

Republic of Macedonia
Public Enterprise for State Roads



NON-TECHNICAL SUMMARY (NTS)

Shtip – Radovish Expressway,
Republic of Macedonia

FINAL

ZYL Consulting Ltd

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Abbreviations & Acronyms:

CESMP	Construction Environmental and Social Management Plan
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
ESP	Environmental & Social Policy
EU	European Union
km	kilometre, used to identify chainage (distance along road corridor) and length
IBA	International Bird Area
LARF	Land Acquisition and Resettlement Framework
MoEPP	Ministry of Environment and Physical Planning
MoTC	Ministry of Transport and Communication
NTS	Non-Technical Summary
OESMP	Operational Environmental and Social Management Plan
OGRM	Official Gazette of the Republic of Macedonia
PESR	Public Enterprise for State Roads
PR	Performance Requirement
RSA	Road Safety Audit
SEA	Strategic Environmental Assessment
SEP	Stakeholder Engagement Plan

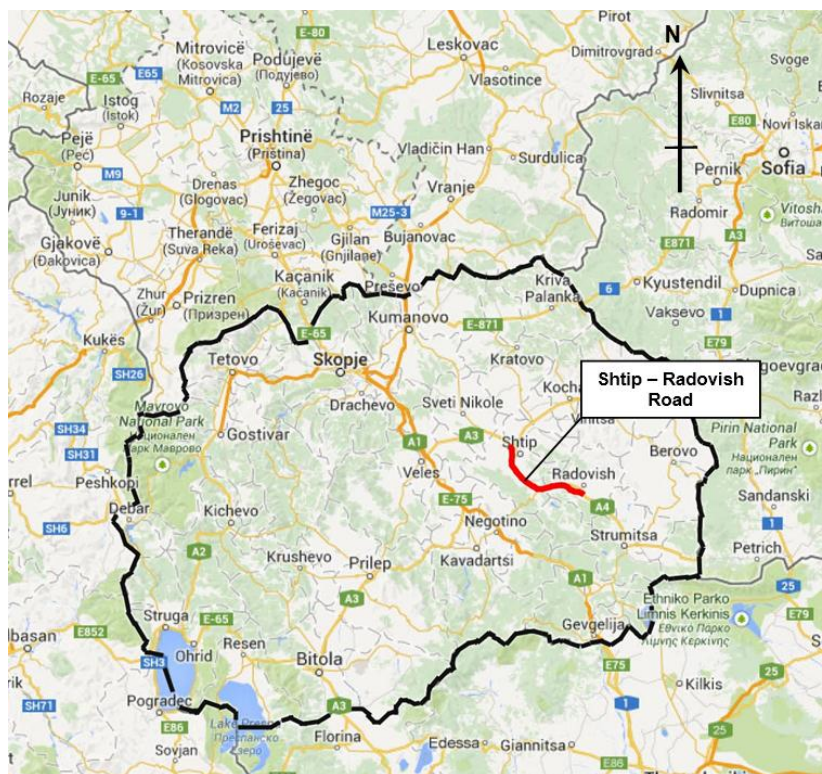


1. INTRODUCTION

The European Bank for Reconstruction & Development (EBRD) is considering providing financing to the Macedonian Public Enterprise for the State Roads (PESR) in support of road improvement works to the A4 highway in the eastern region of the Republic of Macedonia (the “Project”). The Project involves the improvement of a 40 km section of the single carriageway section A4 national highway to create a single 2 lane carriageway ‘Expressway’ between the economic regional centres of Shtip and Radovich. The Expressway will connect with the Miladinovci – Shtip motorway which is presently under construction.

The Project location is shown in **Figure 1**:

Figure 1 Project Location



The EBRD has determined that the Project is a “Category B” Project according to its Environmental & Social Policy (ESP 2014), and is working with the PESR to ensure that the Project’s environmental and social risks are appraised and managed in accordance with the Policy.

This **Non-Technical Summary (NTS)** describes the Project, and summarises the findings of the environmental and social investigations conducted and the risks identified. A **Stakeholder Engagement Plan (SEP)** has been developed for the Project describing the planned stakeholder consultation activities and engagement process. A **Land Acquisition and Resettlement Framework (LARF)** has also been developed to set out PESR’s commitments to national and EBRD requirements in relation to land acquisition. An **Environmental and Social Action Plan (ESAP)** has been prepared in relation to the proposed Project; in order to structure the future Project preparation activities to be in line with EBRD’s Environmental and Social Policy (ESP 2014).

Full project preparation documents including the Environmental Impact Assessment (EIA) – were conducted as a part of larger project which envisaged a Motorway between Shtip-Strumica. It generally followed the same route as the proposed Project and was approved in 2012 . The Elaborates for Environmental Protection for Sections I and II



are still being conducted, and will be uploaded to the PESR website when completed. In addition to the Elaborates, the NTS, ESAP, SEP and LARF, will be disclosed on the PESR website (<http://www.roads.org.mk/en/index.php>).

2. PROJECT NEED & BACKGROUND

Project Need & Benefits

The Project is consistent with the overall plan for the improvement of the national road network, outlined in the Republic of Macedonia's National Transport Strategy (2007-2017), and is part of the overall plans to upgrade the A4 national road which runs from the Kosovo border at Blace via Skopje, Petrovec, Miladinovci, Shtip, Radovish and Strumica to the border with Bulgaria at Novo Selo.

Overall, the Project is expected to deliver a number of benefits, including improved connectivity, reduced journey times, and improved road safety along the road, as well as improving access to community services to the settlements along the route. Some short-term local employment opportunities may be seen during construction, and the improved connectivity will potentially contribute to stimulating growth and investment in the area in the long-term.

