Republic of North Macedonia - Public Enterprise for State Roads

A2 MOTORWAY: BUKOJCHANI - KICHEVO SECTION

Environmental and Social Impact Assessment: Non-Technical Summary

NOVEMBER 2020

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Environmental and Social Impact Assessment: Non-Technical Summary

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ABBREVIATIONS

AADT	Average Annual Daily Traffic
BMP	Biodiversity Management Plan
CEP	Committee for Environmental Protection
CHMP	Cultural Heritage Management Plan
CHSSP	Community Health, Safety and Security Plan
EBRD	European Bank for Reconstruction and Development
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
EU	European Union
GHG	Greenhouse Gas
GC	Grievance Committee
GM	Grievance Mechanism
Ha	Hectare
IBA	Important Bird Area
IPA	Important Plant Area
LAF	Land Acquisition Framework
LAP	Land Acquisition Plan
LWCMP	Labour and Working Conditions Management Plan
NTS	Non-Technical Summary
PESR	Public Enterprise for State Roads
PR	Performance Requirement
REA	Rapid Environmental Assessment
SEP	Stakeholder Engagement Plan
SPS	Safeguard Policy Statement
TMP	Traffic Management Plan

GLOSSARY

Land Acquisition	Refers to the process whereby an individual, household, firm or private institution is compelled by a public agency to alienate all or part of the land/assets for public purposes in return for in-kind replacement or compensation at replacement costs.
Land Acquisition Plan (LAP)	A time-bound action plan for the land acquisition process with budget setting out compensation for affected land/assets and resettlement strategies, objectives, entitlement, actions, responsibilities, monitoring and evaluation.
Land Acquisition planning	This process includes all measures taken to mitigate all adverse impacts of the Project on property and/or livelihood. It includes compensation, resettlement (if such impacts are unavoidable), and livelihood restoration as needed.

Note: This ESIA: Non-Technical Summary (NTS) has been prepared by WSP on behalf of the EBRD using information and assessment outcomes from ESIA work completed by GEING Krebs und Kiefer International and supplemented with additional content by WSP on behalf of the Public Enterprise for State Roads.

1 INTRODUCTION

1.1.1. The European Bank for Reconstruction and Development (herein known as ‘the EBRD’) is considering providing finance to the Public Enterprise for State Roads (herein known as ‘PESR’) for the construction of the 10.7 km Bukojchani – Kichevo subsection of the A2 motorway (the ‘Project’), which is part of Corridor VIII of the Trans-European Transport Network.

1.1.2. The land upon which the Project will be developed is herein referred to as the ‘Site’.

2 WHAT IS THE PURPOSE OF THE NON-TECHNICAL SUMMARY

2.1.1. This Non-Technical Summary (NTS) provides an easy to understand summary of the information that is provided in the Environment and Social Impact Assessment (ESIA) Report. The purpose of the NTS is to help the public to understand: the project background, project description, the ESIA process, the potential adverse environmental and social effects of the Project, and the mitigation measures proposed to enhance the benefits and avoid or reduce adverse effects.

3 PROJECT NEED AND BACKGROUND

3.1.1. The Republic of North Macedonia, as part of its commitment to EU membership, is seeking to develop a sustainable transport sector by developing and improving the network of state roads, which includes the international road sections belonging to the Trans-European Transport Network. These improvements seek to facilitate the anticipated growth in transport movements on the Network in the region.

3.1.2. Overall, the Project, together with other planned improvements, including the wider A2 Gostivar – Kichevo scheme, is expected to deliver the following benefits:

- Improved external connectivity with neighbouring countries; and
- Improved internal connectivity to the northeast region of the Republic of North Macedonia, enabling access to people, goods, services, and employment opportunities, supporting regional tourism, industry and agriculture.

4 WHAT DOES THE PROJECT INVOLVE?

BACKGROUND

4.1.1. Corridor VIII runs through the territory of the Republic of North Macedonia, and is approximately 305 km in length, from the border with Bulgaria (Border Crossing Deve Bair) to the border with Albania (Border Crossing Kjafasan).

4.1.2. The A2 Gostivar – Kichevo scheme is divided into three phases (three subsections):

- Phase 1 (Subsection III Bukojchani – Kichevo);
- Phase 2 (Subsection I Gostivar – Gorna Gjonovica) and
- Phase 3 (Subsection II Gorna Gjonovica – Bukojchani).

4.1.3. Phase 2 and 3 of the A2 Gostivar – Kichevo scheme are located to the north of the Project, and these sections of the A2 are currently planned for design and construction in the future. Phase 3 Gorna Gjonovica – Bukojchani will be immediately adjacent to the northern end of the Project.

4.1.4. The Project is a standalone section of A2 Motorway which can be constructed and can operate regardless of whether the future phases are constructed. The location of the Project is shown on Figure 4-1.

4.1.5. The A2 Motorway alignment to the south of the Project is currently being constructed (A2 Kichevo – Ohrid). The section that is immediately adjacent to the north of the Project will be constructed towards the end of the construction period for the A2 Kichevo – Ohrid scheme.

4.1.6. There are existing transport links in close proximity to the Project, including the existing A2 state road and the Gostivar to Kichevo railway line.

4.1.7. The existing terrain along the Project route includes both mountainous and flat terrain, with permanent and temporary watercourses which flow into the Zajaska River. The mountainous part of the route consists of solid rock materials, while the valleys have mainly arable soils.

4.1.8. The Construction Phase is expected to begin in 2021 following disclosure of the ESIA, and last approximately 4 years, with completion in 2025.

4.1.9. The Project is located on the western side of the Republic of North Macedonia, approximately 61 km south west of Skopje, in the region of Kichevo.

4.1.10. The Project consists of a 10.7 km section from the Dolno Strogomishte interchange in the north, to the under construction, A2 Kichevo to Ohrid scheme in the south.

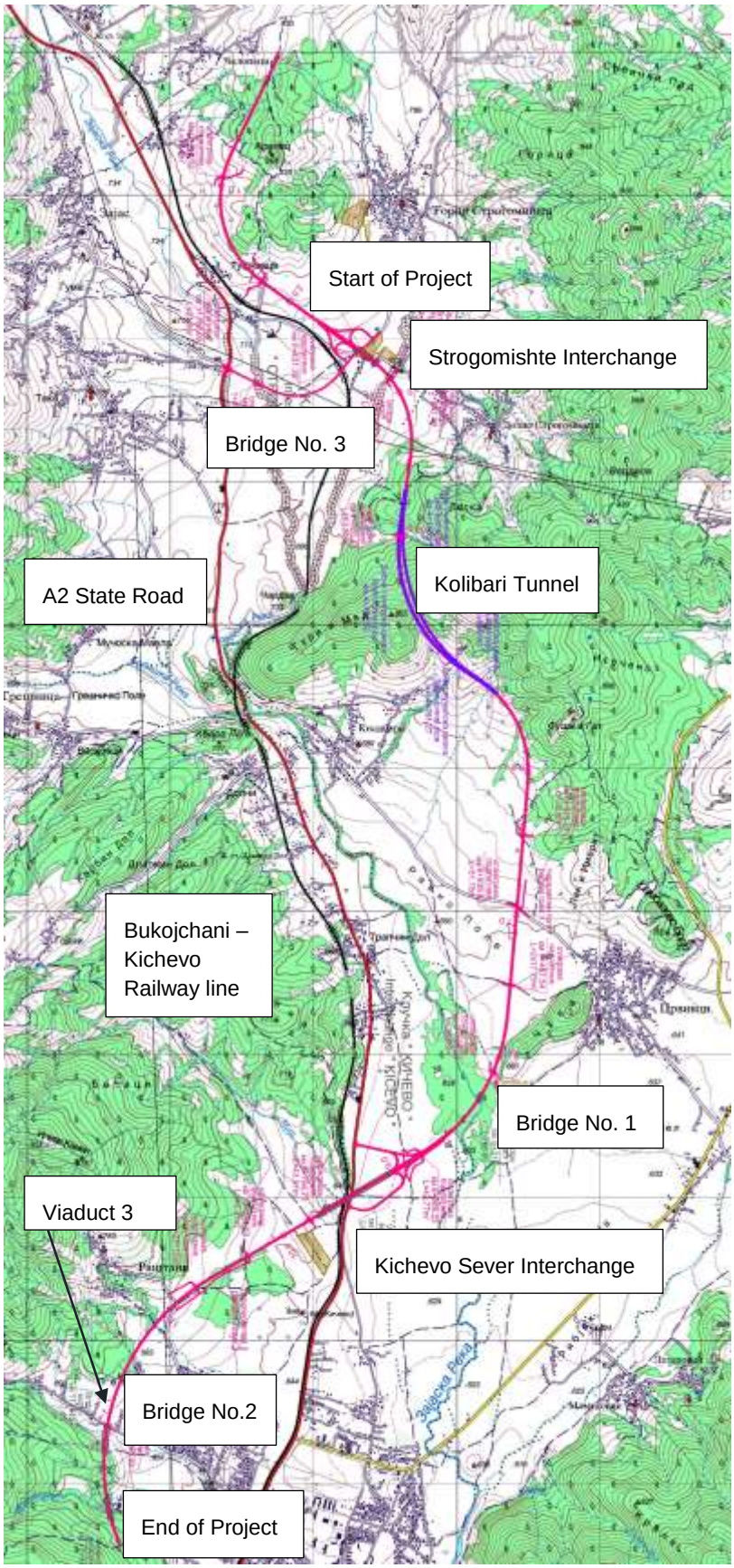

Figure 4-1 - Project Alignment

DESIGN PARAMETERS

4.1.11. The preliminary design consists of two 3.5 m wide lanes in both directions, a 3 m central reservation, two 0.5 m border lanes and two 1.2 m shoulders, and a design speed of 100km/hr. The length of the project is 10.7 km.

TUNNEL

4.1.12. A tunnel, the Kolibari Tunnel, is required in the 'Guri i Mad' locality due to the hilly terrain. The tunnel will have two tubes, one for each direction of traffic.

INTERCHANGES

4.1.13. The route has two interchanges (Figure 4-1), which are locations where the Project alignment joins with other roads via on-ramps and off-ramps, as follows:

- the 'Strogomishte' interchange which includes a road link to the existing A2 state road near Zajas, and on-ramps and off-ramps that connect to a paved road which provides access to the villages Gorno Strogomishte and Dolno Strogomishte, and
- the 'Kichevo Sever' interchange which connects the Project with the existing A2 state road at Kichevo.

DRAINAGE AND CULVERTS

4.1.14. Since the entire route is located within mountainous terrain, most of the water will drain into the local terrain/ river system. Culverts will be used where the Project passes over small scale water bodies. The design team has confirmed that the culverts and waterbody crossing have been designed for the 1 in 100 year storm event. The drainage system has been designed for an allowance of 210l/s/ha which equates for the 1 in 10 year event over a period of 10 minutes.

