn up. NAPA monitors the inventory of flora and fauna in these areas, as well as a very important aspect is to generate income from services to others.

The system of protected areas consists primarily of 15 national parks, several managed natural reserves and protected landscapes that shelter the greatest natural and biodiversity values of the country. This large network is recently being complemented with Regional Protected Areas, established and managed by local authorities.

According to the “Law on Protected Areas”, Nr.81/2017, article 38, paragraph g, the National Agency of Protected Areas “approves activities in protected areas, as part of the process of issuing an environmental permit for activities that have a environmental impacts”.

The proposed project “Rehabilitation of Fier-Seman road” is not located in or near the boundaries of any protected areas, thus obtaining the abovementioned approval does not apply.

#### LAW ON ENVIRONMENTAL IMPACT ASSESSMENT

The new law on Environmental Impact Assessment No 10 440, dated July 7, 2011, is approximated to the Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.

This law aims to protect the environment through prevention, minimization and compensation of damages from proposed projects which may cause direct or indirect significant adverse impacts on the environment due to their size, nature or location before the projects are approved.

The EIA Law defines the type and scale of the projects that require an EIA before implementation. The law prescribes two levels of EIA system for projects (i) preliminary EIA and (ii) profound EIA.

- Preliminary EIA. This is for projects that may have less potential impacts. They include projects listed in Appendix 2 of the Law on EIA.

- Profound EIA. This is for projects with significant potential impacts, as listed in Appendix 1 of the Law, those projects listed in Appendix 2 which the MoET considers will have a significant impact on the environment (including activities that are to be implemented in a protected area). The profound EIA procedure also includes: public debate and consultations with relevant authorities.

According to the above-mentioned legislation, the following rules apply:

**Table 1: Summary of project environmental and social screening criteria**

	Necessary when
Profound EIA	<ul style="list-style-type: none"> <li>- Construction of highways and expressways (highway highways).</li> </ul> <p>Meaning of this law, "expressway" is a path that meets the conditions set forth in the definition of European Agreement on the Main Arteries of International Traffic, 15 November 1975.</p> <p>And</p> <ul style="list-style-type: none"> <li>- Construction of a new road of four or more lanes, or rehabilitation/widening of an existing road, which has two or less lanes, to become with four or more lanes, when the new road or the rehabilitated road is 10 or more km long of continuous length.</li> </ul> <p>Public consultation of profound EIA is mandatory.</p>
Preliminary EIA	<ul style="list-style-type: none"> <li>- Construction of roads, marines and marine installations, including fishing marines (projects not included in appendix 1)</li> <li>- Permanent roads for races and other motor tests.</li> <li>- Public consultations of preliminary EIA not required under the law.</li> </ul>

The proposed section Fier-Seman fits in the category *Preliminary EIA* according to national law and the project does not require an environmental permit, but only the MoE approval of the preliminary EIA.

The other related key laws to environmental protection and assessment are listed below:

Law No. 10119/09 "On Territory Planning," amended by Law No. 10258, dated 21.04.2010 and Law No. 10315 dated 16.09.2010;

Law No. 9700, dated 26.03.2007 “On environmental protection from transboundary impacts;”

Law No. 9478, dated 16.02.2006 “On the accession of the Republic of Albania to decisions II/14 and III/7, amendments of Espoo for Environmental Impact Assessment in the transboundary context;”

Law No. 8897, dated 16.05.2002 “On air protection” as amended by Law No. 10266, dated 15.04.2010;

Law No. 9424, dated 06.10.2005 “On the ratification of the strategic environmental assessment protocol;”

Law No. 9010, dated 13.2.2003 “For environmental administration of solid wastes” as amended by Law No. 10137, dated 11.05.2009 “On Some Changes in Legislation in Force for Licences, Permits and Authorizations in the Republic of Albania”

Law No. 9115, dated 24.07.2003 “On the administration of polluted waters” (amended by Law No. 10448/11 “On Environmental Permits”

Law No. Nr. 81/20178906, dated 06.06.2002 “On protected areas” as amended by Law No. 9868, dated 04.02.2008;

Law No. 10463, dated 22.09.2011 “On Integrated Waste Management.”

Law No. 9048, dated 07.04.2003 “On Cultural Heritage;” as amended by Law No. 9592, dated 27.07.2006;

Law No. 9882, dated 28.02.2008; and Law No. 10137, dated 11.05.2009 “On Some Changes in Legislation in Force for Licences, Permits and Authorisations in the Republic of Albania;”

DCM No. 676, dated 20.12.2002 “On declaring the Albanian Nature Monuments as Protected Zones”

Law No. 8756, dated 26.03.2001 “On civil emergencies” as amended by Law No. 10137, dated 11.05.2009 “On Some Changes in Legislation in Force for Licenses, Permits and Authorizations in the Republic of Albania;”

Law No. 8093, dated 21.03.1996 “On water reserves” as amended by Law No.8375 dated 15.07.1998;

An approval of the EIA report is required by Albanian Law and therefore periodical reporting must be prepared by the beneficiary and submitted to the National Environmental Agency, as specified in the approval document.

Besides the Albanian legal framework, the EIA process respects the international obligations provided from international conventions and agreements ratified by Albania.

The following table shows the conventions and agreements which are related to the environment and have been ratified by the Republic of Albania over the years.

**Table 2. International Conventions and Agreements Ratified by Albania**

**Convention name**

Ramsar Convention on Wetlands (1971)

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Convention on Biodiversity (Biological Diversity) (1992)

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Bern Convention (1976): Conservation of European Wildlife and Natural Habitats

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UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (2003)

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UN Framework Convention on Climate Change (UNFCCC)

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Aarhus Convention (Convention on Access to Information (1998), Public Participation in Decision making and Access to Justice in Environmental Matters)

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Bonn Convention or CMS (1979); Convention on the Conservation of Migratory Species of Wild Animals

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Barcelona Convention (1976); Convention for the Protection of the Mediterranean Sea against Pollution

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Kyoto Protocol

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UNESCO Convention for Safeguarding the Intangible Cultural Heritage (2003)

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Espoo Convention: Convention on Environmental Impact Assessment in a Trans boundary Context together with amendment and Protocols (1991)

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Convention on the Protection of Underwater Cultural Heritage (2001)

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Convention on the Protection and Use of Transboundary Watercourses and International Lakes

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Nagoya Protocol

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United Nations Convention on the Law of the Sea

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Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

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Cartagena Protocol on Biosafety

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Basel Convention

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Stockholm Convention on Persistent Organic Pollutants

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Protocol on Water and Health

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### 2.4.3. Laws and Regulations in the Field of Cultural Heritage and Chance Finds

Projects for all types of constructions above ground and underground and engineering infrastructure projects across the entire country are based on standards and technical requirements of legal acts in force. Law No. 10119/09 "On Territorial Planning," amended by Law No. 10258, dated 21.04.2010 and Law No. 10315 dated 16.09.2010, is the main legislative tool in Albania relating to urban planning, and aims to integrate the urban planning legislative framework into a single law.

Law 9048 ("Cultural Heritage Act") approved on April 7th, 2003 (as amended by Law No. 9592, dated 27.07.2006; Law No. 9882, dated 28.02.2008) is the primary legal framework governing the management of tangible and intangible cultural heritage in Albania. Law 9048 represents the first effort to extend legal protection to material within the field of intangible cultural heritage. Its contents include: Categories of Albanian cultural heritage to be protected (i.e. tangible, intangible, movable, immovable); Definitions and examples of tangible and intangible heritage; Responsibilities of relevant institutions and government bodies; Penalties for those who damage cultural heritage; and Mitigation procedures. Article 4 lists the tangible, immovable values that are to be protected, which include, but are not limited to: Archaeological sites; Historic structures (including places of worship); Historic towns and neighbourhoods; Cemeteries and graves; and Historic landscapes. Law 9048 was amended by Law 9592 dated 27.07.2006. Amendments included 1) the introduction of the National Committee of National Heritage as an advisory body and 2) the creation of the National Committee for Intangible Heritage (NCIH). Law 9048 was amended again by Law No. 9882, dated 28.02.2008. The 2008 amendments incorporated articles reconstructing the network of specialized cultural heritage institutions and articles dealing with the creation of the National Council of Archaeology and specialized institutions such as the Albanian Archaeological Service.

According to the law, if anything unusual will be found during the digging and excavation process, the contractor has to stop immediately the works, urgently inform the local authorities, the Institute of Cultural Monuments and also the Ministry of Culture. They will send archaeologists and field specialists in order to check and evaluate the supposed archaeological objects and the works will restart only after the official permit is given by the Institute of Cultural Monuments.

Albania also respects the international obligations provided under international conventions and agreements ratified by Albania in the framework of cultural heritage.

**Table 3. Laws adopted after the ratification of international conventions by the Republic of Albania**

<b>Convention name</b>	<b>Ratified by Albania</b>
Law no. 9490, dated 13.03.2006 "On the Ratification of the Convention for the Safeguarding of the Intangible Cultural Heritage", Paris 2003	2006
Law nr.9806, dated 17.09.2007 On the Ratification of the European Convention "On Protection of the Archaeological Heritage"	2007
Law No. 10 027, dated 11.12.2008 "On accession of the Republic of Albania to the Convention on the Protection of Underwater Cultural	2008

### 3. DESCRIPTION OF THE PROJECT

Figure 1: Map of project location

The project consists of the reconstruction of the road from Fier to Seman (Figure 1). The total length of the road is around 18 km. Besides the main road, there are some junctions to public facilities such as schools, kindergartens, hospitals, etc. that are included in the design. A general outline of the road, classified into zones of different levels of urbanization, is provided in Figure 10 (page 26).

#### **Table 4. Road sections length**

For ease of reference, the road has been theoretically separated into 5 zones regarding types of rehabilitation. The classification in these zones is not continuous, meaning that zones 3 and 4 for instance, are repeated (please refer to schematic representation in figure 10). These



zones represent typologies of typical cross-sections for the preliminary design, based on the level of urbanization in different zones of the road, along the whole 18 km. For instance, zone 1 corresponds to the most urbanized area near the city of Fier, Zone 2 less urbanized, zone 4 represents typical agricultural landscape and zone 5 represents forest area.

The project is still in the preliminary design stage. There is no chosen design version yet in order to continue with the detailed design.

In the detailed design exact information will be provided on:

- Upgrade of underground infrastructure
- Bicycle lane width and plan
- Road cross-sections
- Materials to be used for road layers
- Existing vegetation (will there be any trees removed or not, and if yes, how many trees and what are the specific requirements for replanting of trees)
- Culverts: new or rehabilitated
- Canals (cleaning up of canals for preventing floods)
- Provision of parking lots using already available areas at the end of the segment without the need to cut trees
- Details on reconstruction of existing bridges

All necessary field surveys for the road project were carried out and data were collected including traffic studies, geological and topographical surveys, hydrological studies, soil instrumental tests, materials surveys, and pavement bearing capacity survey for pavement design and preparation of detail engineering design.

Geometric design takes into consideration that a smooth flowing alignment is desirable on rural roads. Changes in alignment, both horizontal and vertical, should be so gradual that they will not surprise the driver. Roads with adequate alignment usually operate more efficiently and safely than roads with poor alignment, even where improved signing and pavement marking are provided, therefore, adequate alignment should be provided wherever practical.

The horizontal alignment of the road centreline, tangent points and right of way were fully defined. Both horizontal and vertical alignment took into account the design standard adopted while minimizing the earth works. Also, much, consideration was given to road safety standards.

Interventions that are to be made to improve the road conditions will not require any land acquisition and road widening is not foreseen to cause resettlement or cause houses/buildings dismantlement.

Therefore, the alignments of the existing route will not cause substantial changes but minor and those will be made to bring the road geometry to smooth flowing alignment. Careful evaluation of traffic for the design project roads and test analyses are part of the design options. High attention is paid to road safety as an important part of the design. Road marking, signing and metallic guard rails are proposed within the requirements of the safety standards and recommendations of the previous road safety audit reports.

Special attention is paid to the safety of road users especially pedestrians providing safe crossings, sidewalks in urban areas and where appropriate the “Safe Zone” approach is adopted. For these purpose locations of schools, kindergartens, hospital and other public

infrastructure facilities along the road were observed in the communities through which the road passes.

For the purposes of the economic evaluation, as part of the assessment of the project, the Consultants have used the HDM-4 software package. The economic evaluation has been carried out in accordance with the Guidelines for Economic Analysis, by comparing project options. The economic evaluation includes sensitivity analysis where the effects of changes in the values of the key indicators are examined.

The road is asphalted but very damaged and in a bad physical condition, which creates difficulties in road traffic.

The road has been paved for the last time with bitumen in 1990 with partial patches over the years, which are not durable.

A bicycle lane is recommended along the whole road segment. The exact locations and lengths will be defined in the final design and the change addressed in the revised ESIA.

The project foresees also the reconstruction of existing bridges and improvement of radiuses. No removal of trees is foreseen along the whole road, but since the project is in the preliminary design stage, it is recommended that in case when removing trees cannot be avoided, they will be relocated (removed with roots and replanted, especially in zone 5), following specific recommendations detailed in the technical specifications.

A few shrubs and bushes will be removed during the cleaning up of drainage canals on the roadsides, manually without the use of herbicides.

The project roads have been constructed in an area where water depth could be an issue. The subgrade materials have been found to be water circulation resistant (not sand). Nevertheless it is essential that the drainage of the pavement is effective and road side drains and ditches are functioning and are not blocked. Undoubtedly poor drainage conditions have greatly contributed to pavement failures especially where the road passes through a village.

The main functions of a road drainage system are:

- To prevent flooding of the road and ponding on the road surface,
- To protect the bearing capacity of the pavement and the subgrade material,
- To avoid the erosion of side slopes.

The principal types of drainage systems are:

1. Open drain,
2. Concrete chute drain,
3. Piped (positive) drain,
4. Subsurface drain.

The type of road drainage which is selected for a particular road will depend on such factors as to whether it is a rural or an urban road, or if it is in cut or fill and also on groundwater conditions and space.

1. Open drains are used to carry away surface water and can also pick up some subsoil water (depending on depth). Open drains facilitate the early visual detection of blockages but their use may be restricted by the lack of roadside space, safety considerations and the risk that they may be closed in by agricultural machinery.

2. Concrete chute drains are commonly used in the urban areas, areas with limited space and sections with longitudinal steep grade where soil erosion can appear.

3. A piped positive drain is normally associated with an urban situation and is used in conjunction with gullies and curbs/sidewalks. It may also be used in some rural embankment situations where it is deemed important that water from the road and hard shoulder should not be allowed to drain onto the embankment. A piped drainage system with gullies requires regular maintenance and has high construction cost.

4. A subsurface drain is used when ground water exist. Open jointed pipes are laid in a trench which is backfilled with a porous material.

Neglect of drainage and/or neglect of maintenance of the existing drainage systems and roadsides condition may be considered to be one of the main reasons for the road deterioration. Therefore the project has taken into account the necessity of sufficient drainage and focused during the design on roadside drainage redesigning and upgrading.

The preliminary design that has been submitted consists of two possible versions, explained in detail in section 3.5. The final decision on the version has not been made. The chosen one will be elaborated in the final, detailed, design based on which this ESIA will be revised.

Version 1 of the design consists of:

- Different road widths according to different zones based on typology of the surrounding area. Width ranges from 1,520 m at the urbanized area near Fier city, to 680 m width at the section with pine trees near the beach.
- A bicycle lane will be constructed along the whole segment
- Depending on the zone, the road will have one or two lanes

Footpaths on one or two sides, or none in the areas that there are no settlements, such as zones 4 and 5

Version 2 of the design in zone 5 consists of the rehabilitation of the existing road, without added urban elements, such as footpaths, bicycle lanes, improvement of movement safety and traffic, ease of access, traffic elements, etc.

Also work is planned on the road basement (gravel, stabilizing layer); rearrangement of the water supply and sewage networks (to be submitted with the final design), electric pole dislocation, asphalt pavement laying, illumination and greening, vertical and horizontal signs and road safety. No new road construction will be financed.

The existing road at certain areas is accompanied by decorative trees on one or both sides. The last 2.2 km of the road are situated in a dense area of natural pine trees, which, as outlined in the design Terms of Reference, will be preserved.

Special care will be taken for decorative planted trees to be replanted using special machinery to protect the tree roots.

Proposed Segment has a total length of 18 km and is an important axis for the development of coastal tourism for the city of Fier and the surrounding areas. This project will impact on improving the access to Seman Beach (very popular for the whole region) and the Archaeological Park of Apollonia, which is 3.5 km from the proposed segment and is very important for the development of cultural tourism in the area and one of the most important archaeological sites in Albania. This road also serves as access to other coastal villages as it is an existing road.

The road passes on a flat terrain and connects about 20 other villages with important agricultural production.

Figure 2: Satellite plan of the proposed segment

### 3.1. Terrain and alignment

Administratively, the road section belongs to Fier Municipality. The section passes through a very flat terrain. It begins from Junction of Road with the railway and ends in the sea. The slope steepness is almost  $0^0$ . Absolute altitude marks vary between 6-0 m. The existing road section geometric characteristics are as follows: horizontal curvature: 2 deg./km, rise and fall: 0.2 m/km.

The below photo illustrates the existing road alignment development (Figure 3).

Figure 3: View of the existing road

### 3.2. Road territorial division

To fulfill the traffic demands the cross section of the road must be widening according to the standards. The widening of the road will be different for each project zone.

Based upon territorial function of the road, the total length is divided into 5 zones of different urbanization. The divisions of the segments corresponding to the 5 types of rehabilitation are given in the Figure 10.