Project Development & Planning History

Initially, a Motorway was proposed to connect Shtip and Radovish, and on towards Strumica. Apart from the initial 10 km section of the proposed Expressway the Motorway alignment was broadly similar to that of the current Project. The Motorway was to be a dual carriageway (2-traffic lanes and a hard shoulder in each direction), wider and a faster design speed (120 km/h) than the proposed Expressway Project. An EIA was conducted on this Motorway scheme, and approved by MoEPP in 2012.

However, traffic projections conducted for the A4 road corridor suggested that the traffic flows were not sufficient to warrant a Motorway and an Expressway constructed at less cost could fulfill the objectives regarding design speed, traffic capacity and safety. Therefore, rather than a Motorway, it was decided to upgrade the current A4 road into an Expressway, with a single traffic carriageway plus a hard-shoulder in each direction and a design speed of 110 km/h.

3. PROJECT DESCRIPTION

The current A4 road between Shtip to Radovish is a 2-lane single carriageway pavement over its full length, with a width of between 6.5 m and 7.0 m.

Figure 2 illustrates the proposed 40 km Expressway Project alignment and its key elements. For approximately 20 km of the corridor, the improvement Project involves the rehabilitation and widening of the existing A4 road, and the remaining 20 km involves creation of a new Expressway, constructed on an alignment to the north-east of the existing A4 highway. The existing road will continue to act as a local access road for this new aligned Expressway section.

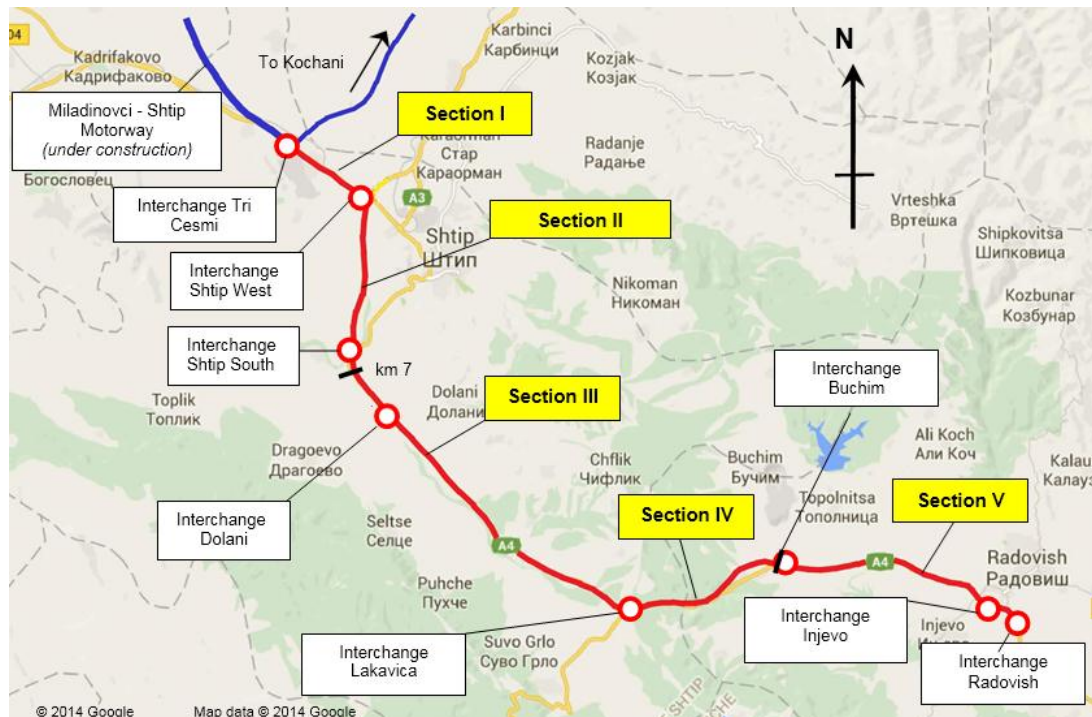
The Expressway Project is made up of the following 5 sections:

- **Section I** – 3.2 km (chainages -3.2 km to 0.0 km approximately) section running from the **Interchange Tri Cesmi** to **Interchange Shtip West** comprising of rehabilitation and widening of the existing A4 highway;
- **Section II** – 7.4 km (chainages 0.0 km to 7.4 km approximately) section running from the **Interchange Shtip West** through **Interchange Shtip South** terminating approximately 2 km from this interchange/junction comprising of rehabilitation and widening;



- **Sections III & IV** – 21.2 km of new Expressway (chainages 7.4 km to 28.6 km approximately) which will be constructed on an alignment north-east of the existing A4 highway running from the end of Section II to **Interchange Dolani** to **Interchange Lakavica** then onto **Interchange Buchim**; and
- **Section V** – 8.6 km (chainages 28.6 km to 37.2 km approximately) section running from **Interchange Buchim** through **Interchange Injevo** to **Interchange Radovish** comprising of rehabilitation and widening of the existing A4 highway. This section includes parallel access roads for the local community, agricultural vehicles and other non-Expressway vehicles/users to use.

Figure 2 Shtip – Radovish Expressway Project Alignment



Sections I, II & V involve rehabilitation and widening of the existing road pavement along the existing A4 alignment to provide two 3.5 metre wide traffic lanes and two 2.2 metre wide hard shoulders. Sections III and IV - in the central 20 km long section of the Expressway - will be constructed on a new improved alignment to meet the requirements of the current Macedonian road design standard. The sections of new Expressway will run mostly through flat agricultural land and lightly-wooded side sloping ground.