ROAD CROSSINGS

4.1.15. The Project crosses fourteen existing roads; two of the road crossings will pass over the proposed alignment (overpasses), and twelve will pass under the proposed alignment (underpasses).

BRIDGES

4.1.16. Three bridges are proposed as part of the new motorway section (Figure 4-1),which include one bridge over the Sushica River (Bridge 2), and two bridges over the Zajaska River (Bridge 1 and 3).

VIADUCTS

4.1.17. Three viaducts are proposed and will provide a drainage system and channelling of the storm water from the surface of the structure. There will be viaducts at each of the proposed interchanges (Strogomishte and Kichevo Server). Viaduct 3 will bridge the dry ravine of Stiborani (Figure 4-1). The Strogomishte viaduct structure will pass over the cemetery in Dolno Strogomishte, and one local road. Design variants have been prepared to investigate whether it will be possible to locate the viaduct piers outside the cemetery. This assessment has therefore assessed the design parameters with the maximum impacts from all the variants considered, to ensured that the worst case scenario has been assessed, and that appropriate mitigation has been identified.

RETAINING WALLS

4.1.18. Retaining walls, consisting of gabion baskets (steel cages containing rocks) and structural anchors (steel anchors fastened into bedrock) will be constructed in areas of deep cuttings / earth works.

EARTH WORKS – BORROW PITS

4.1.19. Two borrow pits are likely to be required to provide suitable material for the Project. These pits are located in close proximity to the village of Greshnica and in the vicinity of Kichevo. The materials taken from these borrow pits include gravel sands, dolomites and dolomitized limestones. If any additional borrow pits are required, they will be agreed with the Ministry of Economy in accordance with the Law on Mineral Resources1. The PESR will notify the EBRD of the need for additional borrow pits and will outline the measures they will take to ensure that the Contractor takes into consideration EBRD requirements to select appropriate locations for the borrow pits. The PESR is responsible for submitting the request of permission for a concession to use the material to the Ministry of Economy. The PESR is then granted permission for the concession, which they then transfer to the Contractor.

EARTH WORKS – EXCESS MATERIALS

4.1.20. Three designated disposal areas will be used for the excess material from the excavations on the route. These disposal areas will be located: at the northern end of the Project, on the southern end of the tunnel and west of the village of Crvica. All disposal sites are outside of environmentally sensitive areas will be landscaped to fit in with the landscape once construction has ended.

CONSTRUCTION

4.1.21. The Project will also include temporary elements, including construction camps, with workers accommodation, and welfare facilities such as a canteen, toilets and break rooms, . The detail of these elements is not fixed and will be finalised by the Contractor, during the construction preparation stage. The ESMP that will be implemented for the Project includes a Construction Workers' Accommodation Management Plan which will set out parameters for the location of these facilities. They will be located outside environmentally sensitive locations and away from residential areas.

CLIMATE RESILIENCE

Climate resilience has been considered in the design and will be further considered in the detailed design. The PESR's Climate Resilience Design Guidelines are being utilised as part of the detailed design works. Current climate change considerations include the specification of drainage and bridges to take into account high rainfall events. The inclusion of a tunnel has reduced the Project's susceptibility to extreme weather conditions at that location.

[1] Law on Minerals ("Official Gazette of RM no. 136/2012") – article 40a award of concession for exploitation of mineral raw materials for construction of state roads, Law on Environment ("Official Gazette of RM no. 53/2005, 81/2005, 24/2007, 159/08, 83/09, 48/10, 124/10)

5 HAS STAKEHOLDER ENGAGEMENT TAKEN PLACE?

5.1.1. The stakeholder engagement process started during the planning phase of the Project. Local authorities and institutions were consulted during the development of the design, in order to gather relevant information in order to develop a high-quality design.

5.1.2. Site visits were undertaken by local topographic surveyors in September 2018 who conducted an initial inspection on the potentially affected receptors. During the second and third site visits (March 2019), individual non-formal interviews were held on site with residents of the two potentially affected settlements Osoj (Pevci) and Rashtani.

5.1.3. Additionally, PESR and their designers organised a meeting in Dolno Strogomishte (10 June 2019) to explore the local community's views on the potential impacts on local cemetery.

5.1.4. Consultation was undertaken during the Geing / PESR / Balkan / WSP site visit undertaken in July 2019 which included:

- Local community meeting in the village of Dolno Strogomishte.
- Sinohydro co, Ltd, KO Motorway Project, contractors for the adjacent section of the A2 (Kichevo to Ohrid) which is currently under construction to the south of the Project.
- Meeting between PESR, EBRD, GEING (ESIA authors), WSP (Due Diligence) and Balkan (lead designers).

5.1.5. Public consultations on the proposed scheme are yet to be organised, and PESR plans to do so in Q4 2020. Community engagement will continue throughout the design and construction phase.

5.1.6. A Project Stakeholder Engagement Plan (SEP) has been prepared as part of the Project documentation, details of which are included in Chapter 12 of this NTS. The SEP sets out how local communities can get further information on the project, and how they can ask any questions.

5.1.7. Prior to the construction of the Project a Grievance Mechanism will be put in place to enable communities to raise any concerns regarding the Project. A copy of the Grievance Mechanism form is included in Appendix A.

6 HOW HAS THE PROJECT BEEN ASSESSED?

6.1 REPUBLIC OF NORTH MACEDONIA REQUIREMENTS

6.1.1. The ESIA has been prepared in line with Chapter XI – Environmental Impact Assessment of Projects as set out in the Law on Environment (O.G. of RM no. 53/05 and its amendments).

6.2 EBRD REQUIREMENTS

6.2.1. The ESIA has also been prepared following the guidance in the EBRD Environmental and Social Policy 2014[2] (ESP 2014).

6.2.2. Specifically, the project has been structured to meet the EBRD's Environmental and Social Policy (ESP) and Performance Requirements (PRs) 2014, which are as follows:

- PR1: Environmental and social appraisal and management;
- PR2: Labour and working conditions;
- PR3: Pollution prevention and abatement;
- PR4: Community health, safety and security;
- PR5: Land acquisition, involuntary resettlement and economic displacement;
- PR6: Biodiversity conservation and sustainable management of living natural resources;
- PR7: Indigenous (not applicable as there are no indigenous people likely to be affected by the Project)
- PR8: Cultural heritage;
- PR9: Financial intermediaries (not applicable to this Project as there are no financial intermediaries involved); and
- PR10: Information disclosure and stakeholder engagement.

6.2.3. The Project includes all reasonable measures to avoid, minimise or mitigate any adverse changes in environmental and social conditions, including impacts on public health and safety, and identifies any disproportionate impacts on groups as a result of their gender, age, ethnicity, disability, socio-economic status and/or other personal characteristics.

6.2.4. The Project takes into account relevant international conventions and protocols relating to environmental and social issues, as transposed into national legislation.

[2] https://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html

7 HOW WILL THE PROJECT RELATED IMPACTS BE REDUCED, MANAGED AND MONITORED?

7.1.1. An Environmental and Social Management Plan (ESMP) has been prepared and forms part of the ESIA for the project. It contains all of the main mitigation measures required to mitigate adverse effects and secure the beneficial effects summarised in this NTS. The ESMP will be maintained as a live document and its implementation will be a requirement of the PESR and its contractors.

7.1.2. The ESMP sets out the following roles and responsibilities:

- The EBRD
  - The EBRD are financing but not directly developing the Project. Responsibility is therefore passed to the Project Owner, although reports will be required to be submitted to the EBRD on the status of the ESAP, resolution of grievances and EHSS performance of the project.
- Public Enterprise for State Roads (PESR)
  - The PESR will have ultimate responsibility for the project and will oversee the implementation of the EBRD project requirements during construction and operation, overseeing the contractor, subcontractors and other involved third parties. They will be responsible for creating a Project Implementation Unit.
- Project Implementation Unit (PIU)
  - The PIU will be responsible for the overall implementation of the mitigation measures and requirements, specified within the disclosure package for the Project, and implementing the Environmental and Social Management System (ESMS). They will be required to oversee the implementation of the Contractors CESMP, which will be developed by the contractor to ensure they fulfil all the identified environmental, health, safety and social requirements under the loan agreement for the Project. The PIU are responsible for ensuring roles and responsibilities are clearly identified and allocated for environmental, health, safety and social (including gender), both within the PIU itself and within the contractors' arrangements, including sub-contractors and contracted organisations. The PESR will appoint a Supervising Engineer to supervise the Contractor.
- Supervising Engineer
  - The Supervising Engineer will be responsible for supervising the Contractor to ensure that recommendations and requirements, as set out in the ESMP and other documentation are applied. They will be responsible for continuous monitoring of the processes and activities undertaken by the Contractor, and specifying measures to be implemented by the Contractor, to address any areas of non-compliance
- Lenders Technical Advisors
  - The EBRD will appoint a Technical Advisor who will be responsible for reviewing documentation on behalf of the lender, and who will monitor the Contractor's implementation of the activities specified in the ESMP on a quarterly basis. They will be responsible for providing a monitoring report to the Lenders that evaluates compliance with both the ESMP

and Lenders requirements and provides recommendations to the Supervising Engineer and Contractor to address any areas of non-compliance.

- The Contractor
  - The Contractor will be responsible for implementing the construction phase measures in the ESMP.
  - The Contractor will also be responsible for implementing any environmental, health, safety and social measures identified in the ESIA, that the PIU has developed for submission to the Ministry of Environment and Physical Planning (MOEPP).
  - The Contractor will be responsible for submission of relevant reports to the Supervising Engineer, for subsequent approval by the Supervising Engineer, PIU/PESR, EBRD and/or the Ministry of Environment and Physical Planning (MOEPP), as appropriate.
  - The Contractor will be responsible for appointing technical specialists to ensure environmental and social mitigation is implemented correctly, in line with best practice and national and international requirements. Specialists include: Environmental Engineer, Health and Safety Officer, and other social, safety, environmental and/or specialists may be engaged to provide support as necessary.
  - The Contractor will be responsible for preparing the licence, permit and agreement documentation.