- The first division corresponds to a very urbanized area part of Fier city (**Zone 1 in the plan**)  
The second division corresponds to urbanized area part of alongside villages (**Zone 2 in the plan**)  
The third division corresponds to little urbanized area, alongside individual houses (**Zone 3 in the plan**)

The fourth division corresponds to the rural area, alongside agricultural fields(**Zone 4 in the plan**)

The fifth division corresponds to the beach area, approaching the marsh,area but not entering in it , with sea level altitude (**Zone 5 in the plan**).

As can be noted in the general plan of the road segment, divided into zones, types of intervention corresponding to different zones, especially 2,3,4, tend to be repeated along the segment, due to the typology of urbanization along the segment. Therefore, zones 2,3 and 4 are repeated throughout the segment.

**Zone 1** is located only at the beginning of the road, near the more urbanized area of the proposed segment (Figure 4)

Figure 4: View from zone 1 area of the road

**Zone 2** is located in the villages near Fier city (Figure 5), a bit less urbanized than zone 1.

Figure 5: View from zone 2 area of the road

**Zone 3** is located at various road segments, such as between villages, with scattered houses by the road, less dense than zone 2 (Figure 6). There are segments that include planted trees for decoration purposes on both sides of the road.

Figure 6: View from zone 3 area of the road



#### **Zone 4**

This type of area is found at several sections of the road, consisting mostly of agricultural fields on both sides (Figure 7).

Figure 7: view of zone 4 typology of the road

#### **Zone 5**

This typology of intervention consists of the last 2 km of the road, from the beginning of the pine trees alley up to the beach on the Adriatic sea (Figure 8,9). This section will be narrower, compared to other sections of the design, due to the need to protect the trees, allowing only the narrowest approved road standards during detailed design. This will ensure that the minimum number of trees are impacted as it may be unavoidable due to road safety standards.

Due to the vicinity of Seman River Delta (5 km from the road end) and also due to the lack of maintenance of the irrigation canals over the last decade, the surrounding area had been flooded during heavy rainfalls 2-3 times over the last decade. However, the current proposed road segment has not been damaged by flooding, with the latest intervention for rehabilitation in 1990.

Both issues, flooding and preservation of trees, call for specific attention during the preparation of the detailed design.

**Due to the large number of trees in the area, this zone is still under discussion with stakeholders (World Bank, ADF, Municipality and public) regarding the detailed**

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**design, in regards to the width of the road for the purpose of saving the trees. This decision will be made upon clearance from World Bank on the chosen version of preliminary design.**

Figure 8: Zone 5 typology near the beach

Figure 9: Zone 5 near the pine trees

Figure 10: Classification of the road into 5 zones/types of rehabilitation

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### 3.3. Road condition

The existing road pavement is in general in unsatisfactory condition, based on visual assessment of the surface and small samples.

Traffic regulation and safety elements are also in very poor condition. The traffic signs are missing. Culverts are half-filled with soil. There are some existing guardrails along the road. Due to the poor road condition, the present travel time on the project road section is about 45 minutes, established by the measurement.

### 3.4. Alternatives of road design

#### 3.4.1. The “do nothing” alternative

The rehabilitation of Fier-Seman road has been proposed by the Fier Municipality as its top priority segment to be rehabilitated.

The existing road pavement is in general in unsatisfactory condition, while it continues to be used as one of the main secondary roads with access to the beach and Apollonia archaeological site.

Traffic regulation and safety elements are also in very poor condition. The traffic signs are missing. Management of traffic is challenging due to the existing road being narrow.

Culverts are half-filled with soil. There are some existing guardrails along the road.

Due to the poor road condition the present travel time on the project road section is about 45 minutes, established by the measurement.

After road rehabilitation a travel time of about 20 minutes is expected based on the assumption of an average travel speed of 40 km/h in villages and 80 km/h in rural areas.

#### 3.4.2. Alternatives regarding types of intervention

According to the national road standards and the requests of the municipality of Fier, there were identified three different options.

For each individual zone, here after are given the geometrical cross section options;

The three alternatives for road typical cross-sections are outlined for each zone in sections 3.4.2.1 and 3.4.2.2.

The section in zone 5 is narrower due to the existing pine trees (Figure 9).

All existing structures will be redesigned during the detailed design preparation. The open channels in urban areas will be substituted by box culverts.

Based on the condition of the culverts, rehabilitation works have been divided into following main categories:

- No work required - structure is adequate;
- Minor rehabilitation work required - varies from cleaning to structural repairs of head and wing walls;
- Replacement structure required - varies from cleaning to structural repairs of head

- New structure required - varies from cleaning to structural repairs of the outfalls for new irrigation and side drain channels;
- Remedial works required to bring all drainage structures up to an acceptable standard.

At this phase of the design, the design contractor has provided two design versions regarding the proposed interventions: Version 1 and Version 2.

The reconstruction of the road will occur only within the right of way, over the track of the current existing road.

During the taking of the inventory consultation with local villages and mayors and other stakeholders was organized by ADF, with the participation of the designer, and their requirements will be taken into consideration during the preparation of the detailed design.

The meeting was organized in December 12, at Fier municipality. Minutes of this meeting can be found in Annex 1 of this document. The relevant concerns and conclusions will be addressed in the final design and revised EISA.

For each version, typical cross-sections for each of the project zones (1,2,3,4 or 5), as described in section 3.2 are provided in Sections 3.4.2.1. and 3.4.2.2. below.

#### **3.4.2.1. Preliminary design alternative 1**

a) Typical cross-section for zone 1, alternative 1

*Explanatory:* Zone 1 of version 1 of the proposed design includes: Footpath, Bicycle line, two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 1 in this version is 15.70m, including embankments.

b) Typical cross-section for zone 2, version 1

*Explanatory:* Zone 2 of version 1 of the proposed design includes: Footpath, Bicycle line, two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 2 in this version is 15.70 m, including embankments.

c) Typical cross-section for zone 3, version 1

*Explanatory:* Zone 3 of version 1 of the proposed design includes: Footpath on the inhabited site (one side), Bicycle line, two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 3 in this version is 13.20m.



d) Typical cross-section for zone 4, version 1

*Explanatory:* Zone 4 of version 1 of the proposed design includes: Bicycle line, two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 4 in this version is 12.60 m.

e) Typical cross-section for zone 5, version 1

*Explanatory:* Zone 5 of version 1 of the proposed design includes: Bicycle line, one lane, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 5 in this version is 6.85 m.

The existing width of the current road at zone 5 varies from 3.5 to 5 m. Trees are located on one or both sides of the road. Since the design foresees widening of the road, it may be unavoidable to move some trees, although the design will adapt to the trees by widening the road on the sides with no trees, within normal safety standards. There will be no felling. Removal of trees will be avoided in the detailed design, but in cases when it is necessary for any trees to be relocated/replanted, in order to ensure the alignment of the road, specific measures will be taken to

protect the roots, as per technical specifications in the tender documents, to ensure success of the replanting of the same trees. Special machinery to protect the roots with minimum impact will be used and replanting will be done during the beginning of spring (March for the pine trees is more appropriate). More elaboration will be provided on this alternative (if selected) in the final design (and revised ESIA), including cost and practice to ensure that trees will survive the replanting.

#### **3.4.2.2. Preliminary design alternative 2**

##### a) Typical cross-section for zone 1, version 2

*Explanatory:* Zone 1 of version 2 of the proposed design includes: Two sidewalks, two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 1 in this version is 13.00 m.

b) Typical cross-section for zone 2, 3 and 4, version 2

*Explanatory:* Zones 2, 3 and 4 of version 2 of the proposed design includes: two lanes, as well as underground channels, culverts, embankments, etc. The proposed road width in this version is 9.50 m.

c) Typical cross-section for zone 5, version 2

*Explanatory:* Zone 5 of the proposed design includes: one lane, as well as underground channels, culverts, embankments, etc. The proposed road width for zone 5 in this version is 4.50m.

Depending on the existing width of the road, a few trees may need to be relocated/replanted in this version also, in order to ensure a safe alignment of the road. In this version temporary stops for car exchange are foreseen, since the preliminary design alternative in this section foresees one lane. Most of the trees will need to be relocated in these stops. More elaboration will be provided on this alternative (if selected) in the final design (and revised ESIA), including cost and practice to ensure that trees will survive the replanting.

### 3.4.3. Alternatives regarding usage of materials

#### Asphalt overlay

Overlays represent a wide variety of treatments to rehabilitate a pavement. Asphalt overlays provide in general an improvement in the structural capacity of a pavement. They are used when a pavement has medium to high level distress which would make preventive maintenance/repair treatments too expensive or ineffective.

Overlays are standard surfacing options to improve not only the strength of the pavement but also ride quality and/or surface friction. They are also placed to minimize the effects of aging of flexible pavements and minor surface irregularities.

New asphalt overlays usually also can contribute to a noise reduction which is welcomed in urban areas. Following the recycling of an existing asphalt pavement a new asphalt layer is usually placed as the surface layer on top of the recycled asphalt layer. This is a different situation and the new asphalt surface is not an overlay in the original sense, also an existing reused and recycled pavement material is left in place and covered or overlaid by a surface layer.

#### Asphalt surface replacement

Asphalt surface replacement is usually used when a pavement strengthening is not required but can be used to improve ride quality and/or surface friction. Asphalt surface replacement is also used when the existing asphalt surface is high and the existing carriageway is too wide and the surfacing of the full width is not economically viable.

#### Surface treatment

Double bituminous surface treatment (DBST) has a lower initial cost than asphalt surfacing, and performs well when in good condition. DBST is therefore considered one option for the low volume project road where no strengthening is needed.

Surface treatment or dressing can be applied on unbound or recycled pavement layers or on top of an existing asphalt pavement. Surface dressing on unbound pavement layers are supposed to be used only on roads with very low traffic volume. In Europe the provision of surface dressing as an initial pavement construction on unbound layers is no longer in use for public roads.

The application of surface dressing on an existing asphalt pavement is considered as a low cost treatment to stop or delay further deterioration and to delay a potential need for strengthening of the pavement. Prior to placing of a surface dressing of an existing asphalt surface any patching, leveling, pothole repair and crack sealing and repair is required.

Surface dressing on existing asphalt does not reduce the roughness and does not improve the structural strength. Reflective cracking cannot be completely prevented but can be reduced if modified bitumen with higher elasticity range is used preferable applied in the form of an emulsion. A road with a surface dressing is noisier compared to an asphalt road and loose aggregates of a newly placed surface dressing are a potential danger to road users.

### Recycling of existing pavement

An alternative to overlay an existing asphalt surface or placing a surface dressing is the recycling of the asphalt pavement followed by a new asphalt surface or a surface dressing. For the usually used cold recycling method the old pavement is crushed with a milling machine and mixed with the old gravel base course and new material if required. After that the road surface is reshaped. The base course and the old wearing course are stabilized using cement or cement and bitumen. Finally a new asphalt surface or surface dressing is paved.

### Removal of existing asphalt

The traditional way of pavement reconstruction starts with the removal of the existing asphalt pavement. Unbound layers are assessed and mostly left in place as part of the new pavement construction.

### New pavement construction

On top of the existing compacted and shaped old base course a new base course is placed with a thickness as required. The surface is then formed by an asphalt surface or surface dressing is paved.

### Gravel surfacing

The gravel surfacing is the cheapest pavement rehabilitation measure. It is used on very low traffic roads and in rural areas where no surfacing exists or existing surfacing is in very poor condition.

In urban areas it is not recommended to be used. Asphalt is 100% recyclable and as a result we recommend its re-processing and reuse as an underlayer, mixed with bitumen. This can significantly reduce the amount of asphalt waste produced during construction, while maintaining the asphalt pavement up to the required standards.

## 4. DESCRIPTION OF THE EXISTING ENVIRONMENT

### 4.1. HABITAT, BIODIVERSITY AND PROTECTED AREAS

Figure 11 : Location of the road in relation to protected areas



Figure 12: The protected area Pishe Poro

The road to Seman, Fier, according to the national legislation, does not fall within a protected area. However, it is located between two protected areas (Figure 11). The nearest protected area to the road is Pishe-Poro managed nature reserve, category IV of protection, the outer border of which is located at the nearest 4.5 km distance from the proposed road (Figure 12). The other protected area, the border of which is located 7 km north of the proposed road, is the National Park Divjake-Karavasta, category II of protection (Figures 13, 14a).

Figure 13: The protected area Divjake-Karavasta

Figure 14 a: ; location of nature monuments

**Seman Sandy Dunes**” are situated on the seaside, near the village of Povelçë. They represent groups of sand dunes created from the wind activity. They are around 1 km long, 15 m wide and 6 m high and are situated 4 km away from the working location, aerial distance

**Old Seman River Corona**, it is situated on the lower course of Seman river, near the village of Libofshë, around 1 m above the sea level. It represents an old riverbed, several km long and with a very specific ecosystem, that differs for a high biodiversity. This site is located at least 8 km aerial distance from the nearest working location.

**Black pines in Poro beach** are situated near the seaside, located at least 6 km from the working site.

**Hoxhara marsh**: the ex-Hoxhara marsh, bonificated (dried up to gain agricultural land) in 1962-1963. At the center of the ex-marsh area is constructed Bocove village which is 8.52 km away (aerial distance) from the proposed Fier-Seman road.

Figure 14, b). Location of Hoxhara ex-marsh in relation to the road (ish-keneta e Hoxhares)

## 4.2. DESCRIPTION OF VEGETATION COVER IN AND THE VICINITY OF THE PROJECT AREA

### 4.2.1. Flora populations surrounding channels and reservoirs

Irrigation and drainage channels as well as water reservoirs depending on the water depth and its salinity, shelter complex vegetation and a mix of different species usually present on temporary and permanent marshes (Figure 15,16,17). Among these flora species, the dominant species is the halophytic- hydrophilic vegetation represented mainly by: common reed (*Phragmites australis*), Common Bulrush (*Typha angustifolia*), Broadleaf Cattail (*Typha latifolia*), hardstem tule (*Scirpus lacustris*), Alkali Bulrush (*Scirpus maritimus*), Duckweed (*Lemna minor*), least duckweed (*Lemna minuta*), greater duckweed (*Spyrodela polyrhiza*), etc.

Figure 15: Characteristic vegetation cover near the coastal area

Figure 16: Typical landscape and vegetation cover along the road Fier-Seman

Figure 17: Pine forest near the coast

#### 4.2.2. Alluvial forests

The vegetation of these areas is divided in two different layers. The first layer is usually represented by the reed and other species that are closely connected to the water. Abundance and coverage of the second layer depend by the layer level. The main species for the first layer is represented by the class *Phragmitetalia*, where the main species is common reed *Phragmites australis*. This species shows a high ecological plasticity and it is situated along the main irrigation channel and its branches, in many drainage channels and in other parts of Vjosa River where the flow is not so strong. In some areas it is developed the green algae *Lemna minor*. The ecological plasticity is stressed by the floristic composition of the class including: Common Bulrush (*Typha angustifolia*) (the dominant species), Purple loosestrife (*Lythrum salicaria*), marshpepper knotweed (*Polygonum hydropiper*), curlytop knotweed (*Polygonum lapathifolium*), Greater Water parsnip (*Sium latifolium*), *Gratiola medicinale*, Saw-sedge (*Cladium mariscus*), Common Water-plantain (*Alisma plantago-aquatica*), bur-reed (*Sparganium erectum*) etc. The second layer generally includes the forests along the river that belong to the class *Alno-Populetea* and *Salicetea purpurea*. The main species of these classes are aspen, black poplar, (*Populus alba*, *Populus nigra*), White Willow, Purple Willow, Rosemary Willow (*Salix alba*, *Salix purpurea*, *Salix amplexicaulis*, *Salix elaeagnos* subsp. *angustifolia*), Black Alder, Grey Alder (*Alnus glutinosa*, *Alnus incana*), Oriental plane (*Platanus orientalis*), Field Elm, Wych elm (*Ulmus minor*, *Ulmus glabra*), Narrow-leafed Ash (*Fraxinus angustifolia*), etc. The pasture vegetation is generally poor. The main species are: great horsetail (*Equisetum telmateia*), Branched Horsetail (*Equisetum ramosissima*), common selfheal (*Prunella vulgaris*) etc. On several river areas, with a strong flow, the trees are replaced by other species like: Oriental plane (*Platanus orientalis*), Rosemary Willow, White Willow, Purple Willow (*Salix elaeagnos*, *Salix alba*, *Salix purpurea*), smallflower tamarisk (*Tamarix parviflora*), etc. On the lower river course, where the flow is not so strong and the river bottom is composed mainly by sand and mud, the vegetation is dominated mainly by these species: Black Alder, (*Alnus glutinosa*), Narrow-leafed Ash (*Fraxinus*

*angustifolia*), Field Elm (*Ulmus minor*), English oak (*Quercus robur*), poplar (*Populus alba*),etc.

The last segment of the road ends up near the alluvial forest, at a length of 2.2 km. Trees are situated mostly on one side.