The new hard shoulders along the entire Expressway alignment, will act as emergency lanes to provide refuge for broken-down vehicles. The Project will along its full length have new safety barriers, road markings, road signs and road drainage in accordance with national design standards and relevant EU requirements. The interchanges will also be lit in accordance with national design standards. For safety reasons, protection fencing will be installed along the entire Expressway route.

The existing A4 road is used by local communities and for agricultural vehicles, therefore access must be maintained to local lands and villages. Several new grade-separated interchanges and access/local side road arrangements are therefore included in the Project design. In addition, several structures - bridges, underpasses, culverts and retaining walls - will be installed along the route. A 'Shelter Belt' (or 'road reserve') 40 m each side of the Project Expressway will be established with restrictions being placed on certain activities within this 40 m width.

Road Safety Review



A Road Safety Review has been undertaken on the Project, which noted that the proposed Expressway has an improved alignment and design that should improve the safety and efficiency of traffic flow along the corridor, and should contribute to reducing the cost of traffic accidents. A full Road Safety Audit (RSA) will be undertaken once the detailed design is complete and at relevant points in the future in line with national requirements and the EU Directive 2008/96/EC.

4. ROUTE SELECTION & CONSIDERATION OF ALTERNATIVES

Several alternatives to the proposed Project route were considered during its development, as summarised below:

Route Concept – Motorway (Original Proposal) or Expressway (Current Project): The original proposal for this part of the A4 was a Motorway, but it became apparent that projected traffic flows did not warrant a Motorway, so an Expressway was proposed.

Alternative Alignments between Tri Cesmi Interchange and Shtip South Interchange: An alternative alignment was considered for the section between Tri Cesmi and the Shtip South Interchange (see Figure 2), which took the road through a stretch of potentially sensitive grasslands (halophytic steppe-like), which are a protected habitat under the EU Habitats Directive. The alternative was not pursued.

Alternative Alignments at 'New Damjan' Village: One proposed alignment followed the existing road alignment directly through New Damjan village. However, this severs the two sides of the village, and passes a number of residences situated close to the road. The adopted Project route, avoids the demolition of residential structures, resettlement of households and disturbance/safety issues, by taking a curved bypass through agricultural areas to the north.

Alternative Alignments between Buchim Junction and Radovish Junction: An alignment was considered which takes the road significantly to the south of the existing road between New Damjan Village and Radovish. The alignment passes near the village of Injevo, and crosses mostly through agricultural lands. It was never considered in detail this alternative due to the impact on and cost of expropriation of agricultural land.

Interchange/Junction at Topolnica: A new junction was considered to allow access to the village of Topolnica. However, this is not part of the current design. This new junction would require some agricultural lands. A parallel local access road along the entire northern side of Section V between Interchange Bucim and Radovish has been included in the design, along with a short parallel access road from the local Damjan road on the south side of the Expressway. The provision of these new local access roads will enable residents of local villages, including Damjan and Topolnica, to access the Expressway and provide an alternative routing for agricultural vehicles/uses and non-Expressway vehicles etc. Without the junction, the additional distance for residences of the Topolnica village to access the main Expressway will be around 3 km (via Interchange Injevo), and 5 km (via Interchange Buchim).

Environmental and Social Effects of Alternatives

The proposed scheme does not cause more significant environmental and social effects than the other route alternatives considered. The proposed scheme provides probably better access to local lands and villages, especially in the Buchim to Radovish section with the additional local parallel roads.

5. SUMMARY OF ENVIRONMENTAL & SOCIAL LEGAL & POLICY FRAMEWORK

National Legal Framework for Environmental and Social Protection



The environmental legal framework is defined by the Law on Environment¹. This Law transposes the requirements of various EU requirements, including those within the EIA, Pollution Prevention & Control and the Industrial Accidents Directives.

National laws exist which cover social aspects, including Health Protection, Occupational Health & Safety, Labour Relations, Working Conditions, Employment, Wages, Social Protection, Land Acquisition, Child Protection and Equal Opportunities. The Republic of Macedonia has ratified many International Labour Organisation (ILO) Conventions.

The following laws are also of particular interest for the implementation of the Project: Law on Public Roads², Law on Road Safety³, Law on Health and Safety⁴ and Law on Fire Prevention⁵.

Macedonia has signed several international environmental and social treaties and conventions which are also relevant.

Summary of EIA & Permitting Process

The overall EIA process is regulated by the Law on Environment and several secondary regulations that define the screening and scoping process, the EIA content, the procedure for its evaluation and disclosure as well as adoption/rejection. Under Annex 1 of the *'Decree Determining the Projects and the Criteria under which the Requirement for Environmental Impact Assessment Procedure Performance is Established'* (OG 74/05), an EIA is mandatory for the *'construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less, in order to provide four or more lanes, where such new road or realigned or widened section of road would be 10 km or more in a continuous length'*.

The overall length of the EIA procedure according to the Macedonian Law is a minimum of 105 days, which includes holding a public review and consultation within 30 days after the submission of the draft EIA, and an Adequacy Report issued within 60 days after the submission of the draft EIA, and a Decision on adoption/rejection of the EIA after the completion of the Adequacy Report.

Under the Law on Construction (OGRM No. 130/2009) the national responsible body for issuing the construction permit for this Project is the Ministry of Transport and Communication (MoTC).

Legal Framework for Nature Protection

The **Law on Nature Protection**⁶ sets out various principles including of: protection, restrictions regarding use of nature and natural resources, impact assessment, planning, compensation measures, protection of biodiversity, protection of internationally important species, wildlife conservation, genetic diversity, habitats and ecosystems, ecological networks, minimum environmental release, restrictions for construction activities in riparian habitats and littoral areas, protected areas, management plans for protected areas, landscape diversity, etc. The law transposes the following EU Directives: Habitats Directive 92/43/EEC, Birds 79/409/EEC & Council Regulation (EC) No 338/97⁷ etc. The full transposition of the *Habitats Directive* and the *Birds Directive* is pending.