7.1.3. The ESMP includes requirements to elaborate the following sub-plans, that will be implemented during the construction of the Project:

- Waste and Materials Management Plan (WMMP) Asbestos Disposal Management Plan
- Soil Management Plan, including Spoil Disposal Plan
- Water Resources Management Plan, including Ground Water Management and Waste Water Management
- Air Quality Management Plan (AQMP), including Air Quality Control Plan for the tunnel
- Noise and Vibration Management Plan (NVMP), including Pre-Commencement Condition Surveys
- Cultural Heritage Management Plan, including Chance Find Procedure
- Biodiversity Management Plan (BMP), including Woodland Clearance Plan and Land Restoration Plan
- Landscape and Visual Management Plan
- Stakeholder Engagement Plan, including GMs
- Code of Conduct (CoC) for Workers
- Community Health, Safety and Security Plan including Community Access and Infrastructure Plan;
- Labour and Working Conditions Management Plan (LWCMP), including Local Employment and Procurement Plan (LEPP)
- Construction Traffic Management Plan (CTMP)
- Occupational Health and Safety Plan, including specific measures for the construction of bridges and the tunnel
- Emergency Response Plan, including measures for: Natural Disaster Response, Tunnel Emergency Response Plan and Spill Management
- Construction Workers' Accommodation Management Plan

- Construction plans and Method Statements covering: Bridge Construction, Tunnel Construction, Tunnel Handover Plan, Slope Stabilisation Plan, and Blasting Management Plan
- Method Statements for Temporary Activities, including: Storage Areas, River Crossings, Storage and Access Roads.
- Blasting Management Plan

7.1.4. The ESMP also required the elaboration of the following sub-plans, that will be implemented by the PESR during the operation of the Project:

- Operational Stakeholder Engagement Plan (SEP) and Grievance Mechanism
- Operational Community Health and Safety Management Plan
- Operational Worker Health and Safety Management Plan
- Road Safety Audits
- Operational Maintenance Plan
- Tunnel Operational Management Plan
- Emergency Preparedness and Response Plans (EPRP), including Tunnel Emergency Response Plan
- Operational Drainage Management Plan
- Operational Biodiversity Management Plan
- Operational Waste Management Plan
- Operational Air Quality Management Plan
- Operational Noise Management Plan
- Operational Soil Management Plan

8 HAVE ALTERNATIVES BEEN CONSIDERED?

8.1.1. Alternatives have been considered as part of the preparation of the ESIA, including alternative designs and a 'do-nothing scenario'.

8.2 DO-NOTHING SCENARIO

8.2.1. A 'do-nothing' scenario has been considered as an alternative to the Project. The following are likely to remain or occur if the Project does not proceed:

- The condition of the motorway infrastructure in the region will remain poor;
- The strategic plans and goals of the Government and PESR will not be realised;
- There will be no stimulus to the development potential of the area;
- Road safety issues will remain present;
- Travel times will increase as traffic volumes increase over time;
- Access to people, goods, services, and employment opportunities will not be improved along the corridor; and
- Economic growth will be constrained, and investment will decline.

8.2.2. The 'do-nothing' scenario is considered to be unacceptable due to the Project being an integral part of the wider transport network.

8.3 ALTERNATIVE ALIGNMENTS

8.3.1. In 2015 a Strategic Environmental Assessment (SEA) was prepared for the project corridor. The SEA considered the extent to which the Project aligned with the existing spatial and/or economic strategies/plans for the region.

8.3.2. The SEA for the Project included a high level analysis of three alternatives of the scheme. These are named as *Eastern corridor*, *Central corridor* and *Western corridor*.

8.3.3. The Western corridor was not selected because it required multiple river crossings, including many bridge and viaduct structures, which made it unfeasible from a technical and construction point of view.

8.3.4. The Eastern corridor was not chosen due to its close proximity to multiple villages.

8.3.5. The Central corridor was considered the most appropriate, based on the technical features of the motorway, greater distance from settlements, and greater feasibility for construction. Following the selection of the Central Corridor, a tunnel variant option was considered during the design evolution (described further below in "Alternative Designs"), and this option is now the selected design (the Project).

8.4 ALTERNATIVE DESIGNS

8.4.1. Two alternative alignments of the Central corridor were designed, one without a tunnel (Alternative 1) which runs to the west of the existing A2 state road and one with a tunnel (Alternative 2) on the eastern side of the existing A2 state road.

8.4.2. Alternative 1, which does not involve the construction of a tunnel, would have resulted in greater fragmentation and disruption of existing habitats and existing wildlife corridors.

8.4.3. Alternative 2, resulted in reduced disruption to existing habitats due to the inclusion of the tunnel, and it crossed fewer rivers, reducing the risk of adverse impacts on water bodies. Alternative 2 was also more closely aligned with spatial planning aspirations for the region in terms of development and layout of the villages that are defined in relevant spatial planning documentation, including the Polog (2010) Southwestern Planning Region Development Program (2010-2015).

8.4.4. Alternative 2 was considered the most favourable alignment technically, socially and environmentally. Further information on Alternative 2 (the Project), is provided in Section 3.

8.4.5. As outlined in Section 2, there are three potential designs for the Strogomishte Interchange viaduct still under consideration. One of these will involve constructing the viaduct piers within the cemetery at Dolno Strogomishte, while the other two will have piers built outside of the cemetery. The worst case parameters from all the options have been considered in the assessment, to ensure adequate mitigation has been proposed.

9 WHAT ARE THE LIKELY EFFECTS OF THE PROJECT?

9.1 AIR QUALITY

BASELINE

9.1.1. The air quality baseline is generally good, with the exception of CO and PM_{10} particulate concentrations during the colder months of the year, when concentrations are much higher. These pollutants are predominantly emitted from household heating units and there are ongoing programmes in the community to replace raw wood burning stoves with pelletised wood and gas.

9.1.2. Receptors, identified as being sensitive to changes in air quality as a result of the Project, include residential dwellings and buildings associated with education, religion, recreation and military uses.

CONSTRUCTION

9.1.3. Machinery and vehicles will generate dust and exhaust emissions (PM_{10}, $PM_{2.5}$, CO_2, NO_x, PAH, SO_2) during construction operations.

9.1.4. Dust will mainly be generated from blasting and excavating, material loading and unloading, transportation of earth and other materials along the haul roads and the motorway, wind erosion and emissions of exhaust gas from vehicles and other machinery.

9.1.5. The risk of adverse construction air quality effects will be managed though the implementation of the Air Quality Management Plan and Construction Traffic Management Plan in the ESMP.

OPERATION

9.1.6. Atmospheric emissions (dust, NO_2, CO) during the operational phase will originate from vehicle traffic e.g. engine exhaust gases. The Project moves the motorway alignment away from most dwellings, resulting in a slight beneficial effect. Although a small number of receptors will be adversely affected due to the Project, the Operational Air Quality Management Plan in the ESMP will be prepared and implemented, to reduce adverse effects. The air quality benefits of the Project are greater than the adverse effects.

MITIGATION

9.1.7. The ESMP includes various management plans to reduce the risk of air quality effects during construction and operation, including the following:

- The construction **Air Quality Management Plan** will reduce the occurrence of nuisance dust.
- **The Construction Traffic Management Plan** will reduce emissions from construction vehicles.
- The **Operational Air Quality Management Plan** will be prepared and implemented. Regular monitoring will take place at sensitive receptors and in response to grievances raised as part of the **Stakeholder Engagement Plan**. The mitigation measures applied during the construction phase will also be implemented during any maintenance works.

9.1.8. The **Tunnel Operational Management Plan** will manage air quality in the tunnel, and will include measures to ensure proper ventilation, provision of firefighting equipment, emergency training for tunnel staff, regular cleaning, and that exits are kept clear.

9.2 CLIMATE

BASELINE

9.2.1. Greenhouse Gases (GHG) are natural and man-made gases occurring in the atmosphere which absorb and emit infrared radiation thereby maintaining the Sun's energy within the Earth's atmosphere. There is a scientific consensus that the major increase in the concentration of GHGs from man-made sources is contributing to global warming and climate change.

9.2.2. According to conclusions in the North Macedonia Second Biennial Update Report on Climate Changes (Climate Change Mitigation) the transport sector will result in an increase in carbon dioxide emissions from 12.1% in 2012 to 15.8 % in 2035 and increase the NO_2 emissions from 25.3% in 2012 to 35.4 % in 2035.

CONSTRUCTION

9.2.3. Direct GHG emissions associated with the Project during construction are likely to occur as a result of the following:

- Emissions from construction equipment, and from the vehicles used to deliver materials, and transport waste and excess material;
- The materials used in the project
- Clearing of the terrain – vegetation removal;
- Concrete batching plant;
- Blasting – depending on the technology and the explosive used; and
- Generators.

9.2.4. Indirect GHG emissions associated with the Project during construction are likely to occur as a result of the following:

- Emissions from construction camps or welfare facilities, as a result of energy consumption;
- Waste disposal generated from the construction activities and its decay;
- Exploitation of the material from quarries and borrow pits; and
- Working of concrete, asphalt, or iron production plants, whose materials and raw materials will be later used for the construction of the road.

9.2.5. The total volume of carbon emitted from materials to be used in the construction of the Project has been calculated as 48,529 tCO_2e. The total emissions from construction plant has been calculated as 232 tCO_2e. Per annum (over the course of 4 years) this will equate to approximately 11.2 KtCO2e.

OPERATION

9.2.6. The operational effects on the climate change would be due to:

- Emissions of GHG as a result of street lightning and road signage and from traffic flow along the new road. The traffic emissions are dependent on the number of vehicles, type of vehicles and quality of fuels used.

9.2.7. The operational lightning at the tunnel and interchanges, can make a notable contribution to GHG emissions, so energy-efficient lighting will be specified. This approach is anticipated to reduce operational GHG emissions by 60%, in comparison to the use of non-energy efficient lighting

systems. The estimated emissions from vehicles (using 2040 traffic volumes) is anticipated to be 5,867 tCO2. This represents less than 0.1% of all traffic emissions in North Macedonia.

MITIGATION

9.2.8. The following measures will be undertaken to reduce GHG emissions during the design, pre-construction, construction and operation phases:

- Design the road to reduce GHG emissions associated with maintenance of structures and the road;
- Choose low carbon materials for road structures such as fences, noise barriers and similar. The most suitable material is wood, compared to concrete and steel elements;
- Ensure the efficiency of the transport and delivery of construction materials: this will include preparation of plans for the organisation of transport and delivery of materials, using appropriate vehicles for transport and fuels with lower GHG emissions;
- Implementation of appropriate techniques for the application of the asphalt, bitumen emulsion during construction and maintenance; and
- Reduce pavement roughness during operation.

9.3 GROUNDWATER

BASELINE

9.3.1. Groundwater is found within the quaternary deposits and sediment geological units along the Project alignment. Ground Investigations have identified groundwater as shallow as 0.2 m below ground level. The groundwater is in hydraulic conductivity with registered wet zones (surface water features).

CONSTRUCTION

9.3.2. The construction activities have the potential to adversely affect the hydrology of the groundwater, due to:

- Drainage of groundwater;
- Compaction of the soil layers as a result of using heavy construction plant; and
- Construction and drainage of the tunnel.