Figure 18: The road section located near the pine trees (Zone 5)

#### 4.2.3. Mediterranean coniferous forest vegetation

On the border with the associations of the sandy dunes along the seaside, lies a belt of Mediterranean coniferous forest, several hundred meters of width and with dominant species of Aleppo Pine (*Pinus halepensis*), Stone Pine (*Pinus pinea*), but also are present other

species like Maritime Pine (*P. pinaster*, *P. maritime*), planted 30 – 40 years before with the scope of sandy dunes stabilization and for the protection agricultural lands. In general this forest is in a good state of preservation, with young and dense trees and with a high coverage (of 5-th range on the main cases), thus creating a very high scale of shadow becoming this way the main cause of the almost total absence of the shrub and grass level. In highly illuminated places is present one shrub and grass level represented mainly by anthropogenic species like: elm leaf blackberry (*Rubus ulmifolius*), but in considerable level is represented also by typical Mediterranean species like: Western Prickly Juniper (*Juniperus oxycedrus* subsp. *Macrocarpa*) which in peripheral areas (on the northern and western areas) is a dominant species, common myrtle (*Myrtus communis*), autumn heather (*Erica manipuliflora*), Mastic (*Pistacia lentiscus*), hare's-tail grass (*Lagurus ovata*) etc.

#### 4.2.4. Salt marshes vegetation

Two types of association are present in these areas. The first represented by typical halophytic species like: *Juncus maritimus*, *Arthrocnemum fruticosum*, *Salicornia europaea*, *Limonium vulgare*, *Inula crithmoides*, *Atriplex hastata*, *Carex extensa*, *Aeluropus littoralis* positioned on the form of narrow belts along the channels and the other one represented by hygrophilic and hydrophilic species like: *Phragmites australis*, *Scirpus lacustris*, *Mentha aquatica*, *Tamarix dalmatica*, *Vitex agnus-castus*, *Tamarix hampeana* present inside the water of these channels and on their sides, in places with medium to low salinity levels.

The sandy dunes are represented mainly by a mixed vegetation with a dominance of European Marram Grass (*Ammophila arenaria*) or the association *Ammophiletum arundinaceae*. Beside this, other species can be found in considerable levels like: European searocket (*Cakile maritima*), Golden Samphire (*Inula crithmoides*), *Elymus farctus*, *Echinophora spinosa* *Agropyretum mediterraneum*, Sea Spurge (*Euphorbia paralias*), Sea medick (*Medicago marina*), *Sporobolus pungens*, sea daffodil (*Pancratium maritimum*), etc.

### 4.3. Fauna

The road section is not located near dense habitats for fauna. The alluvial pines at the end of the road segment do not create appropriate habitats for fauna species, due to not being dense enough and do not cover a sufficient area for species to breed and live. The data below is taken from a surrounding area of a radius of 20 km, including also the protected areas mentioned above.

There is no official data later than 1990's for these protected areas, apart from partial studies.

#### 4.3.1. Amphibians and Reptiles (Herpetofauna)

Amphibians and Reptiles species are indicators, very important bio-indicators for the environmental assessment of the terrestrial and water ecosystems. In the tables below are shown the list of the 4amphibians and reptile species present in the Forest-Sea area, where all



the species are permanent species, that feed, shelter and reproduce on the habitats of these areas: forest, shrubs, channels, wetlands etc.

#### **Table 5. National and international status of protection of amphibians**

#### **4.3.2. Birds**

The project area offers a number of suitable bird habitats, whether wintering, breeding or migratory birds. According to the existing literature the region could shelter at least 150 bird species (from 330 present in Albania). The sea waters are places visited by a small number of species like the Black-throated Loon (*Gavia arctica*), different Grebe and Duck species. The sandy belt and dunes are areas used during spring and summer time with several nesting bird species like: Oystercatcher (*Haematopus ostralegus*), wintering plovers (*Charadrius sp.*) and a small number of other birds like the Yellow Wagtail, the Tawny Pipit (*Motacilla flava*, *Anthus campestris*). The wetland habitats include lagoons, Seman and Vjosa rivers as well as irrigation and drainage channels, part of the irrigation-drainage system developed on several agricultural lands. Wetlands are crucial habitats for water birds. They are concentration points for wintering birds mainly ducks and coots that are found in abundance when in absence of human activity. During summer time these areas are least visited, but anyway they shelter

several nesting species like: Kentish plover (*Charadrius alexandrinus*) and The Common Sandpiper (*Actitis hypoleucos*). The water channels are food places (Fam. Podicipedidae), Ducks (Fam. *Anatidae*) and Gulls (Fam. *Laridae*). Agricultural lands and dry lands offer shelter for a high number of species, especially for species of the order Passeriformes. During winter time, these environments are used by groups of Chaffinch (*Fringilla coelebs*) and other small bird species. During summer they are transformed into nesting sites for Quail (*Coturnix coturnix*).

The avifauna of Mediterranean shrubs is typical of that of the northern Mediterranean, in which the most characteristic community is that of the order Passeriformes. The shrubs are visited during winter by a considerable number of species that come from the mountainous areas. The most typical bird species of this vegetation are: The Blackcap (*Sylvia atricapilla*), The Sardinian Warbler (*Sylvia melanocephala*), Cetti's warbler (*Cettia cetti*), etc. During spring-summer season, the maquis shelters a considerable number of small bird species like The Subalpine Warbler (*Sylvia cantillans*), Eastern Olivaceous Warbler (*Hippolais pallida*) etc. During migration, the Mediterranean shrubs and especially those near to the seaside are used as sites for several species like: the Hoopoe (*Upupa epop*), Eurasian Wryneck (*Jynx torquilla*), Common Blackbird (*Turdus merula*) etc. The forests are distinguished for the high density of bird population and especially those of the order Passeriformes. They offer suitable food reserves and nesting sites for several number of bird species, among which the most characteristic species are the woodpeckers (Fam. Picidae) like Green Woodpecker (*Picus viridis*), Syrian Woodpecker (*Dendrocopos syriacus*), Tits (*Parus major*, *Parus caeruleus*) and Eurasian Jay (*Garrulus glandarius*).

**Table 6. Nationally threatened bird species in or near project site**

### 4.3.3. Mammals

The study area represents a very important part of the littoral sandy belt of our country. As such this area was declared Hunting Reserve since 1958 and afterwards Natural Managed Reserve (1992 and 1998). Known as Pishe Poro (Fier), it has served as an important reserve

for the wild fauna, including the mammals. The pine forest lying over a sandy dunes system accompanied by wetlands with saline and fresh water (temporary and permanent) and the coastal littoral area itself offer diverse ecological niches for a considerable number of terrestrial and water mammals.

Table 7: **Nationally threatened mammal species near the project site**

#### 4.3.4. Impact on Habitat and Biodiversity and Mitigation Measures during construction

The impacts during construction will be local and temporary since the road is only being rehabilitated and no new segments will be constructed and works are to be carried out within the narrow bent of right of way. However, in the case fauna is disturbed in the sensitive phase on the lifecycle, this can impact its population. Severity also depends on several factors including the vulnerability of species, availability of alternative temporary habitat, and more.

Table 8 outlines the foreseen impacts on habitats and species and recommended mitigation measures.

**Table 8: Foreseen impacts and recommended mitigation measures for habitats and species**

<b>Foreseen impacts</b>	<b>Subject</b>	<b>Source</b>	<b>Potential Impact Severity</b>	<b>Recommended mitigation measures</b>
Destruction and degradation of natural habitats Migration of animal populations Creation of new habitats for invasive animal species	Habitat & Species	Workers' camp site	Minor	Selection of construction camp sites away from important habitats (pine forest, sand dunes, beach) Construction work during dry season Rehabilitation of habitats after the work is finished with native plants only. Disturbance of animals and collection or destruction of flora, timber and other forest products is strictly forbidden.

Pollution of soils and habitats, reduction of surface and underground water quality	soil and water quality	-Solid and liquid waste from the camp site -Leaking fuels from cars and working machinery -accidental spillage of fuels and hazardous waste	Minor	Set up sedimentation basins, septic tanks, collection and recycling of solid and liquid waste in camp sites Recycling or isolation of lubricants Construction of an appropriate drainage system for surplus water, immediate collection and recycling of waste Keep hazardous liquids in spill and leakage proof containers.
Migration of animal populations due to disturbance Reduction of breeding success near the project site	All habitats and species	Noise, vibrations, lighting, dust, human presence	Minor	Install noise reductions accessories into machinery Isolate the working area Check noise levels according to regulations Watering of road during dry season Keep the site size to what is necessary Avoid works during May-June months, which correspond to the breeding period, especially in zone 5, the less urbanized area
Degradation of forests, trees and shrubs	Habitats and species	Clearing of vegetation	Minor	Replanting of trees using technical specification requirements that will be defined in the detail design: i.e. special machinery to remove the trees without damaging the roots (excavator) . Replanting only during March. All felling should be approved by the competent authorities.
Habitat destruction and degradation , disturbance to breeding sites of fish and benthic species	Terrestrial and aquatic habitats	Depositing of excavated material, material supply	Minor	Arrange works during dry season, no materials should be picked up from coast or river as well disposed in marsh area (place for disposal needs to be agreed with municipality

#### 4.3.5. Impact on Habitat and Biodiversity and Mitigation Measures during Operation

The following impacts have been assessed in relation to permanent land take and operation:

**Table 9: Impact on Habitat and Biodiversity and Mitigation Measures during operation**

Source	Subject	Foreseen impact	Potential Impact Severity	Mitigation measures
Solid waste deposition	Habitat and species	Pollution	Moderate	Law enforcement, frequent monitoring
Hunting and other disturbance of animals	Birds, large mammals	Reduction of species and their respective abundance, migration of animal populations due to disturbance, biodiversity depletion	Minor (hunting and other disturbance of fauna is prohibited through a moratorium), however, the impacts needs a special attention due to the area is populated with quite a few endangered and vulnerable species. )	Law enforcement
Accidents	Habitats and Species	Damage of populations of species	Moderate	Isolate working area, good warning signs
Forest fires	Habitats and Species	Damage of populations of species, biodiversity depletion	Minor	Prohibit operating of vehicles near the forest, prohibit open fires, ensure firefighting equipment is in place
Logging for firewood	Revering, Mediterranean and pine forests	Habitat destruction and degradation, migration of animal populations due to disturbance	Minor	Construction of an appropriate drainage system for surplus water, immediate

				collection and recycling of waste
Noise	Birds, Mammals, Amphibians, Reptiles	Migration of animal population due to disturbance, Reduction of breeding success in the vicinity of the road	Moderate	Law enforcement, avoiding works during breeding periods for vulnerable and endangered species
Vibration, lighting	All the fauna groups	Migration of animal populations due to disturbance Reduction of breeding success in the vicinity of the road	Moderate	Minimize working time, do not let machinery idle, avoiding works during breeding periods for vulnerable and endangered species
Air emissions (dust)	All the groups	Temporary removal from the area, reduction of breeding success in the vicinity of the road	Minor	Road wetting,

#### 4.3.6. Impacts to natural resources

Exploitation of sand, gravel and stone for aggregate and other mineral materials production causes permanent changes to the environment due to non-renewable nature of these natural resources. To minimize this impact only licensed quarries and exploitation sites with valid concessions will be used for supply.

### 4.4. HYDROLOGY, WATER BODIES IN AND THE VICINITY OF THE PROJECT SITE

#### 4.4.1. Underground Water

According to the studies made in the area of Semani and marsh of Hoxhara (on the Semani beach) (measures made in the boreholes during some years in the different works done by the authors in the marsh area), it results that the level of the underground water is nearly the same in winter and in summer. The authors of this survey used all existing works and the recent works that have been done in different moments during the whole period of the survey in question and it results that in the major part of the zone, the level of the underground water is very close to the surface of the ground in winter (-0.50 to 1.50 m), increasing the risk of flooding, especially at the last 500 m near the sea.

In summer, this level goes deeper, such as 4.50 m from the surface of the natural earth of the level of the surface. However, being situated in a marsh land, the area poses a greater risk of floods, although it must be mentioned that the existing road is not damaged by floods. Specific measures will be taken to prevent floods during detailed design, which consist on cleaning up of existing culverts, drainage canals, improvement of infrastructure networks related to the road, all measures to be specified in detailed design.

#### 4.4.2. Irrigation

An important part of the water resources of the area are the manmade waterworks (reservoirs, draining canals etc.), as well as the Vjosa-Levan-Fier irrigation canal, situated at least 10 km distance from the proposed road, with a total length of 32 km and a watering capacity of 15,000 ha. A dense network of irrigation channels covers the whole agricultural land. But a number of them have been destroyed and only a small portion of land is actually under irrigation.

#### 4.4.3. Surface water

The primary surface water drainages in the project zone are the Vjosa River and the Semani River, The Vjosa delta is located north of Narta Lagoon, while the Semani delta is located near Karavasta lagoon. The road segment Fier-Semani is located between the two deltas (Figure 19) The road is transected by Semani River in one place, the Hoxhara bridge (See figure 20), while Vjosa river is located 25 km from the road section (Aerial distance). SEMANI river is located at a minimum of 5 km air distance from the proposed road section.

Figure 19: Map of hydrological resources (Seman river north, agricultural discharge channel of Hoxhara)

The road crosses Seman river at Hoxhare village, through a bridge. This village corresponds to km 6 of the road segment and the road crosses over the river through an existing bridge. This bridge will be reconstructed as part of the road alignment (Figure 20).

Figure 20: Existing bridge



River is situated at least 20 km from the proposed road. It is the biggest river in Southern Albania and one of the biggest in the country. The total watershed area of this river covers about 6,710 km<sup>2</sup>, out of which 4,365 km<sup>2</sup> are within the territory of Albania, while the remainder is in Greece. The river's main branches such as Drino, Benca, Luftinja, Shushica etc, as well as many large and small streams compose the hydrographic net of the river. River Vjosa springs from the Pindus Mountains in Greece. In the Albanian territory, up to Dragoti, the river passes through a narrow valley, accompanied with low terraces on both shores. After Dragoti, the valley widens, except for the narrows in Kalivac and Kote. In the flat area, the riverbed is wide and very winding. The river mouth is in the Adriatic Sea, near Poro village, north of Narta Lagoon. The annual water-flow regime of River Vjosa is determined from the collaboration level between the climatic factors and the physical and geographical features of the territory. From the climatic factors, the precipitation influences directly the distribution and the amount of water-flow, while the influence of the physical and geographical features of the territory is mainly important in the precipitation and evaporation regime. In the River Vjosa watershed the main precipitations are rainfalls. However snowfalls, noticed in the higher part of the watershed, are especially important for increasing the underground water reserves that feed the superficial flow, especially during the dry period of the year. The largest amount of precipitation in the hydrographic watershed of River Vjosa is registered during the wet period of the year (October . May). The average depth is registered to be from 1,030 mm to 1,750 mm. This represents 85.1% up to 89.7% of the annual rainfall. As a consequence, the average water-flow during the wet period is considerably higher. Floods in Vjosa are mainly caused by the rainfalls. This is why floods are registered from November to March, the period when the rainfalls are abundant. Snow melt has very little influence on flooding. Rainstorms cause the highest floods in the network of the River Vjosa branches, but the proposed road section is at more increased risk from Seman river flooding at the 2.2 km section near the beach. However, although the zone is prone to flooding, the current proposed road segment has never been damaged by floods.

#### 4.4.4. Construction Impacts on Hydrology, Surface and Ground Water

##### *Underground water*

The potential will exist for underground water contamination from construction plant leakages and accidental spillages of vehicle fuels and oils. Appropriate pollution control measures shall be put in place by the Contractor during construction in order to reduce these impacts to low risk.

##### *Surface Water*

The proposed road will pass on the existing right-of-way space and therefore have no negative effect on the River Vjosa and River Seman. A negative impact could potentially occur towards the minor network of drainage canals. During construction the following potential impacts may occur on surface waters as a result of drilling and excavating for foundations or accidental spills of oil and fuel from construction vehicles and machines due to improper management of construction activities; turbidity and high particle content and other pollution (wastewaters, hydrocarbons, oil, waste pollution, spilled chemicals, etc.)

on surface waters as a result of possible temporary interruptions of drainage canals or pollution due to improper management of construction sites, reconstruction of bridges, etc. These crossings are designed to cater for the 1 in 100 year storm as the best current practice.

#### 4.4.5. Mitigation Measures for Hydrology, Surface and Ground Water

Pollution control arrangement will be put in place during the construction process. These will include provision of bunds and siltation fences. Stockpiles of the construction materials, such as asphalt, oil and chemicals shall not be located near to any surface watercourses, lagoons, lakes or water wells. The stockpiles will be located on sealed surfaces, covered with canvas sheets or a more permanent roof and surrounded by a bund to prevent runoff of spillages. Stockpiles should be protected to prevent vandalism and theft that can lead to spillages etc. During the phases of concrete casting, necessary for the construction of structures (piles, plinths, abutment walls), in order to avoid the dispersion of water and concrete in the soil and in the groundwater, some measures will be adopted, such as the positioning of sheet protection to contain the casting. The site run off discharged from construction yard activities will be treated in accordance with their type.

The water used during the project must come from the existing and legal sources. No new drills are envisaged or uptake and use of natural waters in the surrounding (rivers, streams, wells, etc.). The water coming from washing of the machines, which cannot be avoided due to the functioning of the machinery and the equipment, will be treated by sedimentation in a settling tank for coarse particles and oil interceptors to allow the fine particles and the oils to then be eliminated. Washing should be done on impermeable surfaces with the collection system. All construction materials, including aggregates and conglomerates will be furnished by a licensed facility, through a contract between the facility and the operator. No unlicensed plants or facilities will be allowed. There will be no on-site production of aggregate or asphalt.

In the event of accidental spillage of chemicals or fluids during construction, a program of surface and groundwater monitoring will be established by the Contractor. Emergency preparedness Plan that includes procedures for accidental spilling and other accidental situations will be developed before the works commence.

Works will be isolated from watercourses and materials and wastes stored in safe distance from the watercourses and protected from flooding. The anticorrosive and paint coating on bridges will be carried out with extensive spill, dripping and leaking prevention measures.