Legal Framework for Land Acquisition

¹ OGRM No. 53/05, 81/05, 24/07, 159/08, 83/09 and 123/12, 93/13, 187/13 and 42/14

² OGRM Nos. 84/08; 52/09; 114/09; 23/11, 168/12

³ OGRM Nos. 54/07; 86/08; 98/08; 64/09

⁴ OGRM Nos. 92/07, 136/11, 23/13, 25/13

⁵ OGRM Nos. 67/04, 81/07

⁶ OGRM Nos. 67/04, 14/06 and 84/07, 35/10, 47/11, 148/11, 59/12, /13, 163/13 and 41/14

⁷ Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulating trade therein



Issues related to provision of compensation for land and assets acquired in the Public Interest, are regulated mainly by the **Expropriation Law**⁸. This focuses on properties and assets which may be expropriated and restrictions which may be placed on property rights, in the Public Interest. Public Interest is determined for projects which are foreseen by various planning documents and are in the interest of the Republic of Macedonia. The Expropriation Law provides a list of Projects for which Public Interest and roads are one of them. An important feature of the Expropriation Law is that it allows for compensation of structures built informally (without a valid permit), in the amount that corresponds to their construction value, (i.e. the market value of the materials and costs of labour).

In some instances, issues related to provision of compensation for land and assets is addressed through the **Law on Obligations**⁹. In principle, this law requires provision of compensation in cash to formal legal owners of land and assets (or those whose rights are recognisable under national laws) for damages or losses incurred as a result of investors/contractors (or others) accessing land or preventing access to land and/or assets. Cases in which the one causing the damage/losses and the affected person are not able to agree on the amount of compensation, are referred to the Courts to decide.

6. PROJECT EIA, STAKEHOLDER ENGAGEMENT & LAND ACQUISITION PROCESS

Strategic Environmental Assessment (SEA) Process

A Sectoral Environmental Assessment was conducted in 2008 on the Regional and National Roads Programme. No Strategic Environmental Assessment (SEA) was requested by MoEPP for the original Shtip – Strumica Motorway Project, as the SEA requirement was still in its initial stages of application in Macedonia at that time. Since the EIA was approved without an SEA, this approval is considered confirmation that no additional SEA will be required for the Project.

Environmental Impact Assessment (EIA) Process

An EIA was conducted in 2011 on a proposed Motorway which followed almost the same alignment as the currently proposed Expressway, although it continued onwards to Strumica. This EIA followed the Macedonian requirements for EIA and the draft EIA produced was subjected to four Public Hearings, held in Shtip, Radovish, Vasilevo and Strumica in March 2012. The EIA was subsequently approved by the Ministry of Environment and Physical Planning (MoEPP) in October 2012.

Given that the EIA was approved for the Motorway, and that the Expressway follows almost the same alignment (but is not as wide), the MoEPP made the determination for the Expressway Project that:

- **Sections III & IV:** The validity of the Decision of Approval for the EIA on the Shtip – Strumica Highway Project (made on 26th October 2012) would be extended for two more years, and will be sufficient to cover Sections III and IV of the proposed Shtip to Radovish Expressway; and
- **Sections I, II & V:** An additional Elaborate for Protection of the Environment (*an environmental report which is less rigorous than a full EIA*) is required for Sections II & V of the proposed Shtip to Radovish Expressway. PESR is currently preparing an Elaborate for Section I which is expected to be submitted to MoEPP for approval by the end of October 2015 and consequently this is expected to be approved by November 2015

Status of Elaborates for Sections I, II and V

⁸ OGRM Nos. 5/12, 131/12, 24/13, 27/14

⁹ OGRM Nos. 18/01, 78/01, 04/02, 59/02, 05/03, 84/08, 81/09, 161/09



- **Section V:** The Elaborate for Environmental Protection for Section V was prepared and approved by MoEPP on 15th March 2015; and
- **Sections I & II:** The Elaborates for Environmental Protection for Sections I and II are still being prepared, but no significant issues are anticipated with these. Under national requirements no additional public consultations are needed in order for the Elaborates for Environmental Protection to be approved

Stakeholder Engagement

Some stakeholder engagement activities were undertaken with the public in 2012, in connection with EIA for the Shtip to Strumica Motorway, and there has been some engagement between the designer and the Municipalities/utilities and with MoEPP during the design for the Expressway. However, no formal public consultation has been undertaken in connection with the proposed Expressway Project. Therefore, a Stakeholder Engagement Plan (SEP) has been prepared to identify key Project stakeholders and define relevant procedures and future plans for engagement prior to and during construction. Public disclosure and meetings using this NTS will be carried out with local communities in the Project area. The SEP includes appropriate methods of communication, some of which are targeted given the characteristics and vulnerability of some communities and households along the Project route.

Land Acquisition & Resettlement Planning Process

Some land will need to be expropriated along the route. The land acquisition process is in its early stages, with provisional reports (Land Elaborates) having been prepared for Sections III, IV and V. The reports for Sections I and II are still under preparation. Some economic displacement will occur, but it appears that there will very limited (*if any*) cases where physical displacement of 'residential' structures will occur. There are a non-residential structures (*some of which appear abandoned*) which could be affected, this will be confirmed during the further land acquisition planning process.

The affected land, land users and structures will be confirmed as part of the process to prepare for the expropriation. However, no significant issues have been identified that cannot be dealt with via the implementation of standard land acquisition and resettlement provisions.