9.3.3. If an accidental spill or leak were to occur during construction, the contaminants can enter surface soil layers, and if these surface layers are permeable, pollutants can be transferred to the groundwater. These risks will be managed though the measures set out in the **Water Resources Management Plan** and **Waste Water Management Plan** as part of the ESMP**.**

OPERATION

9.3.4. During the operational phase, release of pollutants to the water environment and the soil (caused by leakage of fuels, grease and/or oils from vehicles) can result in adverse impacts on groundwater quality. Incidents, or severe accidents, when transporting large amounts of pollutants, can also result in groundwater contamination. These risks will be managed through the measures in the **Operational Drainage Management Plan and Monitoring Plan.**

MITIGATION

9.3.5. The ESMP includes various management plans to reduce the risk of groundwater effects during construction and operation, including the preparation and implementation of a **Water Resources Management Plan** and **Waste Water Management Plan**.

Construction

9.3.6. The following measures will reduce the risk of changes in flow and hydrology of the groundwater:

- The groundwater level will be checked before starting construction;
- Construction activities that could affect groundwater must be carried out in the months when precipitation will be low: and
- If contact with groundwater is made during construction (such as excavation and/or tunnelling), the proposed construction methodology will be reviewed to prevent changes to groundwater flows, and to adjust health and safety measures to reduce any increased risk to construction workers.

9.3.7. These measures will be undertaken at all locations where construction activities will extend below the groundwater level.

Operation

9.3.8. The following measures will be undertaken during operation:

- Regular control and maintenance of road drainage infrastructure in order to avoid blockages and waterborne pollutants entering the ground;
- Regular inspection and maintenance of oil traps;
- Monitoring of the quality of groundwater at locations where the level of groundwater is close to the surface (locations based on groundwater investigations at the detailed design stage). Parameters will include groundwater level, total dissolved solids, copper, zinc, cadmium, lead, pH and fuels / oils. This will detect deterioration of groundwater quality and any need for further actions as per the Operational Drainage Management Plan and Monitoring Plan in the ESMP.

9.4 SURFACE WATER

BASELINE

9.4.1. The Project alignment crosses two rivers, the river Zajaska (in two locations) and the river Sushica (a tributary of river Zajaska).

9.4.2. The River Zajaska originates from a spring on the eastern slope of Bistra, at the village Tajmishte at an altitude of 1.480 m.

9.4.3. The River Sushica is an intermittent river with low water levels and has a basin area of 31.17 km^2. The River Sushica flows into Zajaska River in the eastern part of Kichevo.

9.4.4. There are approximately 15 intermittent watercourses along the Project alignment.

9.4.5. The main water supply in the Municipality of Kichevo is the source “Studenchica”. which is managed by the Public Water Supply Enterprise “Studenchica” – Kichevo. The capacity of the spring “Studenchica” in January 2020 was measured between 877 l/s as a minimum value to 1156 l/s as a maximum. The average flow in January 2020 was 986 l/s.

CONSTRUCTION

9.4.6. During the construction phase, the following activities have the potential to adversely affect the water environment. This will be minimised though the implementation of the measures outlined in the ESMP:

- Input of pollutants:
  - Communal waste and wastewater (from the presence of the construction workforce);
  - Wastewater from construction works;
  - Mobilisation of any contaminants that may be present along the alignment;
  - Construction waste (surface water pollution by fine granulated material, cement and/or concrete); and
  - Fuel and other pollutants (solvents, paints, greases, oils, lubricants) potentially leaking from storage locations, construction equipment and vehicles.
- Alteration to the river channel morphology and/or the physical characteristics of the waterbody:
  - Increased deposition of sediment (generated from the construction of the Project, excavations, embankments, and earthworks) and its transfer into existing watercourses;
  - Alterations to the river channel morphology due to construction of bridge piers;
  - Alterations to the environmental characteristics of river habitats;
  - Alteration of the morphology and/or fragmentation of existing riverbed habitats (namely in the floodplain area); and
  - Physical barriers within the floodplain.
- Use of water resources for construction water and potable uses
  - Any effects on the local water supply are expected to be minimal due to the scale of the available supply. Water use by the project will be agreed ahead of construction with the Public Water Supply Enterprise “Studenchica” – Kichevo.

OPERATION

9.4.7. During the operational phase, the following activities have the potential to have an adverse effect on the water environment, although this will be minimised though the implementation of the measures in the mitigation section:

- Input of pollutants:
  - Fuels and/or oils leak from motor vehicles;
  - Leaks from plant and equipment during maintenance activities; and
  - Accidents during the road transport of hazardous substances along the project alignment.
- Alterations to flow patterns, and sediment deposition, due to the Project introducing new structures within the floodplain that obstruct floodwaters, or the impermeable road surface resulting in reduced infiltration rates and increased overland flow.

MITIGATION

9.4.8. The ESMP includes various management plans to reduce the risk of surface water effects during construction and operation, including the preparation and implementation of a **Water Resources Management Plan** and **Waste Water Management Plan**.

Pre-Construction

9.4.9. The detailed design of the Project will specify appropriate drainage solutions with oil and silt interceptors to prevent contaminated waters entering groundwater.

Construction

9.4.10. The mitigation measures for surface water are set out in the **Water Resources Management Plan (including Ground Water Management and Waste Water Management)** in the ESMP. This plan will calculate the total water requirements of the Project and ensure that adequate measures are put in place to reduce water usage. The Plan will cross reference the Materials and Waste Management Plan, which will set out measures to reduce the risk of accidental spillages of contaminative materials.

Operation

9.4.11. As outlined in the ESMP, mitigation measures including the following will be implemented (to be set out in the **Operational Management Plan** and **Operational Drainage Management Plan**):

- Regular maintenance of the drainage system to prevent blockages; and
- Inspection and maintenance of oil and silt interceptors.

9.4.12. These measures will ensure that the drainage systems (specified in the detailed design) are operated and maintained appropriately.

9.5 GEOLOGY AND SOILS

BASELINE

9.5.1. The bedrock geology beneath the Project is comprised of sedimentary strata. This is overlain by superficial deposits of Alluvium. The Project alignment is largely located on topsoil, with Made Ground present beneath the areas of hardstanding.

9.5.2. Groundwater is likely to be present within the superficial Alluvium deposits.

9.5.3. The ground cover surrounding the Project generally comprises: agricultural land (largely grassland); areas of hardstanding associated with residential dwellings; sections of the existing road; and areas of woodland, some of which is partially wetland.

9.5.4. There are sections along the Project alignment which are currently susceptible to erosion. There is a risk that the Project could increase the rate of erosion and result in landslides if not appropriately mitigated.

9.5.5. Receptors identified as sensitive to potential changes as a result of the Project include; construction workers, surround soils and geology, surface water bodies, future site users, off-site users in the vicinity (including nearby residents), nearby residential dwellings, and underground utility services.

9.5.6. North Macedonia is located in a geographical area of high seismic activity, with earthquakes in the project area. The site is located in an area of seismic intensity of 7 MKS (Mercali, Cancani and Zieberg). This equates to “very strong” which results in negligible damage in well-designed structures, slight to moderate damage in ordinary structures (i.e. buildings that do not consider seismic activity) and considerable damage in poorly built or previously damaged structures.

PRE-CONSTRUCTION

9.5.7. The detailed design will include slope stabilisation and erosion protection measures such as retaining walls and rock anchors (steel bolts that hold the rock surface and reduce the risk of slope failure) and engineered netting to catch falling material.

CONSTRUCTION

9.5.8. During construction, the Project is likely to have the following effects to geology and soils, which will be minimised using the measures set out in the mitigation section:

- Risk of leaks and / or spills of oil and lubricants from Heavy Good Vehicles (HGVs) and machinery, which could result in the contamination of soil adjacent to the Project alignment;
- Increased soil exposure as a result of construction activities, such as extensive earthworks, which could result in soil erosion;
- The use of borrow bits (to provide excavated material) and disposal sites (for excavated material), could result in soil loss and degradation;
- Fertile soils could be lost along the Project alignment in areas containing fertile soils (such as those areas covered by agricultural land and woodland);
- Excavations, quarrying, drilling and blasting activities could result the potential for landslides; and
- Risk of the excavation of pre-existing contamination, particularly in the areas surrounding the existing roads, could result in the mobilisation of contamination which has the potential to affect the local community, the construction workforce and the surrounding rivers and streams.

9.5.9. Erosion and seismic construction effects could result in damage to equipment, injury or death, but will be limited due to health and safety measures which will be implemented during construction. This will manage the risk to construction workers of landslides and slopes being destabilised during the works. The **Emergency Response Plan** will manage risks due to earthquakes and other natural hazards.

OPERATION

9.5.10. During operation, the Project is likely to have the following effects to geology and soils, which will be reduced using the measures in the mitigation section:

- Risk of airborne pollutants and leaks and / or spills of oil and lubricants from vehicles using the Project during the operational phase, which could result in the contamination of soil adjacent to the Project alignment;
- Risk of loose materials if disturbed surfaces are not stabilised or successfully revegetated following the construction activities being mobilised, which could result in soil erosion; and
- Risk of seismic activity in the region, which may lead to damage along the Project alignment.

9.5.11. Due to the mountainous nature of parts of the route, there is a potential for landslides to occur where the road alignment intersects with steep gradients. Site inspections have identified area of pre-existing erosion and slope stability issues. These locations have been identified in the designer's slope stabilisation study. Retaining walls and slope stabilisation techniques have been included within the design to reduce the risk of landslides.

MITIGATION

9.5.12. The mitigation measures proposed for the pre-construction and construction phase of the Project are outlined in the ESMP. Mitigation includes:

- The preparation and implementation of the following Plans:
  - A **Soil Management Plan** (including a Spoil Disposal Plan), which will outline considerate removal of topsoil and Made Ground;
  - A **Waste and Materials Management Plan**, which will detail a construction materials and waste management system for the Project, including managing stockpile heights and criteria for borrow pits;
  - A **Land Restoration Plan**, which will include measures associated with erosion protection, such as vegetation planting and measures to improve the stability of slopes;
  - A **Health and Safety Plan** with measures to keep construction workers safe, as well as measures associated with considerate excavations, quarrying, drilling and blasting;
  - **Construction Plans and Method Statements: Slope Stabilisation Plan** outlining measures to stabilise slopes and ensure a safe working environment;
  - An **Emergency Preparedness and Response Plan** (including a Spill Management Plan) including measures for leak/spill prevention from vehicle, machinery and material storage; and
  - A **Water Resource Management Plan** establishing regular monitoring of river and stream crossings, to ensure slopes remain stable, and setting out measures to ensure consideration of run-off during the design of the construction camps.
  - **Method Statements for Temporary Activities** which will include the following activities: Storage Areas, River Crossings, Storage and Access Roads.
  - **Blasting Management Plan** which will set out methods and procedures for blasting activities associated with the construction of the tunnel.

9.5.13. The above plans include measures to reduce pollution and contamination such as:

- Careful construction and thorough quality control processes;
- Provision of spill kits to contain leaks / spills;
- Program to ensure good driver behaviour / maintenance of vehicles; and
- Testing and removal of material arisings in accordance with the Soil Management Plan (including Soil Disposal Plan) and the Waste and Materials Management Plan.