**Table 10: Summary of Impacts and Mitigation Measures on Surface and Ground Water during Construction and Operation**

Source	Subject	Foreseen impact	Potential Impact Severity	Mitigation measures
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Surface water quality	Discharge of silt into water courses Other pollutants associated with construction activities to enter streams. Water uptake	Lowering of water quality	Slight	Building of siltation fences Pollution control arrangements to be put in place during construction, no water uptake is allowed. Chemical toilets are provided for workers. No wastewaters will be discharged to the surrounding. Hazardous liquids will be kept in leak-proof containers with secondary containment systems. There will be no littering.
Ground water during construction	Stripping the surface material will increase groundwater vulnerability . Water uptake	Increase of groundwater vulnerability	Slight	Washing of vehicles and machinery and emergency repairs will take place on impermeable surfaces with collection systems and water appropriately treated before the release to the environment. no water uptake is allowed, only existing water sources will be used.
	Silt and clay particles mobilized by rainfall and construction	Impact on groundwater quality in the immediate vicinity of the construction	slight	

	activities.	works.		
Water courses inundation	Regarding of existing watercourses and proximity and capacity of the adjacent streams.	Discharge from the road is likely to create puddles and road flooding , if drainage channels are not cleaned up.	Slight to moderate	Preventing increased risks of flooding by locally implementing attenuation ponds. (to be specified in detailed design) Cleaning up of drainage channels and upgrading of existing ones is foreseen in the design.
Water Quality	Surface water collected by the carriageway drainage to be discharged into the adjacent streams.	Reduction of water quality due to road discharge and potential accidental chemical spills.	slight	Works will be isolated from watercourses and materials and wastes stored in safe distance from the watercourses and protected from reaching water .

## 4.5. CULTURAL HERITAGE, LANDSCAPE AND VISUALITY

### 4.5.1. ARCHAEOLOGY AND CULTURAL HERITAGE

No archaeological sites are located on the construction site.

There is however, an archaeological park near the road, accessed through another 3,5 km segment that is not part of this contract, the Apollonia Archaeological Park (Figure 21) .

Figure 21: Location of the Apollonia Archaeological Park

Apollonia represents one of the most important cities of the Mediterranean world and Adriatic basin, preserved in an exceptionally intact condition. Numerous monuments inside its original borders comprise an outstanding evidence of Greco - Roman culture of the city. The city was founded by Greek colonists from Corfu and Corinth, who found in its territory an earlier local settlement with its own unique cultural elements. The presence of this local culture is determined by the discovery of archaeological artifacts from the Iron Age, tracts from an existing archaic fortification, the temple of Artemis as well as the tubular necropolis near the territory of the ancient city of Apollonia. The coexistence between two different cultures and their inevitable fusion produced a unique physiognomy of apollonian culture, which turned Apollonia to one of the most important economic centers of ancient Mediterranean world. The urban structure of the city lay on the hilly plateau, with an expanded view towards the fertile plain of Musacchia and the Adriatic Sea. The communication with the coast was enabled by the Aoos River, which flowed nearby. Inside its original borders in the 4th century BC Apollonia raised into one of the most important economic, political and cultural centers beside Epidamnos – Dyrrachion (Figure 22).



Figure 22: The road to Apollonia park, the entrance and view of the park

#### *Impacts on Archaeology and Cultural Heritage*

It is evident from the studies that the proposed road will not have a significant impact upon historical, cultural or archaeological sites because of the distance between the proposed route and the sites of archaeological interest. The Archaeological Park is situated at a sufficient distance from the proposed road and therefore specific protection measures are not required. However, in such vicinity of important archaeological sites, the chance findings are always possible. In order to address this risk, a chance findings clause will be included in the ESMP. According to the Albanian law, in case of any chance findings during excavation and general works, the works will cease immediately, the area will be secured and the relevant authorities will be informed within three days of said finds. The authorities will have fifteen days to respond and indicate what measures need to be taken to proceed with the works. Excavations during the construction phase will be supervised by archaeologists of the Institute of Cultural Monuments.

#### 4.5.2. LANDSCAPE AND VISUALITY

This section describes the existing landscape within the study area, provides an assessment of the landscape and visual impacts of the proposed design, details the methodology used and proposes measures to mitigate negative impacts.

### *Landscape Character*

The landscape along the alignment of the Fier-Seman road is characterized by a mixed agriculture, planted or abandoned on the flat plain. The small settlements along the road add value to this coastal landscape. The land use map presents the overall composition of natural and manmade habitats as well as other activities related to the area. Along the coastal plain there are still many uncultivated patches where the wild plants are free to occupy the land. Closer to the settlements the land generally consists of cultivated plots, mainly with wheat and vegetables. The route provides very scenic vistas, which contribute to a pleasant journey ambience for travelers. The landscape near to the settlements has been degraded by poor waste management, including illegal dumping of waste at the roadside and the deterioration of agricultural activities.

### *Impact on Landscape and Visual Impact*

Landscape and visual impacts will be most pronounced during the construction stage and in the short term thereafter as mitigation is not in place or is limited in its effectiveness. In general negative visual impact will arise from residential and other properties close to or adjoining the construction boundary. Properties in close proximity to embankments under construction may also experience visual obstruction. The existing road is passing mainly across wilderness and mountainous land. Additionally the proposed road alignment will be contained within the existing 'right-of-way' and therefore generally there are very few trees that will be destroyed by the project, as it will be outlined in the detailed design. Such, the overall short to medium term impact of the proposed scheme on the landscape character is considered to be moderate.

There are several tree lines on both sides of the existing road, situated at different locations. One tree alley is located in Ferma village (Figure 23). However, the largest number of alluvial pine trees are found at the last 2 km of the road section (zone 5), ending up at the beach (Figure 24). The impact cannot be foreseen fully in the phase of preliminary design. However, the trees will be relocated with the specialized machinery that is able to protect the roots and all other expert and technical measures (defined in the detail design) will be taken to enable successful replanting.



Figure\_23 : Tree alley at Ferma village

Figure\_24\_ : Alluvial pine trees along the road near the beach

In the longer term, as the road is integrated into the landscape through establishment and development of environmental mitigation, the impact is considered to be moderate to low.

All alternatives of the proposed design do not propose road widening near the beach. However, due to necessary road structure and construction purposes, some trees will be moved and replanted. This will depend on the design alternative to be selected.

#### 4.5.3. Mitigation Measures for Landscape and Visual Impact

General Consideration was given to avoidance of impacts wherever possible during the selection and design of the proposed Scheme. In this respect the alignment has been selected to minimize impact on residential property, topographical features, trees and woodland wherever possible. However, as with any development some degree of impact is inevitable and wherever possible measures have been proposed to mitigate the negative nature of these impacts.

**Construction Stage** Contracts will be written to ensure good working practices so as to reduce any negative impacts arising from construction to the lowest possible level and to ensure that machinery operates within the Scheme construction area. Storage areas will be located so as to avoid impacting further on existing residential properties, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to, or at the latest, at the end of the construction contract. The permanent nature of the impact, from the reconstruction of the road, will also affect surrounding residential property where such property is close to the proposed road. Impacts will include change of access, but not loss of it; change of landscape, change of drainage channels and new culverts. However, in mitigation considerable effort has been given to minimizing such adverse or residual impacts, by avoiding impacts on community life, through avoiding even temporary loss of access during construction, through organization of works in appropriate order. The potential impacts of new drainage infrastructure, as recognised by the public, will be addressed in the final design and revised ESIA.

Changes in landscape are expected to occur also. The road side channels will be located underground in contrast to the current situation where they appear to be located on the road sides. This will affect the entrance to the private houses in the urban areas near the road, which will be taken into account in the detailed design, taking into consideration also the safety of inhabitants. These include speed limits near urban areas, white line road crossings, stop light, and appropriate traffic signage.

## 4.6. NATURAL RESOURCES

### 4.6.1. CLIMATE

The area under study is situated in a coastal plateau, which according to climate regionalization of Albania, belongs to the Central Mediterranean field climate. It is characterized by mild winters with abundant precipitation and hot-dry summers. Precipitation is mainly in the form of rain, while the period of snow falls is of a short duration.

### 4.6.2. AIR TEMPERATURE

The annual average air temperature varies from 15.4 0C in Llakatundi up to 16.3 0C in Vlora. The maximum air temperature is reached in July/August with 30.0 0C and the minimum in January with 4.8 0C.

### 4.6.3. HUMIDITY

Air humidity is regularly linked with air temperature. Monthly mean of the relative humidity in this zone varies from 62 to 69 %, while the annual mean is 66 %.

#### 4.6.4. WIND

In the Fier area, the prevailing winds are those coming from the southeast and the northwest, while in the Vlora area the wind is mainly represented by sea breezes. The sea breeze phenomenon here is very evident especially during the summer. Winter is dominated by eastern winds with an average speed of 3.5 m/s. The predominant direction is that of east (24.4 %) followed by the southeast. Summer is dominated by a sea breeze, which is a westerly wind. The most frequent direction is northwest (17.6 %) and the second one is the westerly direction with 9.4 %. The mean velocity is respectively 4.4 m/s and 5.2 m/s.

#### 4.6.5. RAINFALL AND FLOODS

Precipitation occurs mainly as rain, but can also occur as hail, sleet, snow, fog or dew. The area under study is very homogeneous from the point of view of the dispersal of the rain. Most of the rainfall is concentrated in winter, and less in summer. On average, 70% of the annual rainfall occurs during the winter period and 30% in the summer period. In the study area, November is the month with most rainfall, peaking around 140.0 mm, but December is the month with the most rainfall days (Figure 24). The quantity of rainfall in the study area during the drier months of July and August varies from 19.0 mm to 30.0 mm. The total days with rainfall during the year ranges from 63 to 137 days.

Figure --25: Monthly average precipitation in the area

Floods in the area are mainly caused by the rainfalls (Figure 26). This is why floods are registered from November to March, the period when the rainfalls are abundant. Snow melt has very little influence on flooding. Rainstorms cause the highest floods in the network of the River Vjosa branches.



Figure 26: Flood distribution map of Albania (Source WHO)

According to the WHO flood distribution, the risk of floods in the location area is high. However, due to investigations during the preliminary design, the proposed road segment has not been damaged by flooding. Nevertheless, measures for preventing flooding in the future will be taken into account in the detailed design, including but not limited to drainage of channels, cleaning up of culverts, etc.

#### 4.6.6. SUNSHINE

Sunshine, as one of the principal factors of climate, is very uniform over the area under the study. The annual solar radiation for the area is about 1,540 kWh/m<sup>2</sup>. The highest value is observed in July (216.5 kWh/m<sup>2</sup>) and the smallest in December (52.1 kWh/m<sup>2</sup>).

## 4.7. RELIEF, GEOMORPHOLOGY, GEOLOGY AND SOILS

Based on the existing studies and on the information taken from the recent studies, the following geological phenomena were identified in the zone. The most remarkable geological and geodynamic phenomena identified in the zone is the phenomenon of consolidation of the marshy and alluvial deposits. The marshy deposits of Hoxhara are composed of sandy and clayey layers containing organic matter. The sandy layers are poorly consolidated and under the action of the weight, these layers are strengthened in a short time. The clayey layers are strengthened under the action of the weight in one relatively long time. The presence of the organic matter makes difficult and prolong the time of the consolidation, because the organic matter is decomposed with time, during the decomposition, It changes volume and causes an immediate decrease that influences negatively on the stability of the objects placed on these layers. In this area of the Fieri to Semani road, these layers are present.

### 4.7.1. GEOLOGICAL STRUCTURES

#### *Description of Quaternary's deposits*

The marshy and alluvial deposits are represented by gravels of grains of small sizes sand, silt sand, silt clay, clay, peaty and gravel strata. The layers encountered in the area where will be build the Fieri to Semani road are slightly or normal consolidated. The marsh of Hoxhara and Semani represents a deep hole, of tectonic origin, which has been filled of swampy deposits during the Quaternary. At the studied area marshy deposits are interlaced with alluvial deposits. The thickness of these deposits goes to 100-250 m.

#### *Description of Neocene's deposits*

Under these deposits are met the Neocene's deposits composed by mudstone and sandstone, beige to grey, covered by a weak to medium matrix, whose top is weathered. These deposits form surface in the hills of Pojani and in the hills of Shtyllas. At the Neocene's deposits that are present in the zone of Shtyllas are encountered also some conglomerates layers. The conglomerates have good properties to be used for the construction of different fillings of the Fieri to Semani road.

### 4.7.2. Geomorphology and Geology

The mountains of Albania, based on litho logic and tectonic relationships, are divided into two main geologic subdivisions, the Inner and Outer Albanides. The Inner Albanides are dominated by ophiolitic nappies while the Outer Albanides consist of four semi-parallel thrust zones: the Krasta-Cukali Zone, the Kruja Zone, the Ionian Zone and the Sazani Zone. The area is located within the Ionian and Sazani zones. The coastal portion consists of quaternary marine sands and gravels of tertiary molasses headlands. The molasses were deposited in the Peri-Adriatic Depressions, which overlies older carbonate sediments.

Molasses also constitute the central hilly portion of the area. Sandstones, siltstones, shales and marls compose molasses. Quaternary marshy deposits of clayey silts and sand are found at the northern end of the Narta lagoon. Quaternary and recent alluvium is also found in the River Vjosa. These sediments consist mainly of coarse sand and limestone pebbles. The western part of Vlora and the plain area bordering the Adriatic Sea are part of the Narta syncline

### *Seismicity*

Based on the fact that the geological structures of this area are mainly limestone with some flysch deposits, part of the southern coast has two major types of clusters in terms of geological risk. They have complex features: the first is represented by the solid formations (limestone) and the rest of the soft formations (sand and conglomerates). The area is part of a relatively active seismic region, with a known activity up to 5.8 magnitude on the Richter scale and intensity 9 Mercali ladders.

### *Soils*

The main soil classification in the project area is identified as alluvial soils (Fluvisols) covering 42.7 % of the agricultural land. In general, the underground waters are close to the surface in these soils. They are very suitable for cultivation of all types of vegetables, beans, forage, corn and other crops. Meadow grey cinnamon soils (Cambisols) occupy 38.7% and saline soils occupy 15.3% of the agricultural land. The dominant vegetation cover is cotton that is a salt resistant shrub. Due to the high content in salts, these soils are not suitable for cultivation of most of the agricultural crops. Most of the drainage systems do not operate and as a result, some of these lands are used to cultivate forage because they are salt resistant. After 1990 however, most of this land was abandoned and underwent a rapid salinization process. Grey cinnamon land occupies 2.8 % of the surface while the grey cinnamon meadow (Eutric cambisols) occupies 0.5 %.

Due to the soil being weak, the issue of sustainability is addressed in the design and further on in the detailed design, through calculations of layers, such as base and sub-base.

## **4.7.3. Construction Impact on Soils and Mitigation Measures**

### *Re-use of Excavated Material*

Excavated materials intended for re-use will be handled and trafficked to a minimum and stockpiled in such a way so as to minimize the effects of weathering. The time between excavation and re-use during wet periods will be kept to a minimum. During prolonged wet periods, the contractor will suspend excavation and placement of these materials, to prevent degradation due to wetting. The excavated soil should be temporarily stored in a designated area (away from the watercourses) and reused. In the case of the dry periods the excavated soil will be covered to prevent dusting.

### *Impact and Mitigation Measures on soil during operation*

On completion of the road, visual inspections of all the structures along the alignment, including embankments and culverts would be undertaken to ensure that the road structures are not causing erosion, and to identify the requirements for and to carry out any remedial work. This would minimize the potential future impact of loss of soils and the associated landscape impacts caused by erosion.

**Table 11: Foreseen impacts on soil during construction and operation**

<b>Source</b>	<b>Subject</b>	<b>Foreseen impact</b>	<b>Potential Impact Severity</b>	<b>Mitigation measures</b>
Road construction	Soil	Noise and dust release from transportation of materials. Loss of topsoil due to incorrect handling and storage	slight	Excavated topsoil intended for re-use will be handled and stockpiled as specified in the documents. The remaining part, the unused soil, that will not be used for road layer purposes, will be disposed off to a site selected by the supervising engineer and in coordination with the municipality. The site will be away from the watercourses and with no impact to the environment including the landscape (visual).
Operation	Soil	Erosion near bridges and culverts due to rainwater runoff	Slight	Regular maintenance of the road Replanting and maintenance of vegetation.

## 4.8. HUMAN ENVIRONMENT

### 4.8.1. AIR QUALITY



Based on official data from the Albanian National Environmental Agency on air quality (Figure 27) monitoring at national level (2015), values of emissions caused by traffic (PM<sub>10</sub>, NO<sub>2</sub>, SO<sub>2</sub> and benzene) in Fier town are above recommended levels.

Figure 27: Data from the National Environmental Report for PM<sub>10</sub>

As can be seen in the above graph (Figure 27), in Fier, the average monitored value of PM<sub>10</sub> is 195 µg/m<sup>3</sup>, compared to 40 µg/m<sup>3</sup>, which is the limit in EU.

Levels of SO<sub>2</sub> are above EU limits for 20% of the monitoring period. The highest monitored daily value is 335.80 µg/m<sup>3</sup>, compared to 125 µg/m<sup>3</sup>, which is the daily limit according to EU guidelines.

A large scale of Albanian citizens own old cars that have with diesel engines, since Albanians import large quantities of old cars from Western Europe. This explains why sulphur dioxide (SO<sub>2</sub>) and particulate matter (PM) emissions per vehicle are relatively high.