A Land Acquisition & Resettlement Framework (LARF) has been prepared and disclosed to support compliance with applicable Macedonian legislation and EBRD's Performance Requirement 5. A socio-economic survey/census of project affected people must be undertaken by PESR as part of the land expropriation process in order to comply with EBRD's requirements. This will feed into the production of a Resettlement Action Plan (RAP), which will indicate which households and businesses will be affected by the physical and economic displacement (e.g. from loss of agricultural land), and what compensation and assistance they will be entitled to receive.

Amendments to National Water Management Plan

One pending issue for the progress of the Project is the need for approval of amendments to the National Water Management Plan. The 1976 National Water Management Plan has a provision for a new dam – the Jagmular Dam - on the River Bregalnica, about 18 km downstream from the proposed Project. This proposed dam would risk flooding of part of the road if the dam was constructed to the level originally anticipated. PESR commissioned a design study on the dam scheme which determined that a reduction in dam level was required to eliminate the flooding risk. This reduction in dam level will still meet the needed power and water supply demands.

PESR has submitted a proposed amendment to the National Water Management Plan to MoEPP, showing this reduced dam level, and a Public Hearing on the proposed amendment was held on 21st Sep 2015. If, following the



response period, the MoEPP approves the amended plan, the plan will be finalised and submitted to the Cabinet and Parliament for final approval.

7. SUMMARY OF BASELINE ENVIRONMENTAL & SOCIAL CONDITIONS

Environmental Baseline

Setting and General Conditions: The proposed Expressway is situated largely in the flat terrain of a shallow river valley, with hills or areas of higher elevation rising up from the valley corridor on both sides. The hills in the wider area are mostly forested, with areas of dry grassland interspersed between. The climate is mildly continental, with an average monthly temperature of 23.8°C in July and 1.4 °C in January at Shtip. Annual average rainfall is 506 mm at Shtip. There are no sources of significant noise or air pollution along the road corridor.

Surface Water and Groundwater: Several watercourses cross the road from north to south before entering into the river valley adjacent to the road. Most of the watercourses which drain from the north are not perennial, and are dry in the summer, but with high flow in the winter. The Bregalnica River collects water from all the watercourses in the area, and flows westwards from the road corridor. The larger rivers are reported to be relatively clean, with the smaller rivers sometimes polluted from sewage or contaminants (e.g. historically believed to be partially from the mines in the area). Groundwater is abstracted in the area mostly from the alluvial aquifers around the Bregalnica and Lakavica river valleys, and is used for agriculture, and potable supply to smaller villages.

Biodiversity: There are several types of priority biodiversity features in the wider area of the road, including: natural oak-hornbeam forests and shrublands; grasslands with sparse shrubs; and riverine habitats of willow, poplar and reed beds, which exist along the watercourses of the area. There are also several modified habitats, including conifer plantations, fields, vineyards and orchards, as well as abandoned agricultural areas, and urbanised developments.

Because approximately 20 km of the Expressway involves only a 4.4 m widening of the existing road, mostly through already degraded vegetation, the widened road itself passes through very little area of priority habitats. The riverine habitats are important, as is certain areas of sensitive grassland which the new road skirts around the edge of. The current road also passes through a 'bio-corridor', which links woodlands to the north and south of the road.

The road passes through no protected areas, although the adjacent area of Pilav Tepe is proposed for protection as a Natural Monument, and the existing A4 road and new Expressway pass through an International Bird Area. None of the areas of vegetation clearance or disturbance will result in significant change in the function of the habitats, or in significant loss of habitat for protected species.

Social Baseline

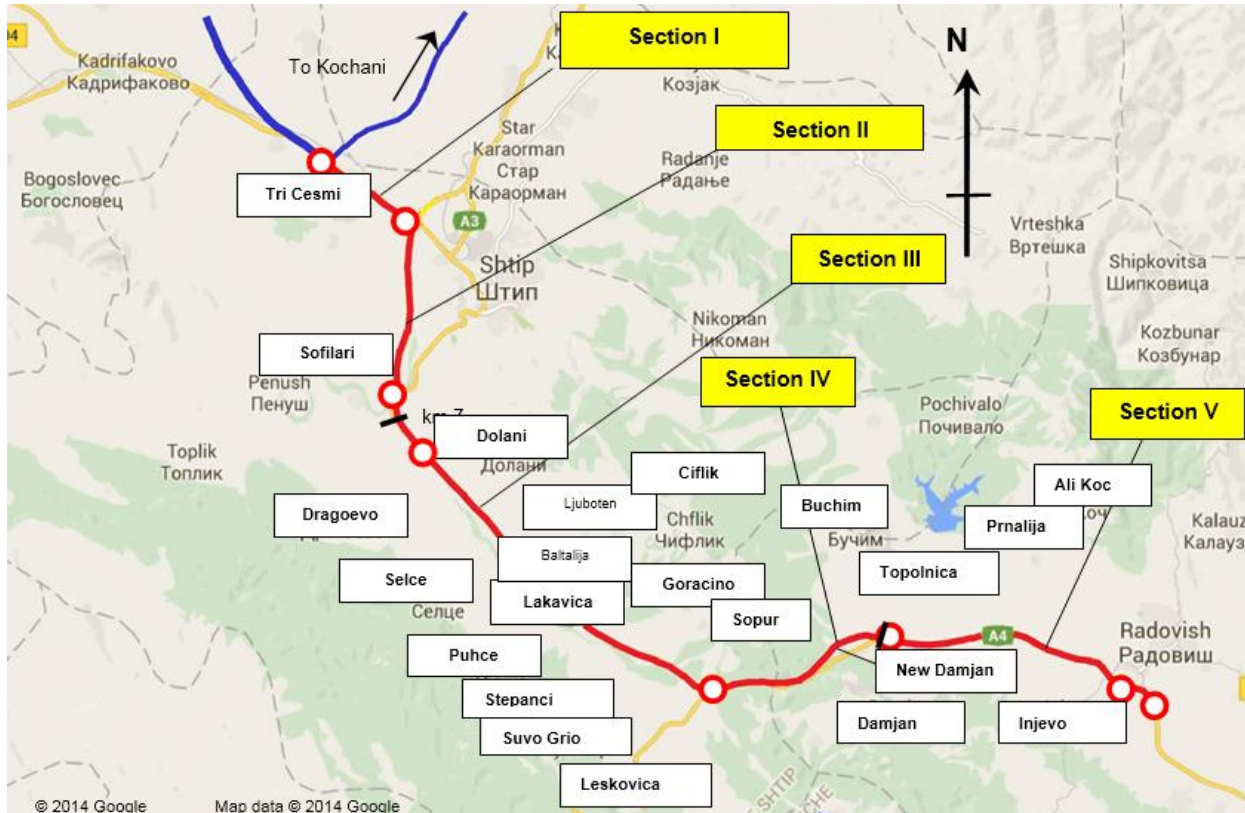
The proposed Expressway lies within the Municipalities of Shtip and Radovish in eastern Macedonia, which is a relatively economically depressed area. Locally, people are migrating out of the local area to the cities or further afield seeking employment opportunities. This area is currently served by poor road infrastructure and the A4 road presents clear road and community safety risks. The local economy in the Project area is heavily dependent on agriculture and related food processing industries, with some textile and garment production and mining industries also in the area.