9.5.14. The mitigation and enhancement measures proposed for the operational phase of the Project are outlined in the ESMP. Mitigation includes:

- Preparation of an Operational Maintenance Plan and Operational Soil Management Plan including measures to:
  - Maintain oil and sediment traps and basins, drainage channels and treatment systems; and
  - Maintain slope (cuttings and embankment).
- The preparation and implementation of an **Emergency Preparedness and Response Plan**.

9.5.15. The implementation of these plans will ensure that the drainage systems are working as designed which will reduce the risk of contaminated materials entering the ground. The Operational Soil Management Plan will ensure the risks or erosion and slope failure are minimised. The Emergency Preparedness and Response Plan will set out measures to mitigate/ reduce the impact of natural disasters (earthquake, landslip, flood, extreme weather events, etc.) and accidents in the tunnel (such as tunnel collapse, tunnel fires, gas release, etc.).

9.5.16. The Project has been designed to comply with the relevant national seismic design codes and Eurocode 8. The Project has been designed for a return period of 500 years as per Eurocode 8.

9.5.17. The designers have undertaken a slope stabilisation study which will inform the design, and construction methodology, thereby reducing the risk of landslides and improving safety along the project alignment.

9.5.18. The construction works will be undertaken in accordance with **Construction Plans and Method Statements** prepared by the Contractor and signed off by the Supervising Engineer. These methods statements include; Bridge Construction Plan, Tunnel Construction Plan, Bridge Construction Plan, Tunnel Construction Plan, Tunnel Handover Plan, Slope Stabilisation Plan.

9.6 WASTE GENERATION AND RESOURCE EFFICIENCY

BASELINE

9.6.1. The Economic Chamber of Macedonia, Building Materials Group, indicates that raw materials, such as plaster, marl, ceramic clays, lime and other non-metal minerals, will be available over the next 50 to 100 years. The importation of primary raw materials is negligible within North Macedonia. The report is however undated and there are no other publicly available data sources to provide a more robust indication of current material availability within North Macedonia.

9.6.2. There is continuous manufacturing of cement within North Macedonia, adjusted to the needs of the construction market. Cement production utilises existing manufacturing infrastructure. The use of prefabricated cement products is indicated to be minimal, except in the interior design industry.

9.6.3. The National Waste Management Plan identifies that the majority of solid waste generated is disposed of to landfill. No indication of any construction waste recycling or treatment processes are described in the National Waste Management Plan, or within the North Macedonia Environmental Performance Review. Recycling of materials appears to be limited to packaging waste streams (such as glass, plastic, paper, metal, wood).

9.6.4. Based on available information, the waste recovery infrastructure within North Macedonia is considered limited.

9.6.5. The Macedonian National Waste Management Plan estimates quantities of construction and demolition waste generated per annum to be in the region of 500,000 tonnes. This figure is refined in the North Macedonia Environmental Performance Review[4] suggesting 1,120 tonnes was generated in 2016, of which 23 tons was hazardous wastes. The report however indicates that the accuracy of the figures should be treated with caution as the data may not have covered all construction activities in the country. There are no formal systems in place for the collection of construction and demolition wastes.

9.6.6. Within the Kichevo region, average waste composition statistics from 2016 indicate that just 1.18% of waste comprises construction waste.

9.6.7. Twenty three landfill sites are present in the Kichevo region; however, the majority are informal sites.

9.6.8. No data on remaining landfill capacity is available. Based on the information presented above, landfill infrastructure regionally and nationally is considered limited.

CONSTRUCTION

9.6.9. During the construction phase, the following construction materials are required: earthworks, aggregate, crushed stone, asphalt, concrete and pre-cast concrete. The Project includes two borrow

pits for construction material. These are pre-existing quarries and not located in environmentally sensitive areas.

9.6.10. If the contractor requires additional borrow pits, the Contractor will be required to notify the PESR of the need to request permission from the Ministry of Economy in accordance with the Law on Mineral Resources. The PESR will notify the EBRD of the need for additional borrow pits and will outline the measures they will take to ensure that the Contractor takes into consideration EBRD requirements to select appropriate locations for the borrow pits. The PESR is responsible for submitting the request of permission for a concession to use the material to the Ministry of Economy. The PESR is then granted permission for the concession, which they then transfer to the Contractor. The Contractor will prepare Environmental Protection Elaborates and all the required documentation to apply for the permission for a concession to create new borrow pits and use the material.

9.6.11. Arisings from vegetation removal will be diverted from landfill and is typically provided to local residents for heating.

9.6.12. Waste types generated for disposal at designated deposit areas or landfill during construction include; earthwork excavation, rock excavation, hazardous waste (such as asbestos[3] containing material or contaminated land) and general construction wastes such as plastic packaging and off-cuts. Material usage and waste generation will be minimised though the measures set out in the mitigation section.

9.6.13. The Project includes three designated disposal areas for excess excavated soils, and material from the construction of the tunnel. These are located at the northern end of the Project, close to the southern tunnel portal and to the west of Crvica. They are located outside of environmentally sensitive locations and will be landscaped to fit in with the landscape once construction has ended.

9.6.14. The ESMP includes measures to mitigate the effects associated with the generation of waste and material resources.

MITIGATION

9.6.15. The mitigation measures proposed to minimise the adverse effects of the Project on material resource consumption and waste generation and disposal are detailed in the ESMP. They include the following;

- The detailed design and construction specification will include the use of recycled materials in imported materials where possible;
- The detailed design of the Project should maximise re-use opportunities of the earthwork and rock excavations currently identified for disposal at deposit sites;
- The Contractor will prepare a **Waste and Materials Management Plan** (WMMP) ahead of construction activities commencing in order to:
    - Minimise waste in accordance with the principles in the waste hierarchy and in line with EBRD Performance Requirements; and

[3] Asbestos will not be used in the construction of the Project but there may be asbestos present in existing structures demolished as part of the works.

- Define a chain of custody to ensure the use of reputable and legitimate enterprises.

- The WMMP will include an **Asbestos Disposal Management Plan** (if existing asbestos is found during construction activities) and a Contaminated Land Management Plan.

9.6.16. The contractor will develop a **Soil Management Plan**, including Spoil Disposal Plan for approval by the Ministry of Environmental and Physical Planning (MoEPP) (and Department of Forestry, if the locations affect access to woodland). Efficiencies will be sought during the detailed design to optimise the design including the choice of structure and materials, which will reduce the overall burden on finite resources and the generation of waste.

9.6.17. If it is necessary to open new disposal sites (for topsoil/ excavation spoil and other inert materials) in addition to the three planned along the Project alignment. Their locations will be confirmed with the municipality of Kichevo and be in accordance with the planning requirements of the region, as well as the annual waste management programmes / plans of the municipality of Kichevo, and subject to the measures in the WMMP to identify a suitable location. The Contractor will prepare Environmental Protection Elaborates in accordance with national legislation, EU regulations and EBRD PRs, for submission by the PESR;

9.7 NOISE AND VIBRATION

BASELINE

9.7.1. The Project alignment is characterised by very few stationary noise generating sources, so noise levels are generally relatively low. Some of the settlements identified as sensitive receptors, including Zajas, Kolibari, Trapchin Dol, and the city of Kichevo, are near the existing A2 state road, which is an existing source of noise.

9.7.2. The baseline indicates that the existing noise environment is dominated by the existing infrastructure which includes the existing A2 state road and the Bukojchani to Kichevo railway line.

CONSTRUCTION

9.7.3. Construction of the Project will generate noise and vibration, which will affect the nearest receptors to the Project alignment. Construction operations (including excavation activities, bridges construction, demolition, dredging, production of gravel and concrete, transport of materials in and out of the construction site, tunnel construction) and use of outdoor machinery and equipment, will take place across the entire Project alignment.

9.7.4. Most areas along the alignment are rural and of low sensitivity, however, there are residential areas in the northern and southern ends of the Project alignment which are considered to be of a high sensitivity. During construction, noise levels have the potential to increase substantially compared to the existing situation, however, this will be managed though the measures in the in the ESMP.

OPERATION

9.7.5. During the operational phase, noise will increase due to the motorway traffic on the alignment, increasing the noise level experienced by receptors near the alignment. This will be managed though the inclusion of noise barriers in the design and the implementation of the **Operational Noise Management Plan.**

MITIGATION

9.7.6. The ESMP includes various management plans to reduce the risk of noise and vibration effects during construction and operation of the Project.

Pre-Construction and Construction

9.7.7. Before construction begins a **Noise and Vibration Management Plan (NVMP)** will be prepared and will set out measures to be applied during the construction works to limit the impact of noise and vibration during the construction period. The contractor will apply the measures set out in the NVMP during construction of the Project.

9.7.8. A **Traffic Management Plan** will be prepared to ensure construction related traffic is minimised. The plan shall identify traffic diversion and management issues, traffic schedules, traffic arrangements showing all detours/lane diversions.

9.7.9. The installation of temporary noise barriers (protective walls) with a noise reduction potential of 5-15 dB (A) in line with international best practice and standards.

9.7.10. Monitoring of construction noise levels in line with international best practice such as British Standard (BS) BS 5228 will be undertaken.

9.7.11. Most of the mitigation required for noise will also help reduce vibration. In addition to the noise mitigation, the use of sonic pile drivers, opposed to vibratory pile drivers, may provide a substantial reduction in vibration levels.

9.7.12. Pre-condition surveys will be undertaken at building within 25m of the Project alignment, to provide a baseline against which any structural damage due to vibration can be assessed and compensated by the Contractor, as specified in the ESMP.

9.7.13. The assessment has identified the requirement for noise barriers along the project alignment. Further works will be undertaken at the detail design stage to confirm the exact specifications to ensure satisfactory noise levels. Noise barriers are currently included in the preliminary design (designed following noise modelling of future traffic volumes), two of which are located in the vicinity of Dolno Strogmishte and the rest are located in close proximity to Kichevo and Osoj.

Operation

9.7.14. Noise barriers have been included in design of the Project, in the vicinity of Dolno Strogomishte and Osoj.

9.7.15. An **Operational Noise Management Plan** will be prepared and implemented throughout the operational stage of the project. It will include regular monitoring of traffic noise as per national legislation and/or international good practice. Appropriate maintenance activities will be carried out to assess the barriers' effectiveness of sound attenuation (in line with ISO 10847:1997).

9.7.16. The **Stakeholder Engagement Plan** and Grievance Mechanism will feed into the Operational Noise Management Plan and complaints will be remedied where possible.

9.8 BIODIVERSITY

BASELINE

9.8.1. A baseline study has been undertaken using desk based information as well as site walkovers, and an aquatic survey. The study area is characterised by areas of typical Italian and Turkish oak forest.