#### 4.8.2. Impacts during the Construction Phase

The construction phase of a road scheme is a possible source of emissions of fine particulate matter which can have a temporary impact on the quality of the air in the area surrounding the construction sites.

During the construction phase the emission of dust is associated with various activities such as the removal of trees and topsoil, the excavation of earth material and the placement of the same material in embankments and the construction of structures. The emission of dust depends firstly on the weather conditions and on the level of activity and the type of operations being carried out. Also dust is raised by the wheels of the heavy construction vehicles as they pass along the construction site during dry weather conditions. The stockpiles of loose materials are generally maintained in open conditions due to the necessity for frequent access to them by excavators and loaders etc. The emission of dust from such stockpiled materials can arise due to the following activities:

- formation of stockpiles using conveyor belt methods;

- impact of strong winds; and
- loading of the trucks for transport to the work sites;
- improper transport (trucks not covered).

In the area of the proposed road, the areas that will suffer most due to the possible emission of dust during construction are the urban areas. It is recommended that monitoring of the quality of the air in areas around the construction sites is undertaken during the construction process in order to reveal as early as possible any problems arising from emissions due to the construction process. But it must be emphasized that good management of the construction site and the planning of the work must be organized in such way to keep the impacts from site emissions to the shortest period possible.

### 4.8.3. Mitigation Measures for Air Quality

#### *Construction Phase*

The most frequently recommended measures with regard to earthworks consist of: The implementation of dust suppression systems: watering of site roads, using retention devices to limit dust emissions (for example: using wheel washes at every storage area, which are maintained daily); Limiting the speed of mobile plant on site roads. In order to maintain air quality and to avoid causing any nuisance to local residents, it is advisable that soil stabilization (quicklime, hydraulic binder) should only be performed: during periods of low wind; in the extraction area; in the cut sections among areas where there are not sensitive plantations, in order to naturally contain airborne dust.

Limited construction period should be foreseen on the wastewater system and works must not take place during hot temperatures, due to odors.

#### *Operation Phase*

The long-term projected traffic levels are very low and are likely to cause low emissions taking into consideration also the improvement in unitary vehicle emissions in the future as the old vehicle fleet is replaced.

On balance the proposed road should not cause an increase in vehicle-generated emissions, as emissions are dependent of the type of vehicle, the maintenance of the engine, and the speed of the vehicle. On the one hand, a uniform road surface will lead to more constant speeds, which will cause a reduction in the emissions, as emission-causing accelerations can be avoided. Also the amount of dust that is being spread by the passage of vehicles will be reduced, as potholes will disappear. On the other hand, an increase in average vehicle speed is expected on the new road, which may slightly increase the emissions. In order to appreciate the actual air quality in the area and to follow its evolution, some measurements using passive samplers might be done before and some years after the opening. No mitigation measures are proposed in regard to the low impact of the project.

#### 4.8.4. Conclusions, Recommendations and Residual Impacts

**Table 12: Summary of Principal Impacts and Mitigation Measures on Air Quality**

Source	Subject	Foreseen impact	Potential Impact Severity	Mitigation measures
Traffic increase due to construction, poorly operated and maintained machinery, Materials and site management	Air quality	Dust and small particles release; reduction of air quality	moderate	Dust suppression systems; speed of trucks on and off sites; Assignment of appropriate location of storage sites and transport routes

#### 4.9. NOISE

Based on official data from the Albanian National Environmental Agency (Environmental Monitoring Report, 2015), the level of noise is measured in the main cities of Albania, including Fier.

**Table 13: Average values of noise emission in 4 monitoring stations in Fier town, day and night (source: National Environmental Agency, report 2015).**

Nr.	Monitoring station	LAeq/day dB (A)	LAeq/night dB (A)
Station 1	Crossing at the ring entrance	62.47	46.96
Station 2	Crossing to Vlora	55.32	50.30
Station 3	Market	64.30	51.20
Station 4	District office	62.83	53.2
	WHO standard	55	45

It can be noticed that all stations in Fier have above –limit noise levels according to WHO standard, meaning the levels are above the normal accepted values, due to Fier being the second largest city in Albania.

The dominant sources of vehicular noise are usually =exhaust, =engines and transmissions.

However, since the project site is located outside the outskirts of Fier City (nearest village being half a kilometre from the city suburbs), non precise measurements are available in the operation phase for the proposed route. However, there are anticipated that noise level to the local populations during operation will increase, due to increased vehicular traffic for at least two-fold but there aren't anticipated to be any sites where noise levels will approach those that present a significant nuisance to local residents, or that will present any sort of threat to health.

According to the directive No.8 dated 27.11.2007 "On the limit noise levels in certain environments" the limit noise levels are:

- The limit noise levels in certain environments have to be according to the Guiding Values of the World Health Organization (WHO)
- At certain environments, for the implementation of this directive are identified the inhabited areas (outside the inhabited area, inside the inhabited area), institutions (educational, preschool and health institutions), areas with socio-economic activities, urbane environments and public parks.

#### 4.9.1. Noise Impact during the Construction Phase and Suitable Mitigation Measures

Noise emissions from the construction areas, taking into account that the construction work will be effected using large machineries and other equipment, can provoke some nuisance above all for some receivers closest to the most noisy operations, such as piling etc.

Noise emissions can be created by the many construction operations and dependent upon many factors such as the type of equipment, the specific models, the operations that have to be carried out and the condition of the equipment and vehicles used.

The dominant source of noise for the majority of construction equipment is the engine, generally diesel and without silencer. In a few cases, such as for a pile-driver or a pneumatic concrete breaker, the noise produced by the action of the work is dominant.

##### *Mitigation Measures*

The contract documents will clearly specify that the Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of the European Communities, WHO and national legislation.

These measures will ensure that:

- No equipment used on site will be permitted to cause a public nuisance due to noise.
- The best means practicable, including proper maintenance of equipment, will be employed to minimize the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Construction equipment equipped with silencers.
- Any plant, such as generators or pumps, that is required to operate before and after legal working hours will be surrounded by an acoustic enclosure or portable screen.
- During the construction phase of the project there will be some impact on nearby residential and business properties due to noise emissions from site traffic and other activities. The application of capping noise limits and hours of operation, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to a minimum.
- Noise monitoring, especially in there would be complaints.
- 

## 4.10. LOCAL COMMUNITY AND SOCIO-ECONOMICS

This section describes the scope and methodology adopted for the assessment of potential impacts on local communities and on Socio-Economics. It focuses on changes to the provision of, and access to, community facilities. These are defined as facilities contributing to the quality of life in the community. They include schools, hospitals, churches, key shops and services, open space, and the accessibility of these facilities to the local population.

### 4.10.1. Population

The population density is around 100 inhabitants per km<sup>2</sup>. As seen from these data the average population density is approximately the average of the Republic level. The phenomenon of population displacement and abandonment of the village is minimal due to its geographical position, due to the resources, due to labor nature of the residents. This conclusion is confirmed by comparing the data of the population of the year 1990 (13,780 inhabitants) with those of last years.

#### *Natural resources*

From the perspective of natural resource exploitation or potentially exploitable the project area can be characterized as a territory not very rich, however, this municipality has big reserves of drinkable and for irrigation water that can not only meet the needs of the

commune, but also for the commune center and even for the city of Vlora. Among the underground, significant reserves can be considered those of the clay formations, with perspective of their use for the production of cement, bricks and tiles. So along the river Vjosa bed, can be exploited the sedimentary formations as raw material for construction. So, as important richness in the surface can be considered the woodland fund of 1,200 ha, the saline water for salt production by natural evaporation, water for irrigation of Vjosa River, etc.

### *Agriculture*

Being a mostly flat and slightly hilly area with a Mediterranean climate and a satisfactory level of annual rainfall, there are all premises to an intensive agricultural development in the flat agricultural fields along the road.

The area is not used for hunting, due to large human presence on site (many villages and the beach). However, hunting is currently prohibited in the whole country due to a moratorium.

### *Education*

Because this area is not seen the phenomenon of dropping out of the village, the condition of school attendance and the number of pupils in the school has no significant decrease, compared to other areas where the number of students has dropped so much that it has made necessary the school's regrouping. Almost in every village are functioning the education structures, pre-school, 9-year schools and in Novosela operates a high school.

### *Health*

Among the services sectors of the community that provides acceptable standards is the health care sector. Almost in all villages along the project track are built and function the ambulances approaching community outpatient services, counselling centers for women, and for the children. Almost all health service facilities been built new or recently renovated.

The local health center situated in Novosele village provides basic services for the local community, while the Fier hospital, located at a car travel distance of 30 minutes provides an on-call emergency services (ambulance) in case of urgent situations.

### *Networks*

The road is asphalted but very damaged and in a bad physical condition which creates difficulties in road traffic. Work is planned on the road basement (gravel, stabilizing layer); diversion and construction of the water distribution network, reconstruction of drinking water pipes and sewage pipes, electric pole dislocation, asphalt pavement laying, pavement and bicycle construction on both sides of the road, illumination road and green, vertical and horizontal signs and road safety.

The detailed design will treat case by case every upgrade that will be required which will be included and addressed in the revised ESIA.

Water is distributed to local community through the main water supply system. The quality of potable water supplied will improve due to the upgrading of water pipes.

The project activities envisage works on the existing wastewater system. The detailed design will identify exact parts of the wastewater system that will be rehabilitated. Risk assessment and mitigation measures to be taken into account during such works are outlined in the Environmental and Social Management Plan, but will include the following:

- organize and cover material storage areas;
- reuse soil for covering up the drainage system,
- isolate wash down areas of concrete and other equipment from watercourse by selecting areas for washing that are not free draining directly or indirectly into watercourse;
- Have a leak control mechanism in place and emergency interventions to control spills;
- Provide alternatives to local population in the time of works.

Rehabilitation of the wastewater network, as needed, must be foreseen to be completed in the shortest possible timeframe, due to odors nuisance. Works must be avoided during hot temperatures.

#### 4.10.2. Impact on Local Community and Socio-Economics and Mitigation Measures during construction

##### *Impacts*

During construction, water and electricity supplies to the inhabitants, farms and localized industries might be affected by the construction works of the proposed road segment.

Noise and dust created by increased vehicular transport of materials, such as gravel and sand for construction purposes, will increase the noise level and create dust particles during, especially during the dry seasons. The road must be watered frequently by water tanks, in order to avoid dust particles.

Construction materials will be picked from contractors (or contracts with third parties) that are licenced for this purpose, including gravel, sand, aggregates, asphalt and other materials and with valid concessions. Specific criteria for transport of materials are addressed in the ESMP.

##### *Measures*

During construction specific measures will be taken by the contractor, in accordance with the ESMP, in order to maintain water and electricity services to the neighboring residents and farm inhabitants and industries. Irrigation and drainage channels will also be kept functioning as well.

## *Impact on Local Community and Socio-Economics and Mitigation Measures during operation*

### **Public Utilities**

Basically the main public utilities of electricity and water may be affected by the project. Temporarily during the construction period, relocation of these utilities may create problems for the users. These problems may affect more users during the process of the connection of the new cables and pipes with the existing network of the users along the existing road.

In these cases the contractor has to prepare a detailed action plan before each step of its activity on the site. This plan must foresee the accommodation and protection of all public utilities established in the site of activities, such as telephone and electrical cables, and water supply pipelines. The contractor must co-ordinate the activities with the responsible enterprises that have the ownership of these networks such as KESH (Electrical Corporation) and Water Enterprise in order to reduce the possibility of damages and the time of reconnecting the new links with the existing network. This plan must be reviewed initially by the Supervision Engineer and the Contractor must start the implementation after the final approval of the Employer. A specific working techniques (e.g. during the earthworks) will be defined in the ESMP to prevent damage to utilities.

### **Population**

There is minor activity along this road. However improvement of the road could lead to improved economic conditions for the residents alongside the existing road.

The improved road may encourage the development of the area. The operation of the road may have some beneficial effect on the economy of the area through increased access to markets. Improved access to health services and other facilities would have a positive effect on social welfare.

The proposed scheme may lead to increased residential and commercial development adjacent to the new road, but this is very unlikely. If development takes place on valuable agricultural land along the route, the scheme could have a moderate impact on these resources. Enhanced enforcement is required to reduce the high levels of illegal construction and protect this land and to prevent the scheme leading to an increase in unlicensed tree-felling and quarrying and also illegal dumping of waste materials alongside the route.

The improvement of traffic flow along the existing road is expected to have a beneficial impact on access to public services. These will include hospitals, clinics, schools, municipal buildings, other public service facilities. Travel times to the public services may be shorter and employment with them may be more attractive, but the effect is expected to be small. Access to public services will be far better for residents of the villages.

**Table 14: Foreseen impacts on local community and socio-economics**

Foreseen impact	Source	Potential Impact Severity	Mitigation measures
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Increase of accidents, decrease of pedestrian safety	Increased traffic speed	moderate	Provision of adequate traffic signs and markings
Loss of access to basic services during construction	Construction activities	Moderate	Contractor must take specific measures to keep these disturbances to a minimum, such as provision of access roads, set up of working hours, as specified in the ESMP

## 4.11. TRAFFIC AND ROAD SAFETY

### *Impact during the Construction Phase and Mitigation Measures for Traffic and Road Safety*

Impact on traffic and road safety during the construction of the proposed road is not expected to be a problem. However this statement is made based on the understanding that the Contractor will comply fully with the ESMP and in this respect will prepare a traffic management plan with appropriate measures to control and direct traffic and pedestrians. The prepared traffic management plan will include appropriate measures to control and redirect traffic and pedestrians that are easily seen or easy to follow. Also appropriate lighting and well defined road safety signs should be included in the Contractor's traffic management plan, which has to be approved by the Supervision Consultant.

### *Impact and Mitigation Measures for Traffic and Road Safety during operation*

The finished road will be handed over to the municipality of Fier, being a local road. A maintenance agreement will be signed between ADF and the Municipality, outlining measures to be taken over by the municipality. The measures include the following:

After construction of the proposed scheme, when the road is operational, the Maintaining Authority should regularly inspect the road to check for damaged or missing road traffic signs and roadside safety barriers. Whenever these are identified as missing or damaged the maintenance department should arrange for their immediate replacement. A road safety programmer should incorporate auditing during the following remaining phases:

At the conclusion of construction and the beginning of the operation of the road, a safety expert will be required to inspect the road to ensure that safety elements have been incorporated and applied. In addition, the auditor will recommend other administrative measures, such as speed limits. The auditor will submit an auditing report confirming the road approval, and his/her recommendations for administrative measures to be undertaken during the operation phase.

Approximately two years following the commencement of the operation phase, the safety expert will be required to inspect the road and review safety procedures with the authorities

and the police. The auditor will prepare an auditing report and will recommend further measures for the improvement of safety if necessary.

## 5. GENERAL RECOMANDATIONS

### 5.1. TERRAIN AND LANDSCAPE RECOMANDATIONS

Contracts will be signed to ensure good working practices and also to reduce any negative impacts arising from construction to the lowest possible level and to ensure that machinery operates within the Scheme construction area.

Storage areas will be located in the way to avoid impacting further on existing residential properties, trees, hedgerows, drainage patterns etc. and such areas will be fully re-instated prior to, or at the latest, at the end of the construction contract.

The permanent nature of the impact, from the reconstruction of the road, will also affect surrounding residential property where such property is close to the proposed road, due to :

- changes in the road size and structure, such as walking paths,
- Changes in entry path near the gates of the houses
- Changes of hedges and fences,
- Connection to upgraded infrastructure networks

. However, in mitigation considerable effort has been given to minimize such adverse or residual impacts. In terms of this provision for landscaping, the Scheme has the potential for appreciable positive impact in terms of improving habitat diversity and visual integration.

### 5.2. SOILS RECOMANDATIONS

Excavated materials intended for re-use will be handled and trafficked to a minimum and stockpiled at an appropriate site designated by the supervisor, at least 100 m from the inhabited areas and away from natural habitats, in agreement with municipality, in such a way so as to minimize the effects of weathering. The time between excavation and re-use during wet periods will be kept to a minimum. During prolonged wet periods, the contractor will suspend excavation and placement of these materials, to prevent degradation due to wetting.

On completion of the road, visual inspections of all the structures along the alignment, including bridges, embankments and culverts would be undertaken to ensure that the road structures are not causing erosion, and to identify the requirements for and to carry out any remedial work.

This would minimize the potential future impact of loss of soils and the associated landscape impacts caused by erosion.

## 5.3. SURFACE AND GROUND WATER RECOMMENDATIONS

### 5.3.1. Construction Phase

Pollution control arrangement will be put in place during the construction process. These will include provision of bunds and clay fences in working sites where machinery and hazardous liquids, including waste, is stored, to isolate construction materials as advised by environmental monitoring team of ADF during construction. Stockpiles of the construction materials, such as asphalt, oil and chemicals shall not be located near to any surface watercourses, lagoons, lakes or water wells. The stockpiles will be located on sealed surfaces, covered with canvas sheets or a more permanent roof and surrounded by a bund to prevent runoff of spillages. Stockpiles should be protected/isolated and guarded to prevent vandalism and theft that can lead to spillages etc.

During the phases of concrete casting, necessary for the construction of structures (piles, plinths, abutment walls), in order to avoid the dispersion of water and concrete in the soil and in the groundwater, some measures will be adopted, such as the positioning of sheet protection to contain the casting.

The site run off discharged from construction yard activities will be treated in accordance with their type. The water coming from washing of the machines and from the equipment will be treated by sedimentation in a settling tank for coarse particles and oil interceptors to allow the fine particles and the oils to then be eliminated. The water coming from washing of the aggregates and from the production of conglomerates will be treated by sedimentation in tanks and then used again or discharged into road canals after sedimentation.