Local Communities: The main local communities in the Project area are indicated on the figure below. Except for the regional centres of Shtip and Radovish, these are small or very small villages. Lying directly on the existing A4 route is the village of Lakavica which will be bypassed by the proposed Expressway (Section III). A relatively new small settlement of houses known as 'New Damjan' is located on the existing road. There are over 20 small and very small villages situated up the hillsides within 5 km of the existing road, which are generally accessed using small local roads/tracks, some of which are not asphalted. These villages are generally dependent on the existing A4 road



corridor for access to public transport and the centres of Shtip and Radovish where the main community related services are located. Some of these villages have reduced drastically in the number of households residing there over time, with a few of them being reduced to 1-2 households.

Figure 3 Locations of Nearby Communities Along the Proposed Expressway & Existing A4 Road



Land Use

Land along the route comprises of mostly agriculture (*in use with some abandoned*) and pasture/grassland. There are some forestry areas (natural and conifer plantations) and pockets of other uses, such as small-scale cropping (e.g. tobacco, maize etc.), vineyards and orchards.

Cultural Heritage: No known sites lie within the corridor where excavation works are required for the proposed Expressway. However, there are several cultural heritage sites - mostly settlements from earlier periods - within several hundred metres of the alignment, which will need to be avoided during construction.

8. ENVIRONMENTAL & SOCIAL BENEFITS, IMPACTS & MITIGATION MEASURES

During the EIA and subsequent assessment process by EBRD, the potential environmental and social benefits and adverse impacts were assessed. Assessment topics included: ambient air, water, noise and vibration, biodiversity & habitats; landscape; local communities, employment and livelihoods, access and severance, cultural heritage, community, health, safety and security (including road safety and emergency response) and labour and workforce issues.

The benefits of the Project are summarised below:



- **Short-term Local Employment During Construction:** The Project could provide short-term opportunities for local employment during the construction period.
- **Economic Growth & Regional Improvement of Access:** The Project is expected to improve connections with the major economic centres in Macedonia and neighbouring countries, and is an opportunity to stimulate growth and attract further investment.
- **Improved Journey Times & Opportunity to Reduce Rate of Out-Migration:** The Project will improve journey times regionally and locally and improve access to employment. This may help reduce out-migration from the local area, which is understood to be a current challenge of the Municipalities.
- **Improvement of Living Conditions & Community Safety Benefits:** The Project will improve the living conditions and community safety of the local communities in area by providing them with improved links to key community services in Shtip and Radovish. Lakavica and New Damjan will see clear improvements in quality of life and community safety from the heavy traffic diverting to the new Expressway and bypassing these communities.
- **Road Safety Improvements:** Road safety improvements will result from improved road condition, better alignment and separation of through and local traffic.

The potential adverse effects are summarised in the table below along with the proposed key mitigation measures and an assessment of the residual level of effects assuming measures are implemented:



Topic	Summary of Impacts	Summary of Key Mitigation/Management Measures	Residual Impact Significance
Environment			
Air Quality	<p>During Construction: emissions of dust from working areas, access roads, stockpiles and during loading/unloading activities; emissions from batching plants; exhaust emissions from construction machinery; emissions due to peaks in traffic movements.</p> <p>During Operation: Emissions of particulates, gases, volatile organic compounds, and other hazardous air pollutants may result from increased road traffic. However, the traffic will increase along the A4 existing road without the Expressway Project.</p>	<p>Good maintenance of plant to reduce unnecessary emissions, and to remove and replace any heavily polluting plant. Standard construction measures to reduce dust (wetting down dusty areas, covering vehicles, etc.).</p> <p>The Project generally moves through-traffic farther from settlements (e.g. at Lakavica), and may reduce emissions levels at key community receptors.</p>	<p>During construction - Negative impacts of already low significance reduced further with effective contractor management.</p> <p>Negligible/low significance impacts during operation expected.</p>
Noise & Vibration	<p>During Construction: Increased noise levels from construction plant and activities, especially blasting and rock breaking during excavations.</p> <p>During Operation: Noise levels increasing over time from increased traffic flows, unlikely to be a significant immediate change as a result of the Project. The Project generally moves through-traffic farther from settlements (e.g. at Lakavica), and may reduce levels at key community receptors.</p>	<p>Management controls typical for construction work including: notification to local communities, and use of protective equipment.</p> <p>Particular measures during construction include a prohibition of rock breaking and blasting between March and July (inclusive) between kms 18.000 and 24.000 (i.e. the International Bird Area (IBA)), and blasting operations restricted to daylight hours.</p>	<p>During construction - Negative impacts of medium significance reduced to low significance with effective contractor management.</p> <p>Negligible/low significance impacts during operation expected.</p>
Biodiversity	<p>During Construction: Removal of vegetation, loss of habitat, and loss of some species from land taken for road corridor.</p>	<p>Contractor access prohibited from all sensitive habitat areas, except what is necessary to create Expressway. Good construction controls built into construction contract. Rehabilitation of all areas where vegetation was damaged.</p>	<p>Negative impacts of medium significance reduced to low significance during construction.</p>
Protected and Designated Areas	<p>During Construction: Particular effects include removal of riverine habitat at Bregalnica and Madenska Rivers, risk to breeding birds in the area of the IBA, and risk to sensitive grasslands.</p> <p>During Operation: Effects from road traffic on species crossing road corridor and severance effects at Smrdes landscape bio-corridor.</p>	<p>During construction: No storage of plant or spoil disposal to be permitted in areas of sensitive/protected habitats, notably riverine areas, and certain sensitive grasslands. Prohibition of blasting and rock breaking during breeding season at IBA. Rehabilitation of all areas where vegetation was damaged.</p> <p>During Operation: Sufficient flat-based culvert crossing points along with planting of vegetation along fenceline to guide species to crossing points created at bio-corridor in the design of Expressway.</p>	<p>Negative impacts of medium significance reduced to low significance during construction and operation.</p>



Topic	Summary of Impacts	Summary of Key Mitigation/Management Measures	Residual Impact Significance
Water Resources	<i>During Construction:</i> Risks to water quality in Bregalnica, Madenzka and Lakavica Rivers from construction activities in watercourses.	Good construction management controls, prohibition of storage, refuelling, etc in watercourses. Monitoring of water quality during construction. Contractor to develop method statement to meet several stated criteria.	Negative impacts of low significance reduced with effective contractor management.
Landscape & Visual	<i>During Construction and Operation:</i> Impairment of visual aesthetics and change to some features from the Expressway and spoil disposal.	Screening of construction sites <i>at sensitive locations (e.g. near villages)</i> , camps and areas, and management of temporary stockpiling locations on site. Re-vegetation of spoil disposal areas, and rehabilitation of all areas of natural habitat, including embankments and side slopes.	Negative risk of low significance reduced further with management controls.
Soils and Geology	<i>During Construction:</i> Risk of soil contamination from leaks of fuel, oil, chemicals, etc.	Good construction controls built into construction contract.	Negative risk of low significance reduced further with management controls.
Social			
Local Communities	<i>During Construction:</i> Local communities along the route (especially the settlements of Lakavica and New Damjan) may be subject to nuisance effects from construction, including noise and dust. Impacts on access could disproportionately affect elderly people remaining in villages and those on very low incomes where there is dependency on land-based activities. <i>During Operation:</i> For benefits, see above.	Good construction management and controls (e.g. traffic management plan, siting of worker accommodation), and careful engagement with the local communities by the Contractor. Careful sequencing of the works to maintain access. Assistance provided if there are effects on agricultural livelihoods due to access issues, and to vulnerable households (included in LARF).	Negative risk of medium significance of a short-term nature would reduce to low significance with adequate management controls.
Employment & Livelihoods	<i>During Construction and Operation:</i> Some of the households in the local villages are somewhat dependent on land-based livelihoods, and could be affected by loss of land or access to land they use, including customary use with potentially no legal rights.	Provisions in the LARF supported by socio-economic surveys, and targeted assistance if necessary and eligible. Consultation with affected land owners/users including those with legal and no legal rights to the land they own or use/occupy.	Negative risk of medium significance would reduce to low significance with implementation of LARF.