Riparian habitats[4] are found along the watercourses, represented by riparian black alder woodland and belts, and riparian willow belts.

9.8.2. All of these habitat types have been under intense anthropogenic pressure for centuries, due to the need for arable land. They are in different stages of degradation. The other main habitat types include: meadows, pine plantations, tree betls, arable land, orchards and fields. .Substantial parts of the study area have been modified and are either: agricultural, abandoned agricultural, or otherwise planted and/or urbanised.

Protected and Designated Areas

9.8.3. There are no protected or designated sites located within the study area. This applies to existing protected areas, as well as Emerald sites (EU legislation) and areas without legal status (Important Bird Areas (IBA), Important Plant Areas (IPA) and proposed or designated areas for species management).

Important Plant Areas (IPA)

9.8.4. IPA Bukovik – Straza is located approximately 10 km north of the Project. It includes important habitats on a European level. There are three important plant species (*Solenanthus scardicus Centaurea grbavacensis* and *Erodium guicciardii)* within the region, but there are no known occurrences within the project alignment.

Critical Habitat and Priority Biodiversity Features

9.8.5. The area surrounding the River Zajaska (Bridge No. 1), close to the village of Crvici. The area is characterised by mixed riparian gallery community, and common alder is the dominant tree species. The EU HD (Annex I): 91E0* advises that: Alluvial forests with Alnus glutinosa and Fraxinus excelsior have a high priority for protection and its status as a 'Priority' habitat under this classification qualifies it as Critical Habitat (CH) - as per GN6.

9.8.6. The area surrounding the River Zajaska crossing, close to the village of Zajas (Bridge No. 3). The area is characterised by abandoned fields and meadows, with ruderal vegetation and riparian willow-poplar belt (EU HD Annex I: 92A0 Salix alba and Populus alba galleries). In accordance with PR6, this habitat is considered to be a Priority Biodiversity Feature (PBF).

9.8.7. The area immediately north of the tunnel, north of Kolibari. This area includes mosaic woodland that has some characteristics of EU HD (Annex I): 91M0 Pannonian-Balkanic turkey oak-sessile oak forests. Other components of this mosaic include plantation woodland dominated by pine Pinus sp. However, because of the presence of an Annex I this woodland is considered to be PBF.

9.8.8. The area surrounding the location where the Project crosses an intermittent stream, near the village of Osoj (Bridge No. 2). The area is characterised by the riparian willow-poplar belt (EU HD Annex I: 92A0 Salix alba and Populus alba galleries). In accordance with PR6, this habitat is considered to be a PBF.

[4] Riparian: the banks of watercourses

9.8.9. The area surrounding the location where the Project crosses an intermittent watercourse (the River Strogomishka), near the village of Dolno Strogomishte. The area is characterised by the riparian willow-poplar belt (EU HD Annex I: 92A0 Salix alba and Populus alba galleries). In accordance with PR6, this habitat is considered to be a PBF.

9.8.1. A single species listed on Annex II of the EU Habitats Directive was recorded during surveys, fire-bellied toad *Bombina variegate*, which was found within the riparian woodland. This species is a EU Habitats Directive Annex II species that contributes to the designation of Natura 2000 sites and are PBF trigger species.

9.8.2. The range-restricted Macedonian trout *Salmo macedonicus* was recorded from the Zajaska River. A range-restricted barbel (subspecies of the Danube barbel *Barbus balcanicus*) was also recorded. These species are restricted in distribution to the Vardar watershed; the Zajaska River is therefore considered to be PBF by association.

CONSTRUCTION

Habitat Loss

9.8.3. The construction will result in the loss of the following habitats:

Habitats (CH in bold/underlined; PBF in bold)	**Habitat Loss (ha)**	**Relative loss (approx. %)**	**Extent of Habitat Replacement (ha)**
Italian and Turkey oak forests	**3.59**	**0.14**	**3.59**
Riparian black alder belts and woodland	**3.97**	**1.70**	7.94
Riparian willow belts	**0.73**	**1.54**	1.46
Meadows	3.09	4.51	

9.8.4. The Biodiversity Management Plan (BMP) for the Project will require, at least, like-for-like replacement of PBF habitat losses and a net gain for CH. The land required for replanting will be secured by the PESR, and will be maintained as the specified habitat type in the long-term (i.e. for the lifetime of the Project), through commitments secured from the landowners by PESR

9.8.5. The construction of the road may impact the breeding cycle and decrease the breeding success of the birds along the corridor. This included the five species listed under the European Habitats Directive Annex II and EU Bird Directive: common starling, Eurasion blackbird, Eurasian jay, Eurasian magpie and rock dove. Most affected will be the bird community of the oak forests, including Eurasion jay, and species using the arable fields and riparian woodland, including common starling. The passerine species, including Eurasion blackbird, will be most affected by fragmentation and direct habitat loss. Although they are common and widespread in the study area, and the potential impact will be mitigated, by measures in the BMP, such as measures to minimise disturbance during the nesting season.

9.8.6. The disruption or destruction of amphibian and fish habitats may occur due to the clearance of riparian vegetation and the temporary works over and adjacent to watercourses. The Zajaska river is considered to be a high sensitivity habitat due to the presence of Macedonian trout (PBF). The amphibian habitats (riparian woodland) are considered to be a maximum of high sensitivity based on the presence of fire-bellied toad (PBF). . This potential impact will be mitigated by measures in the BMP, including the implementation of standard pollution prevention measures.

9.8.7. As set out in the ESMP, general animal welfare good practice will be applied and delivered by the Project Ecological Clerk of Works. This will include measures such as pre-construction checks and destructive searches to minimise risks of animal mortality during construction. The ECoW will also deliver Toolbox Talks (TBT) to Project contractors to communicate good ecological practice (e.g. such as securing works areas, covering excavations, preventing access to non-works areas, etc.).

9.8.8. The ESMP includes details of these measures including, a **Biodiversity Management Plan**, **Woodland Clearance Plan** and **Land Restoration Plan**.

OPERATION

Habitat Fragmentation

9.8.9. The cleared land strip along the motorway will be permanently occupied by the carriageway and the associated structures. This will cause the severance and fragmentation of habitats. Over time, this may result in the isolation and decline of populations of organisms which, if they become too small, may then be at risk of local extinction. The impact has been considered within the context of the landscape level distribution of the habitat. None of the habitats will be fragmented to the extent that the viability of the habitat within its wider distribution will be compromised. The smallest 'fragments' of habitat that will remain will be riparian woodland between Rashtani and Kichevo (at Bridge No.2).

9.8.10. This risk will be reduced though the implementation of the Operational Biodiversity Management Plan.

MITIGATION

9.8.11. The ESMP, sets measures to mitigate the effects of the Project on biodiversity. Plans outlined in the ESMP include:

- Biodiversity Management Plan, including the
  - Woodland Clearance Plan
  - Land Restoration Plan
- Operational Biodiversity Management Plan

9.8.12. These plans will set out measures to be applied from the pre-construction phase, through to construction and operation.

Pre-Construction

9.8.13. The design of the bridges, the tunnel and box and pipe culverts will provide for connectivity of habitats and facilitate the movement of wildlife, including fish. The detailed design of the project will include replacement habitat areas, which will help ensure No Net Loss of habitats, for Priority Biodiversity Features and a Net Gain for Critical Habitat. The detailed designs of the Project will provide, the replacement of protected habitats as specified in the **BMP**. The PESR will prepare a Biodiversity Management Plan, including a **Land Restoration Plan,** which will include a detailed

calculation of habitat losses and habitat replacement, species and specific locations, to inform the detailed design (and Bill of Quantities) and for inclusion in the tender documents for the Contractor. The Contractor will undertake a survey along the project alignment to identify any specific habitats or flora that should be protected and either relocated or fenced, prior to the start of construction activities.

Construction

9.8.14. The Contractor will comply with measures outlined in the Biodiversity Management Plan. Contractor access will be prohibited from all habitat areas, except where it is necessary to construct the Project. Best practice measures will be built into the construction contract, including the installation of markers to delineate the construction area, fencing of vegetation within the construction area that is to be retained, and watching briefs during vegetation clearance.

9.8.15. Areas of temporary land take, such as those required for construction of the bridges and tunnels, should be reinstated to their former state, aiming to re-establish the species composition, structure and condition prior to disturbance (through checks before and after works). This will be verified by the project's Environmental Engineer.

9.8.16. To minimise the effect of habitat severance and fragmentation, wildlife crossings/ passes will be included in the detailed design, these will include platforms in culverts and under bridges to allow wildlife to pass beneath the road. These will be specified in the Biodiversity Management Plan.

Operation

9.8.17. Regular maintenance of drainage structures will be carried out to ensure they do not become clogged with debris or sediments. Regular maintenance activities will also include protective fence maintenance, and removal of food, waste, animal carcasses, etc. from roads so as not to attract scavengers.

9.8.18. The proposed design includes a tunnel which has reduced the amount of land take required for the Project, and the associated impact to plants and animals and loss of habitat.

9.8.19. As specified in the **ESMP**, an **Operational Biodiversity Management Plan** will be prepared prior to the Project becoming operational. It will include measures such as regular control and maintenance of drainage structures. Regular maintenance activities will also include: protective fence maintenance, removal of food, waste, animal carcasses from roads in order to reduce the attraction of scavengers

9.9 LANDSCAPE AND VISUAL IMPACTS

BASELINE

9.9.1. The Project is located within an area of mountainous / hilly terrain. The landscape surrounding the Project consists of:

- Agricultural land;
- Woodland (both degraded and mature forests);
- Areas of residential dwellings, predominately located to the south and north of the Project (Kichevo and Zajas, respectively);
- Sections of existing road and the railway line;
- A number of cemeteries; and

- A number of rivers and streams, inclusive of Rivers Zajaska, Sushica, Tiborani and Strogomishka.

9.9.2. The primary landscapes are agricultural land and woodland.

9.9.3. The key groups of visual receptors identified include:

- Residential receptors:
  - Residents on the north western and western extents of Osoj;
  - Residents on the eastern and south eastern edge of Trapchin;
  - Residents on the north eastern edge of Kolibari;
  - Residents on the western periphery of Crvica;
  - Residents on the western periphery of Dolno Strogomishte;
  - Residents on the western and southern edges of Gorno Strogomishte;
  - Residents living in the settlements along the A2 motorway, part of the European E-65 Highway, with north and eastern facing views; and
  - Isolated farms and farmsteads along the route corridor within 500 m.
- Commercial receptors, recreational receptors and visitors to places of worship:
  - People visiting the small cemetery and mosque on the south western approach to Crvica;
  - People visiting the cemetery to the west of Dolno Strogomishte;
  - Commercial receptors within 500m (such as the petrol station adjacent to the A2 state road); and
  - People visiting the Albanian Mother Memorial in Zajas.
- Transport receptors, including:
  - Users of the A2 motorway;
  - Users of existing roads and trails along the route corridor within 500 m; and
  - People travelling along the Kichevo to Gostivar railway line.