In the event of a serious spillage of chemicals or fluids during construction, a program of surface and groundwater measurements is established in the ESMP (Mitigation and monitoring tables at the end of this document, under “*Potential contamination of soil and water* from improper maintenance and fueling of equipment “. and will be implemented by the Contractor. The programme consists of setting up sedimentation basins, septic tanks; collection and recycling of solid and liquid waste in camp sites; Recycling or isolation of lubricants; Construction of an appropriate drainage system for surplus water, immediate collection and recycling of waste; Keep hazardous liquids in spill and leakage proof containers.

The Monitoring Plan also contains monitoring requirements regarding “water and soil quality (suspended solids, oil and grease”, measurement of water quality to be provided by the supervision company.

In the supervision contract, it must be outlined clearly that this is a responsibility of the supervisor at the established frequency.

In case of accidental spillages, the regional environmental inspectorate will be contacted for advice on appropriate measures, as a normal procedure of the Environmental Response Plan to be developed prior to start of the works.

### 5.3.2. Operation phase

During operation, few impacts are foreseen on surface and ground waters. The road culverts will arrange water flow in line with the road alignment and flood coefficient will be taken into account during detailed design. Irrigations channels will also be re-established using culverts or diverted as necessary as part of the detailed design. Emergency Preparedness Plan will include management of spills from accidents and other during the regular road operation.

## 5.4. AIR QUALITY RECOMMENDATIONS

### *Construction Phase*

The most frequently recommended measures with regard to earthworks consist of:

- The implementation of dust suppression systems: watering of site roads, using retention devices to limit dust emissions (for example: using wheel washes at every storage area, which are maintained daily);
- Limiting the speed of mobile plant on site roads.

In order to maintain air quality and to avoid causing any nuisance to local residents, it is advisable that soil stabilization (quicklime, hydraulic binder) should only be performed:

- during the periods of low wind;
- in the extraction area;
- in the cut sections among areas where there are not sensitive plantations, in order to naturally contain airborne dust.

The reduction of construction impacts also includes:

- Transport routes used for materials delivery.

### *Operation Phase*

On balance the proposed road should not cause an increase in vehicle-generated emissions, a uniform road surface will lead to more constant speeds, which will cause a reduction in the emissions per vehicle, as emission-causing accelerations can be avoided, but on the other hand, the number of cars using this segment will increase due to improvement of access to

the beach and the culture sites. Also the amount of dust that is being spread by the passage of vehicles will be reduced, as potholes will disappear. An increase in average vehicle speed is also expected on the new road, which may slightly increase the emissions.

## 5.5. NOISE RECOMMENDATIONS

### Construction Phase

The contract documents will clearly specify that the Contractor, during the construction phase, undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of the European Union. These measures will ensure that:

- No machinery used on site will be permitted to cause a public nuisance due to noise.
- The best means practicable, including proper maintenance of plant, will be employed to minimize the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- Any plant, such as generators or pumps, that is required to operate before and after legal working hours will be surrounded by an acoustic enclosure or portable screen.

### Operation Phase

Control of traffic flow and reduction of traffic congestion is key to maintaining acceptable levels of noise during operation. This is a responsibility of the Municipality of Fier.

## 5.6. SOCIO-ECONOMIC RECOMMENDATIONS

### *Public Utilities*

Road and street improvements, whether upgraded within the existing right-of-way or entirely on new right-of-way, generally entail adjustment of utility facilities. Depending on the location of a project, the utilities involved could include water supply lines, gas, power and

communication lines including fiber optic cable, heating system and etc. The field survey and visual inspection along the project roads as well as the discussions that will be held with the administration of the community will identify the location and condition of the utilities.

In the other phases will be given in details all the utility interventions.

Temporarily during the construction period, relocation of these utilities may create problems for the users. These problems may affect more users during the process of the connection of the new cables and pipes with the existing network of the users along the existing road.

In these cases the contractor has to prepare a detailed action plan before each step of its activity on the site. This plan must foresee the accommodation and protection of all public utilities established in the site of activities, such as telephone and electrical cables and water supply pipelines. The contractor must co-ordinate the activities with the responsible enterprises that have the ownership of these networks such as KESH (Electrical Corporation) and Water Enterprise in order to reduce the possibility of damages and the time of reconnecting the new links with the existing network. This plan must be reviewed initially by the Supervision Engineer and the Contractor must start the implementation after the final approval of the Employer.

## 5.7. TRAFFIC ROAD SAFETY RECOMMANDATIONS

### *Construction phase*

Impact on traffic and road safety during the construction of the proposed road is not expected to be a problem. However this statement is made based on the understanding that the Contractor will comply fully with the ESMP and in this respect will prepare a traffic management plan with appropriate measures to control and direct traffic and pedestrians. The prepared traffic management plan should include appropriate measures to control and redirect traffic and pedestrians that are easily seen or easy to follow. Also appropriate lighting and well defined road safety signs should be included in the Contractor's traffic management plan, which has to be approved by the Supervision Consultant.

### *Operation phase*

After construction of the proposed scheme, when the road is operational, the maintenance authority should regularly inspect the road to check for damaged or missing road traffic signs and roadside safety barriers.

## 6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

### 6.1. GENERAL MEASURES

The Environmental Management Plan (EMP) presents a set of mitigation, monitoring and institutional measures to be adopted during the construction and operation phases to eliminate or reduce adverse environmental and social impacts arising from the reconstruction of the Fier-Seman road.

The ESMP mainly consists of the following components:

- **Environmental mitigation measures**, are a series of specific measures developed on the basis of the understanding of future impacts of the road's construction and operation. The mitigation measures are designed to mitigate these potentially negative impacts and reduce them to acceptable levels as can be defined by applicable standards, where appropriate. The mitigation measures refer to design phase (where appropriate), construction phase and operation phase;
- **Environmental monitoring plan**, will be very important for environmental supervision and management and will be carried out periodically to monitor specific components and provide data quantifying the level of impacts, The monitoring plan includes establishment of baseline (if needed) and monitoring during construction and operation phases;
- 
- **Institutional arrangements**, to include the definition of the responsibilities for the implementation and monitoring of the mitigation measures as defined.

#### *Environmental Mitigation Measures*

To reduce the levels of negative environmental impacts, mitigation measures have been identified. Mitigation measures will be implemented during the construction and operation phases. Measures such as construction camp requirements will be indicated. The following components of mitigation are foreseen (presented in detail in table 15), only to be supplemented in the full Environmental and Social Mitigation Plan, Table A, page 96 that is mandatory for implementation:

Table 15: Short overview of aspects and impacts during design, construction and operation

Design Phase	Construction Phase	Operation Phase
Design mitigation measures related to:  - Tree removal/replanting	Materials Supply Materials Transport Noise and Dust Traffic Disruption Vehicular/Pedestrian Safety	Maintenance of the Road Road Safety

<ul style="list-style-type: none"> <li>- Safety of pedestrians and vehicles</li> <li>- Works to adopt to natural species breeding patterns</li> <li>- Measures to prevent flooding</li> </ul>	<ul style="list-style-type: none"> <li>Disposal of Construction Waste</li> <li>Solid Waste and Sediments in Drains</li> <li>Water Pollution</li> <li>Soil Erosion</li> <li>Flora &amp; Fauna</li> <li>Archaeological Discoveries</li> <li>Setting up of Construction Camps and Related Facilities</li> <li>Health and Safety at work</li> <li>Training of workers</li> </ul>	
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The environmental management plan provides a synthesis of the impacts and relevant mitigation measures for the phases of design, construction and operation.

However, based on the specific road section, the following recommended measures need to be included and monitored during contract implementation:

- Waste (recycling and disposal)  
 Since one of the main impacts of this project is the solid waste that is produced during construction activities, it is crucial that before the construction phase, actions must be taken in cooperation with the Fier Municipality, competent authority (MoE) and other actors currently performing similar activities, or are in need of these materials, for recycling of them. The remaining solid waste that cannot be recycled, will be disposed off in the nearest licensed (MoE) landfill, as assigned by Fier Municipality.

Prior to start of works, all urban and domestic waste along the segment, including slopes, must be cleaned up by the contractor.

- Chance find items of cultural and historical interest
  - o According to the Albanian law, in case of any chance findings during excavation and general works, the works will cease immediately, the area will be secured and the relevant authorities will be informed within three days of said finds. The authorities will have fifteen days to respond and indicate what measures need to be taken to proceed with the works. Excavations during the construction phase will be supervised by archaeologists of the Institute of Cultural Monuments.

- Biodiversity

Pine trees in zone 5 must not be cut. If unavoidable, the trees will be replanted/relocated using specific machinery (Excavator for this purpose only). This is a condition of the design approval. Replanting should occur during month of March for the pine trees.

The road will not enter the marsh area.



Works will adopt to natural species breeding periods, especially the birds, since the area near the road is not populated by dense forest to be hosting large mammals. The breeding period for most bird species in the area is around the period of May-June.

## **Design phase**

### *Safety of pedestrians and vehicles*

A carefully planned traffic management plan during construction to provide safety to all traffic participants and avoid congestion will be provided by the designer. In order to avoid impacts on local community, works will be implemented outside the tourism season, which is July-August., or will be minimized during this period.

The programme of works as part of the detailed design will take into account that it is not recommended to perform works during breeding time (May-June in general)

Cleaning up of drainage channels, establishment of culverts are necessary measures to be included in the design in order to prevent flooding.

## **Construction Phase**

**Materials Supply:** Contractors will be required to use or buy material from existing asphalt plants, stone quarries and borrow pits operating with valid environmental and other permits and licenses. Appropriate provisions to this effect will be made in the contract documents as follows. **Materials Transport:** Truck operators will be required to cover or wet truck loads, avoid hauling materials, on public roads, during the morning peak traffic hour (8:00am to 9:00am), and use alternative routes wherever possible to minimize traffic congestion. The contractor will be required to prepare and submit to the works supervisor a traffic management plan prior to the start of works, showing routes and times to be used for materials delivery off and on site. No material transport will be allowed until the traffic management plan is approved.

**Noise and dust:** Construction contractors will be required to limit activities to daylight working hours (not between 7 p.m. and 7 a.m. or as agreed with the public and authorities) and use equipment with noise mufflers. Construction site and materials storage sites will be watered as appropriate to control dust.

**Traffic Disruptions and vehicular/pedestrian safety:** Contractors will prepare a traffic management plan with appropriate measures to control and direct traffic and pedestrians.

**Disposal of construction waste:** Milled asphalt and demolition debris from the construction site will be disposed of in accordance with the local environmental regulations and at sites approved by the environmental authority.

**Solid wastes and sediments in drains:** Solid waste cleanup will be entrusted to licensed operators, with provisions in their contract documents to carry out visual inspections for toxic

materials before handling, segregate waste fractions as necessary, use safety measures while handling and transporting the wastes, and disposal at authorized dump sites with approval of the local authorities.

**Water pollution:** Contractors will be required to properly organize and cover material storage areas; isolate concrete, asphalt and other works from any watercourse by using sealed formwork; isolate wash down areas of concrete and asphalt trucks and other equipment from watercourse by selecting areas for washing that are not free draining directly or indirectly into any watercourse. Contractors will further ensure proper handling of lubricants, fuel, and solvents by secured storage; ensure proper loading of fuel and maintenance of equipment; collect all waste and dispose to permitted waste recovery facility.

**Soil erosion:** slope stabilization during works is a must to prevent the erosion and it is a requirement of the Environmental and Social Management Plan.

**Flora and fauna:** Machinery should not be left idle. Works will not occur during the breeding season (May-June). Replanting of trees shall be performed carefully, using the equipment described in the technical specifications.

**Archaeological discoveries:** In the case of chance findings during excavation and general works, the works will cease immediately, the area will be secured and the relevant authorities will be informed within three days of said finds. The authorities will have fifteen days to respond and indicate what measures need to be taken to proceed with the works. Excavations during the construction phase will be supervised by archaeologists of the Institute of Cultural Monuments.

*Sitting of Construction Camps and Related Facilities, such as storage/stockpile places:* Project contract specifications shall stipulate that the sitting, construction and environmental restoration of facilities for the housing of construction personnel, the storage of equipment and vehicles, labor camps and similar facilities must be conducted to the satisfaction of, and are subject to the approval of the SC. It should be clear that the stipulations apply to all such facilities, including those that are privately negotiated.

**Health and Safety at work:** Preventative health examinations for workers, training on disease prevention, provision of education/ information and health related to reduce sexually related disease.; Informing of local population on vacancies. Maximum possible involvement of local labor; Accommodation needs will be assessed in all worker camps. Ensure standard for accommodation; provide workers with safety instructions and protective equipment (glasses, masks, helmets, boots, etc); Provision of construction workers training; Grievance mechanism for workers to raise reasonable workplace concerns (comments or complaints).

## **Operation Phase**

*Road Maintenance* The Local Authority will be responsible for maintaining the improved road during the operation phase. ADF will prepare maintenance procedures that will be part of the handing over contract. . Measures will include maintenance procedures and environmental mitigation measures recommended in this document related to Operation

Phase. Specific measures will include maintenance and cleaning up of drainage channels to prevent flooding.

The Road Safety Programmer will incorporate auditing during the following remaining phases:

At the conclusion of construction and the beginning of the operation of the road, a safety expert will be required to inspect the road to ensure that safety elements have been incorporated and applied. In addition, the auditor will recommend other administrative measures, such as speed limits. The auditor will submit an auditing report confirming the road approval, and his/her recommendations for administrative measures to be undertaken during the operation phase.

Approximately two years following the commencement of the operation phase, the safety expert will be required to inspect the road and review safety procedures with the authorities and the police. The auditor will prepare an auditing report and will recommend further measures for the improvement of safety if necessary.

***Management of worker relationship:***

The contractor will maintain human resources policies appropriate to its size and workforce that sets out its approach to managing the workforce consistent with the requirements of Albanian law. These policies will be clear, understandable and accessible to workers:

- Creating and maintaining healthy relations between employee/management:
- Promoting fair treatment, non-discrimination and provide equal opportunities for employees
- Labour and employment laws in the country, and the main principles and regulatory standards set forth in the Code of Procedure of the Republic of Albania
- To protect and promote the health of workers, promoting in particular healthier and safer working conditions

*Working relationship:* The contractor will document and communicate to all workers their working conditions and terms of employment including their entitlement to wages, hours of work, overtime arrangements and overtime compensation, and any benefits (such as leave for illness, maternity/paternity, or holiday).

Should apply the principles and standards expressed in the Labor Code of the Republic of Albania as:

- the abolition of child labor
- the elimination of forced labor
- the elimination of discrimination related to employment
- the freedom of association and collective bargaining.

*Child labor:* The contractor will comply with all relevant national laws provisions related to the employment of minors. In any event, the client will not employ children in a manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. 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.

*Forced labor:* The contractor will not employ forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor contracting arrangements.

*Non-discrimination and equal opportunity:* In particular, the contractor will not make employment decisions on the basis of personal characteristics, job requirements base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to all aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline.

*Wages, benefits and conditions of work:* Wages, benefits and conditions of work offered should, overall, be comparable to those offered by equivalent employers in the relevant region of that country/region and sector concerned.

*Occupational Health and Safety (OHS):* The contractor will provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards. The contractor will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by:

- identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers
- provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances
- provision of appropriate equipment to minimize risks, and requiring and enforcing its use
- training of workers, and provision of appropriate incentives for them to use and comply with health and safety procedures and protective equipment
- documentation and reporting of occupational accidents, diseases and incidents

## 7. Implementation arrangements for the proposed segment

All mitigation measures listed in the ESMP table at the end of this document will be monitored during design, implementation of works and operation phases.

The Albanian Development Fund will be the contracting authority for the implementation of this subproject, which will be funded by the World Bank. The responsibilities of ADF during implementation include, among others, the fulfilment of the measures set out in the Environmental and Social Impact Assessment Report, Environmental and Social Management Plan and the Environmental permit. The ESMP is a contractual obligation due to it being a part of contract annexes.

The ADF unit consisting of dedicated environmental and social specialists will monitor the work site weekly and provide a check list for each site visit on the fulfilment of criteria as set out in the above-mentioned documents. The ADF environmental unit will prepare monthly environmental reports, tackling all problems noted during the site visits and providing recommendations and measures to be taken.

An approval of the EIA report is required by Albanian Law and therefore periodical reporting must be prepared by the beneficiary and submitted to the National Environmental Agency, as specified in the approval document.

Construction works will be supervised by a licensed supervisor for this type of works, as well as by the Municipality of Fier.

However, since environmental and social safeguards instruments are considered an integral and important component during implementation of World Bank financed projects, monitoring and reporting will be performed as requested.

### 7.1. ESIA/ESMP Capacity building

The construction operator and/or supervisor must be fully aware of the ESIA/ESMP provisions and trained regarding its implementation. The ADF staff will provide training on ESMP implementation and reporting, in line with the World Bank guidelines and the Environmental and Social Management Framework. The workers will be trained before commencement of works (and upon the employment, for the newcomers) regarding safety issues and also by ADF staff during site visits on construction site.

### 7.2. Reporting and monitoring

The supervising engineer/contractor will report on the implementation of the ESIA/ESMP to the ADF monthly as well as on the implementation of works. The report must include a chapter on environmental performance, based on ESIA/ESMP items. The content of the report will be agreed with ADF. In case of accident or negative impact on the environment (not predicted by the ESIA/ESMP) the supervising engineer will report to ADF immediately.