Topic	Summary of Impacts	Summary of Key Mitigation/Management Measures	Residual Impact Significance
Land & Property	<p>During Operation: Some loss of land, predominantly agricultural (both in-use and abandoned) and pasture/grassland areas with some forestry areas and pockets of small-scale cropping (e.g. tobacco etc.) and vineyards and orchards being affected. The loss of land will result in some economic displacement impacts. A small number of structures may be physically affected, including a fuel station near Tri Cesmi and some commercial structures. Some structures can remain in the road reserve provided they receive permission from PESR.</p> <p>Very few (if any) physical displacement of households is likely with the only risk identified to-date being a very small development of informal structures. The risks of physical displacement of residential properties has been minimised by the route alignment.</p>	<p>Provisions in the LARF and preparation & implementation of a detailed Resettlement Action Plan (RAP) supported by socio-economic surveys. Also, consultation with affected land owners/users, including those with legal and no legal rights to the land they own or use/occupy.</p> <p>The LARF contains provisions to ensure economic displacement effects on businesses are appropriately compensated for. The proposed socio-economic survey combined with the land & asset inventory undertaken for the land acquisition process should enable any physical displacement to be confirmed. The LARF contains provisions for compensation and assistance for the loss of buildings or physical displacement of people. All provisions and requirements contained within the LARF will be implemented in the RAP.</p>	<p>Negative risk of medium significance would reduce to not significant assuming implementation of all requirements of the LARF, implementation of a RAP, and payment of compensation prior to accessing land.</p>
Access & Severance	<p>During Construction: Some localised access effects in certain areas, which could result in severance of communities from areas of productive land or access to services in Shtip and Radovish.</p> <p>During Operation: Some severance risks and access issues for local communities/land users where agricultural vehicles cannot use or cross the Expressway. Also, access issues may arise from limited access to Expressway only being from dedicated interchanges and not from all local roads. There may be a slight increase in journey length for some local communities, however road condition will be improved so overall effect on journey times may negligible.</p>	<p>Construction Measures: A Traffic Management Plan supported with effective consultation, including with vulnerable communities, and careful sequencing of the works to ensure either the existing road is accessible or the local new parallel roads are available.</p> <p>Operation Measures: Project design includes provisions to ensure access to local communities up the escarpment and along the existing road, by the inclusion of underpasses, overpasses and in Section V parallel local roads.</p>	<p>During construction - Negative risk of medium significance (short-term) reduces to low significance with adequate management controls.</p> <p>During operation - Negative risk of high/medium significance reduces to low significance with the adopted design proposals.</p>
Cultural Heritage	<p>During Construction: Risk to buried sites (hitherto unknown) from excavation works.</p>	<p>Contractor to implement watching brief, in association with Ministry of Culture.</p>	<p>Risk is of low significance.</p>
Community Health, Safety	<p>During Construction: During construction there may be the small risk of influx from workers from outside the area which may give rise to certain</p>	<p>Construction Measures: Good site management, including management plans with security, health & safety measures</p>	<p>Negative impacts of medium significance reduced to low</p>



Topic	Summary of Impacts	Summary of Key Mitigation/Management Measures	Residual Impact Significance
<p>and Security (CHSS)</p>	<p>CHSS risks. Construction activities at locations which are used by the local community or other road users and third-parties may increase safety risks.</p> <p>During Operation: There is currently a low level of awareness within the local communities of what vehicles can and cannot use expressways (e.g. agricultural traffic cannot use Expressway). It is common practice for agricultural vehicles and sometimes livestock to access the existing A4 road from adjacent land uses, which gives rise to potential road safety risks.</p>	<p>in line with standard practice on all such sites. HR Policy to encourage the use of local labour. Good workforce management, e.g. code of conduct, health surveillance & healthcare access for workers, etc.</p> <p>Operation Measures: Provision of a protection fence along the Expressway to reduce the risk of informal access from adjacent land (e.g. by vehicles and livestock). Road safety awareness raising initiatives to be undertaken in the local communities prior to the opening of the Expressway.</p>	<p>significance during construction and operation.</p>
<p>Labour & Workforce Issues</p>	<p>During Construction: Health & safety risks to workers, typical of road construction works.</p>	<p>Good site management, security, health & safety measures, applied by the Contractor, in line with standard practice at such sites.</p>	<p>Negative impacts of medium significance reduced to low significance.</p>



9. ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING

Environmental and Social Management

Measures to manage the environmental and social effects of the Project are included in the EIA, the Elaborates for Environmental Protection, and an Environmental and Social Action Plan (ESAP). The key elements have been summarised up in the table above. PESR is required to develop a Commitments Register, to document all design, construction and operation related mitigation measures cited in the EIA, Environmental Elaborates, NTS, LARF and SEP documentation, and identify how the commitments are addressed, and which party (e.g. PESR, Contractor, third parties etc.) is responsible.

An Environmental and Social Management System (ESMS) will be developed for the construction and operation of the road. This will include a Construction Environmental and Social Management Plan (CESMP), which will draw together all the management requirements to minimise disturbance to environmental and social receptors during construction (including habitats, flora and fauna, watercourses, land and livelihoods, community relations, etc.). An Operational Environmental and Social Management Plan (OESMP) will be produced to address mitigation and monitoring actions which will continue during road operation.

Environmental and Social Monitoring

Monitoring will form an important part of the ESMS. During both construction and operation, certain activities, indicators and environmental and social resources will be monitored. **Pre-Construction** monitoring will include levels of noise and air quality at representative road side receptors. Monitoring **during construction** will include water quality in the Bregalnica River, as well as on temporary land take, and indicators of problems from influx of workforce into the area. Operations phase monitoring will include levels of noise and air quality at representative road side receptors, for a period of 2 years post-construction, and monitoring of all vegetation rehabilitation for 2 years.

Monitoring and management actions for the stakeholder engagement and the land & resettlement planning are proposed within the SEP and LARF. There will also be an ongoing requirement for PESR and (during construction) the Contractor to monitor stakeholder, individuals and community grievances and take appropriate management action should trends be identified or key issues occur.

Monitoring reports will be required from the Contractor and Operator during the construction and operational phases. These will be submitted to the relevant inspection authority. The monitoring results will be useful for assessing the long term cumulative effects, if any, especially in relation to biodiversity impacts. If ongoing problems occur, adaptive mitigation measures can be developed and implemented.

10. FURTHER INFORMATION & CONTACT DETAILS

Project preparation documents are available on the PESR website: (<http://www.roads.org.mk/en/index.php>).

Contact details for the Project are:

Mr Joze Jovanovski: Manager of Environment Protection and Social Aspects Unit, PESR

Tel: + 389 (0)2 3118-044, ext. 135; Fax: + 389 (0)2 3220-535

e-mail: j.jovanovski@roads.org.mk

Address: Public Enterprise for State Roads; Dame Gruev 14; 1000 Skopje, Republic of Macedonia