CONSTRUCTION

9.9.4. During construction, the Project is likely to have landscape and visual effects on the aforementioned receptors, which will need to be managed. A Landscape and Visual Management Plan (as outlined in the ESMP) will be implemented during the construction phase to manage effects on the visual receptors

9.9.5. There is the potential for alterations to the landscapes present due to the construction activities, including the presence of workers, machinery and materials and waste movements, the presence of construction compounds and the presence of construction workers' accommodation.

9.9.6. There is also the potential for visual effects due to the construction activities including earthworks and vegetation clearance, and the introduction of temporary infrastructure, including construction compounds and cranes. Prior to the start of works, the location of any construction worker's accommodation will be determined by the Contractor (and approved by the PESR) following an Environmental and Social Screening as outlined in Chapter 23 – ESMP. This will ensure they are located away from environmental and social receptors including residential properties and environmentally sensitive areas.

9.9.7. Construction landscape effects, due to of the Project, will be reduced following the implementation of the mitigation measures. Construction visual effects, due to of the Project, are expected at a number of receptors, although the impact will be reduced following the implementation of the mitigation measures.

OPERATION

9.9.8. During the operational phase, the Project is likely to have landscape and visual effects on the aforementioned receptors, which be managed using the measures in the mitigation section.

9.9.9. There is the potential for alterations to the landscapes present once the Project is operational due to the appearance of new linear and geometric forms, and changes in the textures and colours of the landscape due to the removal of vegetation, cuttings and embankments, and the creation of new structures. The most notable impacts will be in Dolno Strogomishte, where the viaduct will be in close proximity to residential properties, foreshortening views of the wider landscape. These properties will be given the option of being include in the expropriation, if the residents express a preference for being relocated.

9.9.10. There is the potential for visual effects due once the Project, is operational due to foreshortened views of the open landscape where the Project is located. However, these will be reduced through the measures outlined in the ESMP.

MITIGATION

9.9.11. The ESMP sets out the mitigation requirements for the construction and operational phases of the Project.

9.9.12. Mitigation measures proposed for the construction phase include the preparation and implementation of a **Landscape and Visual Management Plan** which will form part of the CESMP and include measures to:

- Minimise the extent of earthworks, where practicable;
- Minimise the use of artificial lighting along the Project alignment and where needed, use directional lighting; and
- Reflect the nature of the existing landforms within the earthworks, where practicable.

9.9.13. Mitigation measures proposed for the operational phase include the preparation and implementation of an **Operational Maintenance Plan** which will include:

- Measure to maintain the earthworks;
- Measures to monitor and manage the vegetation to ensure it establishes and thrives;
- Measures to maintain the quality of the M2 Motorway link road at the junction with the existing A2 state road in Zajas to maintain the setting of the Memorial (such as vegetation management and litter removal); and
- Measures to maintain vegetation to maximise screening to visual receptors.

9.10 SOCIAL AND COMMUNITY

BASELINE

9.10.1. The City of Kichevo and has experienced population growth in recent decades, mostly as a result of migration from rural areas. However, some of the rural settlements in the surrounding area have also recorded continual growth in population. Since 2002, population growth has slowed within the

Municipality of Kichevo and within the Republic of North Macedonia, largely due to external migration.

9.10.2. The Municipality of Kichevo has a developed system of educational institutions including pre-school, primary and secondary education. There are two pre-schools, nine primary schools and two secondary schools.

9.10.3. The healthcare system in the Republic of North Macedonia consists of three segments: primary, secondary and tertiary healthcare. The primary healthcare is based on a network of private and public facilities, notably clinics and health centres. Primary healthcare covers preventative, promotional and curative services which are provided by doctors, specialist and dentists. Secondary healthcare covers specialist advice services. Tertiary healthcare covers clinical services which are provided in hospitals and within the University Clinical Centre in Skopje. The healthcare system is largely financed through mandatory healthcare insurance, which gives an option for all citizens to be healthcare insured.

9.10.4. There are five institutions across the Municipality of Kichevo providing social welfare support facilities to vulnerable persons.

9.10.5. With regard to local road safety; there is a box culvert beneath the existing railway line at the northern end of the Project near Dolmo Strogomishte. This box culvert has limited head room and so the local community have created an informal at-grade crossing further along the railway line (northern direction). There is an existing risk of serious accidents occurring resulting in major injury or death.

Figure 9-1 - Existing underpass/ box culvert

Figure 9-2 - Informal railway crossing (to the north of the underpass)

CONSTRUCTION

9.10.6. During construction, the Project is likely to have the following social and community effects, which will be managed using the measures in the mitigation section:

- The presence of construction workers and the undertaking of construction activities, which could affect community cohesion and wellbeing;
- Risk of the local community accessing fenced areas where construction activities are taking place and construction compounds and construction workers' accommodation are located, with the potential for incidents and accidents;
- Risk of incidents and accidents involving pedestrians, other vehicles, and the potential for damage to local roads as a result of increased construction traffic; and
- Reduced or prohibited access to education facilities, social welfare support facilities and healthcare facilities, which could result in effects on the local community.

9.10.7. These construction social and community effects will be managed to an acceptable level, though the implementation of the mitigation measures in the ESMP

OPERATION

9.10.8. During operation, the Project is likely to have the following social and community effects, which will be managed using the measures in the mitigation section:

- Issues and concerns of the local communities, which could affect community cohesion and wellbeing; and
- Reduced risk of incidents and accidents as a result of the local communities using the developed overpasses and underpasses.

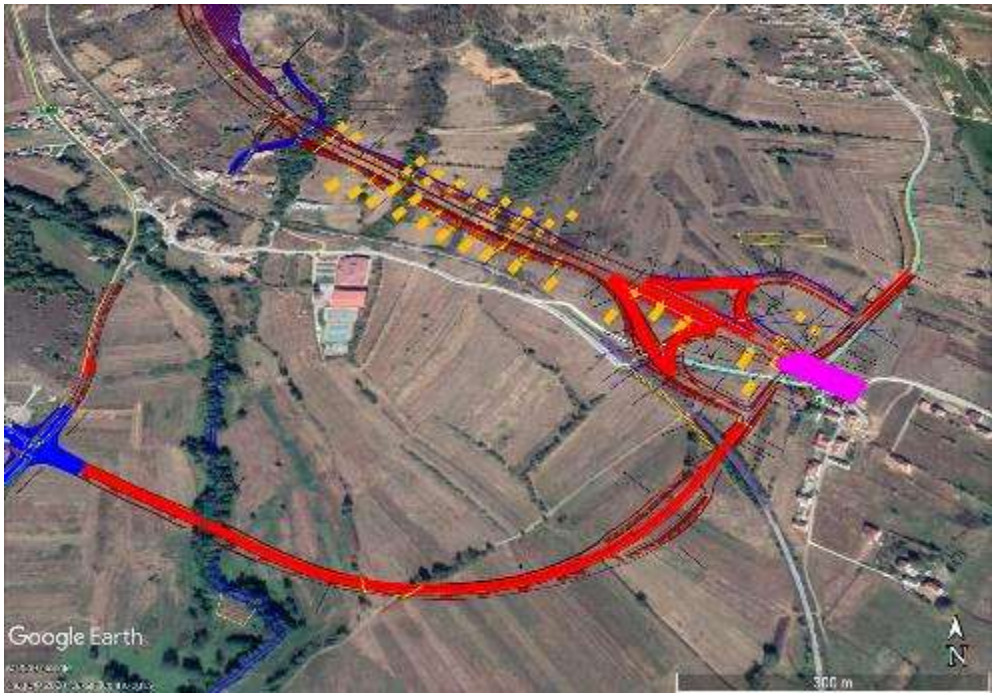

Figure 9-3 – New interchange and overpass

9.10.9. These operational social and community effects are not predicted to be of concern, following the implementation of the mitigation measures in the ESMP.

MITIGATION

9.10.10. The mitigation measures proposed for the construction phase of the Project are outlined in the ESMP. Mitigation includes:

- The preparation and implementation of the following Plans:
  - A Code of Conduct for Construction Workers;
  - A Community Health, Safety and Security Plan;
  - A Community Access and Infrastructure Plan;
  - An Emergency Preparedness and Response Plan;
  - A Traffic Management Plan;
  - A Construction Workers' Accommodation Management Plan; and
  - A Construction Stakeholder Engagement Plan.
- Provision of information to the local communities about the scope and schedule of construction activities, expected disruption and access restrictions at least 24 hours before commencement; and
- An appraisal of suitable locations for the construction workers' accommodation which will consider environmental and social sensitivities, national requirements and permits and the opinions of the local communities.

9.10.11. The mitigation and enhancement measures proposed for the operational phase of the Project are outlined in the ESMP. Mitigation includes the preparation and implementation of the following Plans:

- An Operational Community Health and Safety Management Plan;
- An Operational Worker Health and Safety Management Plan;
- Road Safety Audits;
- An Emergency Preparedness and Response Plan; and
  An Operation Stakeholder Engagement Plan.

9.11 OCCUPATIONAL HEALTH, SAFETY AND SECURITY

BASELINE

9.11.1. Employers, under primary and secondary Macedonian laws on occupational health and safety are required to take all necessary measures to maintain acceptable working conditions. Employees are also required to obey and observe all measures taken to ensure acceptable occupational health and safety. Other occupation health and safety matters addressed in primary and secondary Macedonian laws are inclusive of but not limited to, trade union provisions, working hours, pensions, disabilities, salaries, healthcare and discrimination.

9.11.2. With specific regard to construction activities, the primary and secondary Macedonian laws require employers to prepare a health and safety plan (or equivalent) prior to the commencement of any construction activities.

CONSTRUCTION

9.11.3. During construction, the Project is likely to have the following health, safety and security effects, which will need to be managed using the measures in the mitigation section:

- The presence of construction workers without the appropriate training and / or qualifications, which could pose safety and quality risks to the Project, as well inherent risk to the local communities.
- Risk of the incidents and accidents involving construction workers;
- The use of social infrastructure by the construction workers, which could result in risks to the safety of the construction workers, notably those using the construction workers' accommodation.

9.11.4. These construction social and community effects, due to of the Project, are not considered to be of concern, following the implementation of the mitigation measures outlined in the ESMP.

OPERATION

During operation, the Project is likely to have beneficial effects once the training, qualifications and experience of the construction workforce cascades throughout the Republic of North Macedonia and to future construction workforces.