The contractor needs to implement mitigation measures for construction phase and operator for operation phase

### 7.3. Public information and disclosure

The right of the public to be informed is a mandatory process requested by the Aarhus convention, of which Albania is a signatory party, as well as the World Bank Policy Guidelines.

Upon approval of project financing, the Municipality of Fier, in cooperation with the ADF, will make available to the public the technical project for public review.

Since this project does not require an environmental permit, but only an approval of the preliminary EIA, the public consultation for ESIA is not mandatory by Albanian law. However, in line with the World Bank operational policies (OP 4.01 and disclosure of information), the draft ESIA/ESMP will be disclosed in Albanian and English language in Fier (Fier municipality and on the ADF website). The meeting will take place on January 15, 2017, at the Fier Municipality premises. Feedback that is gathered based on the public consultation, while the comments will be taken into account in the latest version of the ESIA/ESMP (in the minutes of the ESIA meeting attached as well as necessary changes), which will only then become finalized.

In conclusion, this subproject falls under Category B projects, since its environmental and social impacts can be managed through implementation of adequate mitigation measures described in the following Environmental and Social Impact Assessment Report and the Environmental and Social Management Plan. In addition, upon various communications with local community, the draft design was modified in order to avoid any involuntary resettlement. An Abbreviated Resettlement Action Plan will be drafted for this subproject, to appropriately address and solve the compensation for agricultural land acquisition that will take place due to unavoidable road widening through this segment.

### 7.4. Grievance redress mechanism

A grievance mechanism needed to solve problems and manage unforeseen issues which may arise during implementation will be organized in such a way that they are accessible to all, with particular concern for the situation of vulnerable groups. Monitoring will be a joint undertaking under the ADF direction to measure and assess change in household status of project-affected communities.

## Environmental and Social Management Plan

### A. Environmental and Social Mitigation Plan

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
<b><u>Design Phase</u></b>	<i>Involuntary Resettlement</i>	Avoid resettlement by proper identification of properties since design stage	Designer contract		<b>Designer/LGU</b>	<b>Designer/LGU</b>	
<b><u>Design Phase</u></b>	<i>Protection of trees</i>	Carefully plan design to avoid tree replanting, which could only occur if deemed necessary	Designer contract		Designer/ADF	Designer/ADF	
<b><u>Design phase</u></b>	<i>Flooding</i>	Take extra measures to avoid flooding, such as cleaning of and upgrading of culverts and channels	Designer contract		Designer/ADF	Designer/ADF	
<b><u>Design phase</u></b>	<i>Increase of traffic, access difficulties</i>	Prepare traffic management plan	Designer contract		Designer/ADF	Designer/ADF	
<b><u>Pre-construction</u></b>	<i>Involuntary resettlement</i>	Preparation of Resettlement Action Plan in case involuntary resettlement is needed			ADF/Designer/municipality		ADF/designer to prepare resettlement plan and municipality to follow up
<b><u>Pre-construction</u></b>	<i>Cleaning up of the work site from inert materials, dirt, concrete, old asphalt, etc</i>	In consultation with the Municipality of Fier, provide an appropriate method for recycling construction materials and scrap metal materials. Waste from cleaning of site	NA	<b>19,000</b>	ADF/Municipality of Fier	Contractor	As provided in BOQ

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		will be separated and transported and processed/disposed on the licensed landfills.					
<b>Design</b>	<i>Permits</i>	All legally required permits (construction, environmental and other) have been obtained before works commence.	NA	Included to project cost	ADF, Municipality and contractor		
<b>Design</b>	<i>Organization of traffic during construction</i>	Traffic has been organized through the temporary Traffic Management Plan so that there is minimal interference and maximized safety of participants. Traffic signalization and safety measures are prepared. Safe pedestrian passages are provided.	NA		ADF, Municipality and contractor		
<b>Design</b>	<i>Notification of public and relevant institutions</i>	All relevant institutions (e.g. traffic police, construction, environmental and H&S inspectorate, etc.) has been notified on the upcoming works. The public has received timely and relevant information through appropriate means and its geographical and temporal scope.	NA	Included to project cost	ADF, Municipality and contractor		
<b>Design</b>	<i>Materials supplied from illegal or unauthorized sites may exert pressure on the</i>	use existing and licensed stones quarries;	NA	NA	stone quarry	Contractor to obtain all permits	As required in the environmental permit To be specified in bid



Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
	natural resources	requirement for official approval, environmental permit and/or valid operating license (whichever is required within the national regulation)					documents.
<b><u>Design</u></b>	<i>Landscape and nature protection</i>	Defined tree allies/lines that are to be preserved and those to be relocated.  Define procedures for relocation of protected individual trees in consultations with a botanist.	Included to project cost	Included to project cost	Contractor	Contractor	
<b><u>Design</u></b>	<i>Water and soil protection, accidents</i>	Emergency Preparedness Plan that includes leak control action plan and procedures for accidents and accidental spilling/leaking.	Included to project cost	Included to project cost	Contractor	Contractor	
<b><u>Design</u></b>	<i>Risk of flooding</i>	Risk of flooding will be addressed in the design, e.g. through creating additional drainage capacity, cleaning up of drainage channels and culverts, along the whole segment, installing new culverts when necessary, attenuation storage, etc.	Included to project cost	Included to project cost	Contractor	ADF	
<b><u>Design</u></b>	<i>Biodiversity protection</i>	Arrange for works to occur outside breeding season. Road does not enter marshland.  Advise MoE and other competent	Included to project	Included to project	Contractor	ADF	

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		authorities if any specific measures need to be included e.g. construction of animal passages.	cost	cost			
<b><u>Design</u></b>	<i>Public participation</i>	The relevant comments from (i) preliminary design and (ii) ESIA public consultations will be addressed in the final design and revised ESIA.	Included to project cost	Included to project cost	ADF, designer	ADF	
<b><u>Design/Construction</u></b>	<i>Damage to infrastructure</i>	The works on sections transecting utility infrastructure will be coordinated with utility services providers (electricity, sewerage, water supply, telecommunications, etc.). Precise positions of present infrastructure/installations will be determined before works on a particular section commence.	Included to project cost	Included to project cost	Contractor	Contractor	
<b><u>Construction Phase</u></b>							
<b><u>Construction</u></b>	<i>Dust generated during transport of stone, aggregate or other materials</i>	wet or covered truck load.  Unload trucks while preventing dusting, e.g. avoid free-falling and use dust protection sheets.	NA	NA	Construction Contractor	Construction Contractor	As required in the environmental permit  To be specified in bid documents.
<b><u>Construction</u></b>	<i>Dust generated during construction works</i>	Water construction site and material storage sites as appropriate.	NA	NA	Construction Contractor	Construction Contractor	As required in the environmental permit  To be specified in bid documents.

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>During pneumatic drilling/compaction dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at the site.</p> <p>The surrounding environment (at last one road line) shall be kept free of debris to minimize dust.</p>					
<b><u>Construction</u></b>	<i>Air pollution and noise from machinery on site, transport and combustion on site</i>	<p>Do not allow vehicles or machinery to idle on site.</p> <p>Use attested and proper equipment only.</p> <p>No open burning or combustion of any sort is allowed on site.</p>	Minimal, included in the project cost	Minimal, included in the project cost	Construction Contractor	Construction Contractor	
<b><u>Construction</u></b>	<i>Noise disturbance to humans and animals</i>	<p>Check that noise emitted during rehabilitation of the road does not exceed the national norms set out in regulations (85 dB for urban environment, outside as defined in the national legislation).</p> <p>During operations, the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed at</p>	minimal, included in the project cost	Minimal, included in the project cost	Construction Contractor	Construction Contractor	To be specified in bid documents.

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>site camp.</p> <p>No night work will be carried out unless with a special permission and for a limited period of time. There will be no works during tourist season (July-August)</p>					
<b><u>Construction</u></b>	<i>Traffic</i> that may create noise, vehicle exhaust, road congestion on and around the site	<p>Arrange for material transport at hours of minimum traffic. Use alternative routes to minimize traffic congestion. Works to be performed alternatively on half of the road length or in batches in order to allow access to pass</p>	NA	minimal, included in the project cost	Construction Contractor: Transport manager and Truck operator	Construction Contractor: Transport manager and Truck operator	
<b><u>Construction</u></b>	<i>Traffic disruption</i> during construction activity	<p>Traffic management plan with appropriate measures to redirect traffic and is easy to follow (signs and signaling); in cooperation with the local authorities, include traffic police. Regularly inform the local communities and traffic informational agencies of traffic disruptions. Ensure alternative access to the key locations (schools, hospitalists.)</p>	as specified in bidding documents, included in the project cost	minimal, included in the project cost	Construction Contractor	Construction Contractor	Measures to be included in the Traffic management Plan (Bid documents)
<b><u>Construction</u></b>	<i>Vehicle and pedestrian</i>	Appropriate lighting and well	as	minimal,	Construction	Construction	

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
	<i>safety</i>	defined safety signs. Timely announcement in the media when construction will take place	specified in bidding documents, included in the project cost	included in the project cost	Contractor	Contractor	
<b><u>Construction</u></b>	<i>Depletion in non-renewable resources and producing stress to the environment</i>	Use raw materials (sand, gravel, stone) only from suppliers that have valid licenses and concessions issued by the competent authorities.	Included to project cost	Included to project cost	Contractor	Contractor	
<b><u>Construction</u></b>	<i>Risk from surface soil erosion and landslides</i>	<p>Inspect the site for potential landslides and surface erosion.</p> <p>Topsoil from the work's area will be stripped and stockpiled for later use in landscaping the site;</p> <p>The surface runoff management will be applied in the entire length of the road;</p> <p>Cleaning the channels, culverts/ box culverts and having a good maintenance of drainage system will ensure effective protection of the road from erosion and sedimentation;</p>	Included to project cost	Included to project cost	Contractor	Contractor	

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>Slope's systematization will be carried out in a way that will not affect the effectiveness and efficiency of protection from erosion.</p> <p>Where works are necessary, they will be undertaken in such a way to minimize the occurrence of soil erosion, even for short periods. They will be rehabilitated (greened) as soon as possible. Stockpiles will not be placed on these lands.</p> <p>During the works necessary measures preventing erosion and landslides will be taken (use of silt fences, hay bales and other appropriate). Vehicles and machinery manipulation and movement space will be defined in advance and clearly marked.</p> <p>In the case of risk from landslides, apply adequate measures, such as geotechnical assessment and design, installation of gabions, reinforcement measures, etc.</p>					

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
<b><u>Construction</u></b>	<i>Water and soil pollution from works, management and usage of construction machines</i>	<p>Isolate all works from the watercourses. Where necessary use water pumps, filters and other equipment to prevent turbidity. Working site run-offs with possible charge with suspended matter should be filtered before discharging to natural flows.</p> <p>Care is taken not to mix topsoil and subsoil during stripping. Topsoil must be reused where possible. Soil stripping is carried out only in necessary areas.</p> <p>Install leak control equipment Have a leak control mechanism in place and emergency interventions to control spills.</p> <p>The site will establish appropriate water and sediment control measures such as e.g. silt fences to prevent water sediment from moving off site and causing excessive turbidity in the channel.</p> <p>Collectors will be temporary adapted to avoid surface water dispersion in case of watering of</p>	as specified in bid document S, , included in the project cost	50 / month, included in the project cost	Construction Contractor	Construction Contractor	It is recommended that stones and other materials that will be removed, to be reused and recycled at the advice of the Institute of Cultural Monuments and the municipality.

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>sand or gravel to control the dusts.</p> <p>Construction equipment and vehicles (regular maintenance and checkups of oil and gas tanks, machinery and vehicles will be performed) can be parked (manipulated) and washed only on asphalted or concrete surfaces with surface runoff water collecting and treatment system. There will be no discharge of wastewaters to natural recipients without a prior treatment and in the water protected area, there will be none.</p> <p>On site painting or applying protection coatings should be done in the way that annuls the risk of leaking or spilling to waters (e.g. using trays).</p>					
<b>Construction</b>	<i>Pollution</i> from improper disposal of waste materials	Temporarily dispose earth and mineral waste material at appropriate designated location protected from runoff, in cooperation with the municipality of Fier. The mineral waste (topsoil and other) should be reused or	minimal, included in the project cost	As specified in BOQ, included in the project cost	Construction Contractor	Construction Contractor	Most of the waste generated can be recycled.



Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>landfilled/processed in the licensed locations/plants. No waste can remain on temporary or working site upon the completion of works.</p> <p>For temporary, short storage of wastes, select an area on impermeable surface with the runoff collection system, away from any potential leaking into the watercourse. Sufficient number of waste containers for separate collection and of adequate volumes/capacity is provided.</p> <p>Collect and adequately manage all wastes in a timely manner, including dredged material that can only be disposed of at locations approved by the municipality.</p> <p>All waste, including construction debris and excavated materials will be regularly and timely transported off site and managed through a licensed agency/company and disposed of at a licensed landfill/processing plant for the type of waste.</p>					

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities.</p> <p>General refuse, recyclables, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.</p> <p>Whenever feasible, the contractor will reuse and recycle appropriate and viable materials</p> <p>All hazardous and toxic wastes (e.g. oil and oiled materials) will be separately collected, in bins which are leak-proof, and will be handled over to the authorized management and disposal to the licensed landfill/processing company, receipts for which shall be kept.</p> <p>Waste manifests/records that inform on disposal/processing location, amounts, waste type and other will be kept.</p> <p>All waste types will be separately</p>					

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		collected and not mixed (hazardous with non-hazardous and different hazardous waste types). Disposing any type of liquid or solid waste to the natural surrounding (water particularly) is strictly forbidden.					
<b><u>Construction</u></b>	<i>Potential contamination of soil and water</i> from improper maintenance, improper material storage, and fueling of equipment	Organize and cover material storage areas; Proper handling of lubricants, fuel and solvents by secured storage; ensure proper loading of fuel and maintenance of equipment; collect all waste and dispose to permitted waste recovery facility or licensed landfills. In the case of leakage, the contaminated soil should be collected and as hazardous waste disposed as hazardous waste. The waste should be collected in separate and leak proof containers. Have a leak control mechanism, procedures and equipment (e.g. absorbents, impermeable bags, spill fences, etc.) in place and emergency interventions to control spills.	minimal, included in the project cost	minimal, included in the project cost	Construction Contractor	Construction Contractor	The municipality of Fier must provide a written permission for an appropriate waste landfill before the construction works may commence. The selected landfill must be licensed in lien with the national regulation and hold all required permits (construction, environmental, etc.).

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>Store all materials in original containers in adequate locations, which allow for leak-proof storage (e.g. use of bunds).</p> <p>Ensure workers are familiar with safety regulations and storage requirements for each product. Hazardous substances (including hazardous waste) must be kept in appropriately labelled leak-proof containers during temporary storage. Either the container or the storage room must be equipped with the secondary containment system.</p> <p>No large amounts of fuel will be kept on the site. In the case of re-fuelling on site, precautionary measures will be taken to prevent accidental spilling (e.g. use of trays).</p> <p>In the case of any run-off coming from works area possibly contaminated by hazardous substances, it shall be collected on site to a temporary retention basin and transported to an adequate treatment plant.</p> <p>Soil work and management will</p>					

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>take into account metrological data and conditions when planned and carried out (e.g. avoid works during heavy rains).</p> <p>No water can be discharged to the surrounding nature without prior treatment.</p>					
<b><u>Construction</u></b>	Protection from flooding	<p>Clean culverts, ditches and other drainage elements to ensure sufficient uptake capacity.</p> <p>If possible, in cooperation with other relevant agencies and institutions remove other causes for flooding (e.g. clogged irrigation canals).</p>	minimal, included in the project cost	minimal, included in the project cost	Construction Contractor	Construction Contractor	
<b><u>Construction</u></b>	Interruption of surface and underground drainage patterns during construction, creating of standing water.	In line with approved design, maintain natural drainage pattern.	minimal, included in the project cost	minimal, included in the project cost	Construction Contractor	Construction Contractor	
<b><u>Construction</u></b>	Workers health and occupational safety	Provide workers with safety instructions and protective equipment (glasses, masks, helmets, boots, et complying	minimal, included in the project	minimal, included in the project cost	Construction Contractor	Construction Contractor	

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>with the H&amp;S international best practices. The protective equipment is worn at all times.</p> <p>Workers are adequately trained/certified and experienced in using dangerous equipment and for higher risk positions/work.</p> <p>All work will be carried out in the safe and disciplined manner designed to minimize the impacts and risks for workers, surrounding communities and the environment.</p> <p>In case of accidental disruption, immediately stop all works and remove the cause of accident (e.g. stop the leakage), notify proper authorities and emergency remediation of damaged network in line with the requirements of Law on civil emergencies. Any incident will be reported to the project manager immediately and regularly to supervising engineer. During cleaning, ensure workers are equipped with protective equipment. Workers will avoid direct contact with contaminated sites. In the case of soil of water</p>	cost				

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		pollution, the contaminated soil or water should be collected and taken for the appropriate treatment/disposal (as hazardous waste).					
<b><u>Construction</u></b>	Works site organization	<p>Construction sites are fenced off or protected by barriers, tape-marks and informational posts and warnings. Construction site is equipped with proper sanitary facilities (chemical toilets) and resting areas for workers; medical kit and fire equipment is present at the site with use trained employees. The site and construction camp remain inaccessible to public.</p> <p>Appropriate sign postage is in place informing workers of key rules and procedures to follow.</p> <p>Potentially hazardous areas (trenches, manholes, excavations and other) must be protected/covered and clearly marked.</p>	Included in the project cost	Included in the project cost	Construction Contractor	Construction Contractor	
<b><u>Construction</u></b>	Impacts on vegetation, trees, meadows, etc.	The working zone must be reduced to space that is necessary. The clearing of	NA	, included in the project cost	Construction Contractor; Forestry		As specified in the environmental permit and technical specifications

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>vegetation shall be kept to a minimum, with replacement planting planned and conducted, and shall be done in coordination with the measures for protection of habitats and river banks. Specific measures include use of special equipment to protect the tree roots during replanting.</p> <p>Project activities will not include use of pesticides.</p>			Directorate, Municipality of Fier		According to the national environmental regulations, for 1 tree that is cut, 3 must be planted
<b><u>Construction</u></b>	Chance finds items of cultural/historical interest.	In the case of chance findings, ensure all works are stopped, the area will be secured and the relevant authorities will be informed within three days of said finds. The authorities will have fifteen days to respond and indicate what measures need to be taken to proceed with the works.	NA	In case of chance finds, the project owner will pay for all required investigations	Construction Contractor, ADF, municipality of Fier		Albanian legislation details necessary actions in case of chance find items.



Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
<b><u>Construction</u></b>	<b>Labor and working conditions</b>  a) Disease prevention and health examinations  b) Creation of additional workplaces  c) Workforce accommodation  d) Workers safety on site	a) Preventative health examinations for workers, training on disease prevention, provision of education/ information and health related to reduce sexually related disease.  b) Informing of local population on vacancies. Maximum possible involvement of local labor.  c) Accommodation needs will be assessed in all worker camps. Ensure standard for	As specified in BOQ, included in the project cost	minimal, included in the project cost	Contractor, ADF	Contractor	It is a legal requirement to provide protective equipment for safety at work

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		<p>accommodation.</p> <p>d) provide workers with safety instructions and protective equipment (glasses, masks, helmets, boots, etc);</p> <p>b)Provision of construction workers training.</p> <p>c) Grievance mechanism for workers to raise reasonable workplace concerns (comments or complaints).</p>					
<b>Construction</b>	<i>Grievance issues</i>	Establishment of a grievance redress mechanism			ADF	Municipality	
<b>Construction</b>	<i>Damage to electricity, water, sewerage and other infrastructure</i>	<p>During works near and on utilities' installations (e.g. electricity, water supply, sewerage, etc.) the services may be shut down or limited. Local population will be informed and, in the case of longer periods of shutdown, alternative supply will be ensured.</p> <p>When working in vicinity of electrical and other</p>	Included to project cost	Included to project cost	Contractor	Contractor	

Phase	Issue	Mitigating measure	Cost (in EUR)		Institutional responsibility		Comments (e.g. secondary impacts)
			Install	Operate	Install	Operate	
		installation, to avoid damages, the works will be manual with light equipment and using no machinery.					
<b>Operation / Maintenance/</b>	<i>Noise disturbance to local population and workers caused by regular and scheduled maintenance works on the road</i>	Limit activities to daylight working hours (as agreed with local authorities.)	Minimal, included in the project cost	minimal, included in the project cost	Maintenance Contractor/L GU	Maintenance Contractor/L GU	to be specified in maintenance contract documents-Technical Specifications for realization of maintenance works

## Part B: Environmental and Social Monitoring Plan

Phase	What activity/impact is to be monitored?	Where will be monitored?	How is to be monitored?/ type of monitoring equipment	When is to be monitored? (frequency of measurement or continuous)	Why is the parameter to be monitored? (optional)	Indicators	Cost		Institutional responsibility	
							Install	Operate	Install	Operate
<b>Pre-Construction</b>	All permits are obtained before works start. Possession of official approval or valid operating license for stone quarries and other material supply subjects (e.g. gravel and sand exploitation companies).	on location of stone quarry, minerals exploitation companies	inspection of all necessary documents	before work begins	to ensure sustainable use of materials	possession of official approval or valid operating license and concession	NA	NA	Quarry Operator	Quarry Operator

<b>Pre-Construction</b>	Public and relevant institutions are notified of works.	Contractor's premises	inspection of all necessary documents	before work begins	To ensure public awareness	Announcements in the media and direct information dissemination	Included to project cost	Included to project cost	Supervising engineer, ADF	Supervising engineer, ADF
<b>Pre-Construction</b>	Emergency Preparedness Plan and traffic organization plan have been prepared.  Position of existing infrastructure at relevant sections has been determined.  Traffic Management Plan is prepared	Contractor's premises	inspection of all necessary documents	before work begins	To reduce risks and impacts of accidental situations and damage to the infrastructure.	Plans and blueprints in place	Included to project cost	Included to project cost	Supervising engineer, ADF	Supervising engineer, ADF
<b>Pre-Construction</b>	Works organized and scheduled to avoid disturbance of animals in important lifecycle periods.	Contractor's premises	inspection of all necessary documents	Once before work begins	To reduce risks and impacts to biodiversity	Plans in place	Included to project cost	Included to project cost	Supervising engineer, ADF	Supervising engineer, ADF

<b>Construction</b>	<p>Covering or wetting down transported materials that can generate dust, such as stone, sand or gravel, keeping the site wet and protected from dust spreading.</p> <p>Protection from dust while unloading.</p> <p>There is no burring at the site.</p>	job site – each vehicle	supervision	continuously	ensure minimal disruption to air quality	Covered truck load Report from the supervising engineer	NA	minimal, included in the project cost	ADF	Supervision Contractor  Supervision Contractor
<b>Construction</b>	<p>Congestion on site, disruptions to traffic patterns, complaints on traffic management.</p> <p>Safe passages for pedestrians are provided.</p>	On the site	Visual supervision	regularly by supervision	To ensure minimal disruptions to the local traffic, prevent accidents and ensure safety	Number of complaints received		minimal, included in the project cost	a) ADF	Supervision Contractor

<b>Construction</b>	<p>Damage to soil structure, landslides and slips, embankments.</p> <p>Soil erosion and landslides prevention measures in place (e.g. silt fences, hay bales, geotechnical studies, reinforcement and other measures needed).</p>	work site	supervision	unannounced inspections during work, after heavy raining; regularly before and during earth works on a particular section	To ensure minimal impacts on soil	land slips, erosion, damaged embankments, measures in place, studies completed before the works on the affected area	NA	minimal, included in the project cost	ADF	Minimal
<b>Construction</b>	Noise disturbance to human and animal population, and workers on site	job site; nearest homes	noise meter and analyzer, inspection	once for each machine and equipment when works start. In the case of incompliance - regularly. on complaint or negative inspection finding	assure compliance of performance with environment, health and safety regulation and standards	Incompliance (>85dB), complaint, negative inspection finding	minimal, included in the project cost	minimal, included in the project cost	ADF	Supervision Contractor

<b>Construction</b>	Air pollution parameters of dust, particulate matter	At and near job site	Sampling by authorized agency	Upon complaint or negative inspection finding	To ensure no excessive emissions during works	Incompliance, complaint, negative inspection finding, reports of REA	minimal, included in the project cost	100/month	ADF	Supervision Contractor
<b>Construction</b>	water and soil quality (suspended solids, oil and grease)	At and near work site (upstream and downstream)	Sampling by authorized agency Visual inspection of leaks, turbidity and contamination	Upon complaint or noticed spill/leak/turbidity into the river/water body or soil near the water body.	To ensure no excessive emissions during works	Incompliance, No of grievances recorded, reports of REA	Minimal, included in the project cost	minimal, included in the project cost	ADF	Supervision Contractor
<b>Construction</b>	Traffic safety, signaling and accessibility	In the wider area of the working site	Visual inspection, consultations with the traffic police, consultation with the local residents	Upon the start of works on a particular section, upon complaints.	To prevent accidents and ensure access to services and livelihood	No of grievances recorded	Included to the project cost	Included to the project cost	Supervising engineer, ADF	ADF
<b>Construction</b>	Safety signage and procedures in place. Fence is in place. Warning signs in place.	At and near work site	Visually by supervisor	Regularly	To ensure clear posting of safety signs	Number of signs	Minimal, included in the project cost	ADF	Supervision Contractor	ADF



<b>Construction</b>	Disposal of waste materials at licensed landfills/process plants, transported by the licensed transport companies.	On site for timely collection and disposal on final disposal site	Documents check (licences, waste records), site visit,, visually	Before start of works and regularly	To ensure proper waste management thus prevent contamination	Licenses issued by the competent bodies, amounts of waste removed	, included in the project cost	ADF	Supervision Contractor	ADF
<b>Construction/waste</b>	Separate waste collection	On site	Visually, number, labelling and capacity of containers, waste mix, containers safety	Regularly	Prevent pollution	No of containers, waste mix, labelling, procedures	included in the project cost	included in the project cost	Supervision Contractor	ADF

<b><i>Construction / hazardous substances (including waste) management</i></b>	<p>Containers are leak-proof and with secondary containment system. Containers are accessible only to authorized personnel.</p> <p>During use, spill protection systems are in place.</p> <p>Containers are adequately labeled.</p> <p>Check tanks, machinery and vehicles for leaks.</p>	On site	Visual	Regularly	Prevent pollution	No. and size of spills, amount of contaminated soil or water, leaks	included in the project cost	included in the project cost	Supervision Contractor	ADF
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<p><b>Construction</b> <i>/ Workers safety</i></p>	<p>Protective equipment (glasses, masks, helmets, boots, et) worn at all times, safety warning and instruction are on site; organization of bypassing traffic, other Health and Safety (H&amp;S) measures. Workers are adequately trained and certified for positions and work they perform. Emergency Preparedness Plan and emergency procedures are available on site and communicated to all workers through H&amp;S training.</p>	<p>job site</p>	<p>inspection</p>	<p>unannounced inspections during work</p>	<p>Prevent accidents</p>	<p>number of on-job accidents recorded, procedure available, protective equipment available</p>	<p>NA</p>	<p>minimal, included in the project cost</p>	<p>Supervision, ADF</p>	<p>NA</p>
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<b>Construction / Site organization</b>	Site is well organized: fences, warnings, sign postage in place. Dangerous areas fenced and marked. Sanitary facilities available in sufficient number. Camp inaccessible for public.	Work site, camp	inspection	unannounced inspections during work	Prevent accidents	number of on-job accidents recorded	NA	minimal, included in the project cost	Supervision, ADF	NA
<b>Construction/ Destruction of crops, trees meadows etc</b>	loss of/impact on vegetation, damage to existing trees during replanting (replanting procedures are followed)	job site	Supervision, photographic reports	during material delivery and construction	Landscape value protection	Reports of frequent visits on site by the Env. Expert	NA NA	minimal, included in the project cost	Supervision Contractor, ADF	ADF

<p><b>Construction/</b> <i>impact to biodiversity and nature</i></p>	<p>Only native species are used in greening and site rehabilitation;</p> <p>Site is restored to previous condition. Permissions for removal of trees are obtained.</p> <p>Disturbance of animals and collection/destruction of flora is not present.</p>	<p>Working site</p>	<p>Visual inspection of a site, inspection of documents;</p>	<p>Regularly; permissions before works commence.</p>	<p>Landscape value and nature protection.</p>	<p>Complaints</p>	<p>minimal, included in the project cost</p>	<p>minimal, included in the project cost</p>	<p>Supervision Contractor, ADF</p>	<p>ADF</p>
<p><b>Construction/</b> <i>Chance find items</i></p>	<p><i>Cultural properties. chance findings clause is applied</i></p>	<p>Job site, documentation</p>	<p>Expert visits from Institute for Cultural Monuments, regular supervision</p>	<p>Continuous, in the case of findings</p>	<p>Cultural heritage preservation</p>	<p>Catalogue of items found, including photographic and textual documentation; chance findings report</p>	<p>Should be part of the regularly scheduled activities</p>	<p>minimal, included in the project cost</p>	<p>Supervision Contractor, ADF, ICM</p>	<p>Supervision Contractor, Cultural Directorate, ADF</p>

<b>Construction/</b> <i>a)Disease prevention and health examinations</i>	1) Health examinations for workers, 2) training on disease prevention, including STD	At or near job site	visits on site and communication with workers and community	Once a week by ADF	To ensure proper implementation of health and safety requirements	Knowledgeable workforce on procedures, Equipped with safety equipment	Should be part of the regularly scheduled activities	Minimal, included in the project cost	ADF, supervisor, contractor	supervisor, contractor
<i>b)Creation of additional workplaces</i>	1)Informing of local population on vacancies									
<i>c)Workforce accommodation</i>	2)Involvement of local labour 1)Accommodation needs will be assessed									
<i>d)Workers safety on site</i>	2)standard for accommodation 1)safety instructions and protective equipment (glasses, masks, helmets, boots, etc); safe 2)organization of bypassing traffic  3)Availability of grievance mechanism and grievance focal point									

<i>Operation/ Vehicle and pedestrian safety</i>	visibility and appropriateness of signage	at and near job site	observation	once per week in the evening	Safety	Number of warning signs installed, appropria teness, number of accidents recorded	minimal	mini mal, inclu ded in the proje ct cost	ADF	maintenacne Contractor, ADF
<i>Operation/ Increase of domestic solid waste due to increased number of visitors to the site</i>	Visual impact	At and near job site	visits on site and communication with local authorities	Once per every two days by the LGU for maintenance reasons	For aesthetical reasons	Lack of waste on the ground, empty waste bins	Should be part of the regularly schedule d activities by the LGU		LGU	LGU

## **ANNEX 1: Minutes of the meeting organized in Fier Municipality during preliminary design**

Report on the meeting held in Fieri Municipality for the presentation of the preliminary idea for the reconstruction of the road Fier – Seman.

The relevant comments will be addressed in the final design and revised ESIA.

On 12/12/2017, in the premises of the Fieri Municipality was held the meeting for the presentation of the preliminary idea for the reconstruction of the road Fier – Seman. This meeting aimed at the familiarisation with preliminary ideas for this intervention of the local authorities while also serving gathering of data, reflections and opinions about the problematic of the intervention, its compliance with local developmental strategic vision or intervention plans in the area from local authorities.

The meeting was attended by the mayor for Fieri Municipality, Mr. Armand Subashi, infrastructure specialists from the municipality, representatives from the OSHE (operator for the distribution of electric energy), Water Draining Board, water and sewage company, administrators at the municipal units where passes the road, etc.

After the representative of the ADF presented the participants with the nature of the program, its' categorisation under the World Bank scheme and its' financing requirements.

The representative of the company AVE Consulting, Mr. Arben Dervishi, presented the participant with three possible variants of the intervention. Mr. Dervishi familiarized the participants with a zoning of the road according to the particular requirements and interaction with the surrounding.

The presentation was based in drawings and allowed a clear understanding of the preliminary project ideas, which was reflected in the participant's comments and discussions.

The Mayor of Municipality of Fier, Mr. Subashi in his words raised a number of issues that placed the intervention in context with other infrastructural developments in the area, among which the most important the one about the need to reallocate one of the principal connections of the Fieri' bypass at the area where it meets the Fieri – Seman road. The circuitous roads that



provide entrance to the city from its' western side have been previously thought to be placed at another point of a lesser relevance.

Another request was the one of starting the intervention at a point closer to the centre of the city providing so a better connection with circular road of the city.

Object of discussion was also the biking lanes which in the project are foreseen to join in one of the sides of the road after the Fieri bypass. The concerns were that this might impact the safety of the bikers.

Mr. Subashi and other participants underlined that the road offers the possibility to be widened as on both sides of the road there are draining and irrigation canals that can be included in the body of the road using tubes creating so possibilities for a minimal impact on the properties along the road.

Parts of this group of discussions were the ones about the last segment of the road, accessing the Seman beach. The different points of view took in consideration the impact on the vegetation on the touristic potential of the area, the expectations of the visitors frequenting this beach etc.

Although opinions on the need to maintain the flow of the vehicles at a distance from the beach were voiced the general belief is that taking in consideration the fact that daily visitors on this beach frequently take with them the commodity objects or food they might need access as close as possible.

Object of the communication was also the need to coordinate the efforts with other actors that are active in the area as TAP, who is using the road and been responsible for some of the deteriorations because of the high tonnage vehicles its' using. TAP is engaged to intervene in stabilising the terrain and improving the asphalt in parts of the road.

A good coordination was seen as a possible mechanism for lowering the costs of the project.

Ing. Piro Ndreu, representative of the Water Supply and Drainage Company underlined the fact that the area where the project is located has a dense engineered network and that the project needs to take in consideration while also reflecting the developmental potential of the area. He said that the Municipality in cooperation with KfW are planning to upgrade the water supply in the area in the near future while TAP is also planning the building of the electrical station in the vicinities.

Mr. Ndreu and other speakers stressed the possibility for rapid development of the area after the infrastructural improvements lead by this intervention. The beach area can also be expected to see an important development in the future.

The representative of Operator for the Distribution of Electric Energy (OSHE), Mr. Gertan Bileso said that the electrical network needs to be considered carefully in this project. This company enlists in its plans the improvement of the network planning the construction of a 20 kW line for the nearby areas.

The company also underlines the needs to coordinate efforts for the accomplishment of satisfactory results.

Representatives of the Water Draining Board underlined the importance of the canals along this road serve a wide arable area of high productivity.

Other discussions included the possibilities for the depositing wastes, the tree planting along the road, the problematic that might rise for entrances in the road, etc.

In the concluding remarks Mr. Subashi said that the municipality will send a notification about its preferences, while I the same time will start the communications with the authorities to request a reallocation of the connection of Fieri Bypass at the Fieri - Seman road, while in the same time expressing their readiness to be part of the communication that will lead to the implementation of this very important investment for the local community.