MITIGATION

9.11.5. The mitigation measures proposed for the construction phase of the Project are outlined in the CESMP. Mitigation includes:

- The preparation and implementation of the following Plans:
  - An Occupational Health and Safety Management System;
  - An Occupational Health and Safety Plan;
  - A Code of Conduct for Construction Workers;
  - A Local Workforce Employment Plan;

- A Labour and Working Conditions Management Plan (LWCMP),
- A Construction Workers' Accommodation Management Plan; and
- A Community Access and Infrastructure Plan;

- Provision of construction worker training for all construction workers both prior to and during the construction phase of the Project; and
- Provision of employment contracts for all construction workers prior to construction activities commencing.

9.11.6. During the operational phase an **Operational Worker Health** and **Safety Management Plan** will be implemented for workers undertaking maintenance works and inspection activities.

9.12 PROPERTY AND LIVELIHOOD

BASELINE

Property

9.12.1. The City of Kichevo, located at the southern end of the Project alignment, is the largest urban settlement in the surrounding area. Within City of Kichevo residents typically live in flats or apartments. The rural settlements, in the wider Municipality of Kichevo, are compact and mostly located in valleys, near rivers and along the main road infrastructure. The rural settlements surrounding the Project alignment include Bukojchani, Gorno Strogomishte, Dolno Strogomishte, Oslomej, Osoj, Trapchin Dol, Rashtani, Crvivci, Kolibari, and Zajas. With the rural settlements residents typically live within houses. Some residents in the area are likely to spend much of the year abroad, returning to the area during summer.

Employment and Economy

9.12.2. The population is divided into economically active and economically inactive individuals. The Republic of North Macedonia has a relatively high unemployment rate. However, the unemployment rate in the Municipality of Kichevo is slightly lower than the national average.

9.12.3. Based on census data, the most common income source in the area surrounding the Project alignment is salaried employment. It is not uncommon in the region for family members living abroad to send money home.

9.12.4. According to census data, agriculture in the Municipality of Kichevo is the highest income generating activity in the rural settlements surrounding the Project alignment and the second highest in the City of Kichevo.

CONSTRUCTION

9.12.5. During construction, the Project is likely to have the following effects to property and livelihood, which will need to be managed using the measures in the mitigation section:

- Potential access restrictions to residential dwellings within the rural settlements, land and property;
- Potential disruption of utilities provision to residential dwellings, land and property;
- Potential deterioration of the local roads as a result of the construction traffic;
- Permanent expropriation of a small number of residential dwellings and auxiliary buildings;
- Potential temporary reduction in agricultural practices and / or permanent loss of agricultural land, and thus livelihoods associated with each agricultural land holding; and

- Positive employment and economic growth across the Municipality of Kichevo as a result of the employment of the construction workforce and associated use of the existing commercial infrastructure.

9.12.6. Mitigation, as outlined in the ESMP will be implemented to minimise effects on property and livelihood.

OPERATION

9.12.7. Once operational, the Project is predicted to have substantial beneficial effects to property and livelihood. These effects are associated with employment and economic growth across the Republic of North Macedonia as a result of the employment of the construction workforce and the usage of the Project.

MITIGATION

9.12.8. The mitigation measures proposed for the construction phase of the Project are detailed in the ESMP and include:

- The implementation of the **Land Acquisition Framework (LAF)**, and subsequently the preparation of a **Land Acquisition Plan (LAP)**, which will ensure appropriate measures are included for the process of land acquisition, and physical and economic displacement;
- The preparation and implementation of a **Local Workforce Employment Plan**, which will ensure that priority is given to employing the local workforce where the skills are appropriate;
- The preparation and implementation of a **Code of Conduct for Construction Workers**, which will set out practice measures that the construction workers will have to adhere to ensure a positive relationship is built and maintained with the local communities;
- The preparation and implementation of a **Community Health, Safety and Security Plan**, which will outline health and safety procedures for the protection of the local community;
- The preparation and implementation of a **Community Access and Infrastructure Plan**, which will ensure safe access is maintained throughout the construction period;
- The repair utilities provisions and minimised disruption, where practicable;
- Compensation for any damages to private residential dwellings, land and property caused by construction activities, machinery or workers; and
- Upon completion of the construction activities in a particular area, the Contractor will repair damage to local roads to ensure that they are returned to their original state (pre-construction).

9.12.9. The mitigation measures proposed for the operational phase of the Project includes, the preparation and implementation of a **Labour and Working Conditions Management Plan** (LWCMP). As part of this Plan all construction workers will be provided with a reference / confirmation of employment letter and a skills/ training log, to enhance their employment prospects. This will be a benefit for both a local and migrant workforce.

9.13 CULTURAL HERITAGE

BASELINE

9.13.1. Heritage assets along the Project alignment include cemeteries, a memorial and sites of archaeological interest.

9.13.2. There are three cemeteries adjacent to the Project alignment in the rural settlements of Dolno Strogomishte and Crvivci, and also in the City of Kichevo. The cemetery at Crvica is slightly further

from the alignment. The cemeteries in Dolno Strogomishte and the City of Kichevo are shown in Figure 9.4 and Figure 9.5, respectively.

Figure 9-4 - Cemetery in Dolno Strogomishte

Figure 9-5 - Cemetery in the City of Kichevo

9.13.3. The memorial is located adjacent to the Project alignment near the rural settlement of Zajas. The memorial, named the Albanian Mother, is in commemoration of the Albanians who lost their lives during the Second Balkan War.

9.13.4. There is one internationally designated cultural heritage site within the Republic of North Macedonia, which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. The site is named the 'Natural and Cultural Heritage of the Ohrid Region' and is located approximately 4 km south of the Project alignment. In addition to the UNESCO World Heritage Site the Republic of North Macedonia has listed four sites which may be nominated for UNESCO World Heritage status in the future, the closest of which is located approximately 12 km north west of the Project in the Municipality of Mavrovo and Rostuša. The sites are all located a considerable distance from the Project and have no inter-visibility with the Project. As the Project will have no impacts on these sites, they were not considered in the assessment.

CONSTRUCTION

9.13.5. During construction, the Project is likely to have the following cultural heritage effects, which will be managed using the measures detailed in the mitigation section:

- Potential disturbance at the three cemeteries along the Project alignment, particularly if ceremonies are taking place.
- Potential temporary or permanent relocation of graves at Dolno Strogomishte Cemetery.
- Potential loss or partial damage to undiscovered below-ground heritage assets.

OPERATION

9.13.6. The setting of the Albanian Mother memorial will be improved due to the design and layout of the junction immediately adjacent to the monument.

9.13.7. The setting of the cemetery at Dolno Strogomishte will be adversely affected by the operation of the Project.

9.13.8. Operational effects on local cemeteries are summarised within the Landscape and Visual section (9.9).

9.13.9. The ESMP includes various management plans to reduce the effects to archaeology and heritage during construction and operation.

MITIGATION

9.13.10. The cultural heritage mitigation measures proposed for the pre-construction and construction phases of the Project are outlined in the ESMP. Mitigation includes:

- The preparation and implementation of a **Cultural Heritage Management Plan**, which will inform all the requirements, procedures, resources and skills and timeline needed to minimise impacts on cultural heritage assets.
- Investigate design variants for Strogomishte Interchange to avoid construction of piers within cemetery.
- If it is not possible to avoid construction works in the cemetery at Dolno Strogomishte, the preparation and implementation of a **Grave Relocation Plan**, which will outline measures to protect graves during their temporary or permanent relocation.
- The preparation and implementation of a **Chance Find Procedure**, which will form part of the **Cultural Heritage Management Plan** and mitigate for potential chance finds during the construction phase.

9.13.11. No further mitigation measures are recommended for the operational phase.

9.13.12. See mitigation in Section 9. 7 and Section 9.9 for mitigation in relation to operational effects on the cemetery at Dolno Strogomishte.

9.14 CUMULATIVE EFFECTS

9.14.1. The potential for cumulative effects associated with the Project and the following projects have been assessed:

- A2 Kichevo - Ohrid Motorway, 56.7 km – currently under construction (planned to be completed by the end of 2021);
- Upgrade of Existing Railway station – Kichevo;
- Kichevo - Lin Railway (which is planned for construction);
- Kichevo – Gostivar Railway (which is planned for modernisation);
- A2 Motorway, subsection Gostivar-Gorna Gjonovica (Phase 2), the section of A2 Motorway to the north of the Project (which is planned for design and construction);
- A2 Motorway, subsection Gorna Gjonovica - Bukojchani (Phase 3), the section of A2 Motorway immediately to the north of the Project.
- National Gasification System in Macedonia, section 5: Skopje-Gostivar-Kichevo

9.14.2. There is the potential for cumulative construction effects on air quality and landscape to occur when construction works overlap, but these will be managed. The Contractors will liaise with the other contractors for relevant schemes to ensure that appropriate measures are in place with regard to air quality and dust emissions. There are no notable cumulative effects expected during operation.

10 STAKEHOLDER ENGAGEMENT PLAN (SEP)

10.1.1. A Stakeholder Engagement Plan (SEP) has been developed with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of the Project. Stakeholders could be individuals and organisations that may be directly or indirectly affected by the Project, either in a positive or negative way, who wish to express their views. A Supplementary SEP has been prepared in light of Covid-19 and restrictions on public gatherings.

10.1.2. The SEP also identifies a formal grievance mechanism (GM) to be used by stakeholders for dealing with complaints, concerns, queries and comments.

10.1.3. The SEP will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, or key stakeholders change, the SEP will be brought up to date. It will also be reviewed periodically during project implementation and updated as necessary. A separate SEP will be developed for the construction and operational phases

10.1.4. The SEP includes the following:

- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous engagement activities;
- Stakeholder engagement programme including methods of engagement and resources; and
- A grievance mechanism.

11 FURTHER INFORMATION AND CONTACT DETAILS

11.1.1. Documents associated with the Project, inclusive of this ESIA Report can be requested from:

Contact Information	
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11.1.2. A form for registration of grievances related to the Project is provided as Appendix A.

Appendix A

PUBLIC GRIEVANCE FORM

GRIEVANCE REGISTRATION FORM	
CONTACT INFORMATION	
Name:	Gender: □ Male / □ Female
Address:	
Community:	Telephone:
Jamoat:	E-mail:
Anonymous grievance: □ Yes / □ No	Preferred mode of communication for feedback: □ Mail / □ Phone / □ E-mail
DESCRIPTION OF GRIEVANCE / SUGGESTION / QUESTION	
Please provide details (who, what, where, when) of your grievance below:	
In case any other actions were undertaken by the complainant with respect to the grievance case, please provide details on past actions (if any):	
Please provide details on your suggested resolution for grievance:	
GRIEVANCE REGISTRATION DETAILS	
Name of registrant:	
Organization:	Position:
How the grievance was lodged: □ in person / □ mail / □ e-mail / □ phone / □ fax / □_____	Type of grievance: □ type A / □ type B / □ type C
Documents attached:	Grievance is relevant to Project: □ Yes / □ No if “No” it was forwarded to: _____
Remarks:	
Signature of registrant:	Date of grievance:

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