European Bank for Reconstruction and Development

Croatia: Corridor Vc Motorway Completion (50712)

Framework Environmental and Social Management Plan

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Contents

Tables

Appendices

No table of contents entries found.

Abbreviation List

Abbreviation	Full name
ESMP	Environmental and Social Management Plan
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EIB	European Investment Bank
IFI	International Financial Institutions
EIS	Environmental Impact Study
ES	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
HAC	Hrvatske Autoceste
HR	Human Resources
IESC	Independent Environmental and Social Consultant
ILO	International Labour Organisation
ISO	International Organization for Standardization
LARP	Land Acquisition and Resettlement Plan
LTA	Lenders Technical Assistance
PAP	Project Affected Person
PR	Performance Requirement
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
TMP	Traffic Management Plan
MSTI	Ministry of the Sea, Transport and Infrastructure

1 General Information

1.1 About the Project

The European Bank for Reconstruction and Development (the "EBRD") is considering extending a sovereign-guaranteed loan of up to EUR 77.0 million to Hrvatske Autoceste d.o.o. ("Croatian Motorways Limited" or "HAC" or "the Company"). Up to EUR 52 million of the EBRD loan will be used for financing the construction of a 22.5 km motorway section between the Hungarian border and Halasica bridge on Motorway A5 ("the Project"), while the remaining funds will be used for the modernization of the HAC lighting system. EIB is expected to co-finance the Project in an amount equal to EBRD distributed in the same way.

The Project section is part of the international Pan-European corridor Vc. It is part of the European network marked E73 which connects northern Europe with the Adriatic and represents the backbone of the road transport infrastructure in the eastern part of Croatia. The Project section has been designed as a dual carriageway, dual lane motorway separated by a central reserve and with one emergency lane each.

The Project consists of the following subsections:

- Hungarian border – Beli Manastir (chainage km 0+000.00 to km 5+000.00, L=5.0 km);
- Beli Manastir – Halasica Bridge (chainage km 5+000.00 to km 22+480.00, L=17.5 km);

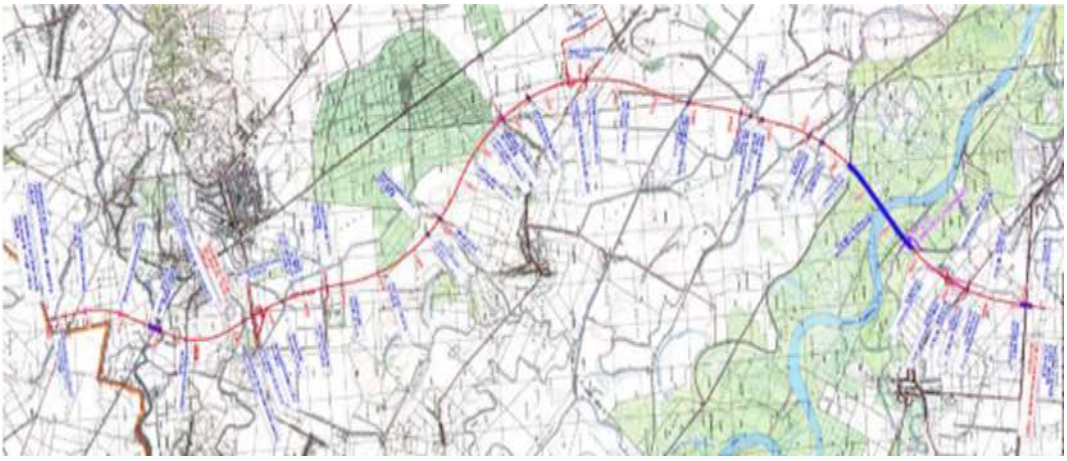

Figure 1 General Layout Plan of the Project Section

1.2 About this document

This document is the Framework Environmental and Social Management Plan (Framework ESMP or the Plan) for the Corridor Vc Motorway Completion Project.

This Plan has been developed to ensure the Project's compliance with the EBRD and EIB requirements in managing identified environmental and social risks and impacts.

The main objectives addressed within this Framework ESMP are the following:

- to define general high level environmental and social requirements for the construction stage;
- to determine specific management plans to be developed within the Project's ESMS;
- to identify the required resources to ensure implementation of activities provided for by the management plans;
- to outline the auditing, monitoring, and reporting procedures to assess implementation of Framework ESMP and other management plans.

The scope of the Framework ESMP includes Project-related construction activities at the Project sites, camps, access roads, quarries and transportation routes. Its requirements are applicable to all Project personnel, including personnel of Contractors and Subcontractors and other individuals visiting Project sites and facilities.

This document will be considered together with the Framework Health & Safety Management Plan, as these two documents complement and complete each other, covering together Environmental, Social and Health and Safety aspects of the Project.

This document will be revised and updated regularly, but at least once a year to incorporate new and/or remove completed procedures and actions and to address any changes in the legislation relevant to the environmental and social aspects of project implementation.

2 Policy, legal and administrative framework

2.1 National legal framework

Republic of Croatia became a European Union (EU) Member State in June 2013 and started the process of aligning national legislation with EU regulations. Process is not fully completed. Croatia has been a member of the International Labour Organization (ILO) since 1992 and has ratified 59 ILO Conventions, including the eight fundamental conventions.

A list of applicable local, national and EU legislation is provided in Appendix A of this report.

2.2 EBRD requirements

The EBRD operates under a number of policies, including the Environmental and Social Policy (2014). The EBRD requires that all projects it finances have an environmental and social appraisal that will be appropriate to the nature and scale of the project, commensurate with the level of environmental and social impacts and issues, and with due regard to the mitigation hierarchy.

The EBRD ES Policy states, "The EBRD categorizes each project to determine the nature and level of environmental and social investigations, information disclosure and stakeholder engagement required. This will be commensurate with the nature, location, sensitivity and scale of the project, and the significance of its potential adverse future environmental and social impacts. Past and present environmental and social issues and risks associated with project-related existing facilities will be subject to environmental and social appraisal regardless of the categorization."

A project is categorized A when it could result in potentially significant adverse future environmental and/or social impacts which, at the time of categorization, cannot readily be identified or assessed, and which, therefore, require a formalized and participatory environmental and social impact assessment process."

The EBRD's ES requirements for projects are defined under the Performance Requirements (PRs), available on the EBRD website:

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

2.3 EIB requirements

European Investment Bank is driven by the policy objectives of the European Union and their principles of sustainable development, public participation, and accountability. EIB financing is preconditioned with compliance with its policy for the protection of the environment and socio-economic issues defined in the Environmental and Social Standards.

The Standards outline the importance of managing environmental and social impacts and risks throughout the life of an EIB project. They lay out promoter's responsibilities in the process of assessing, managing and monitoring environmental and social impacts and risks associated with the Project.

When the EIB is co-financing in partnership with other IFIs that have their own environment and social, pursuant to EIB's own assessment adequate implementation of those policies may prove enough to meet the EIB ES Standards.

The EIB Environmental and Social Standards are available on the following link:

https://www.eib.org/attachments/strategies/environmental_and_social_practices_handbook_en.pdf

2.4 Relevant institutions

During the construction and operation of highways in the Republic of Croatia, environmental protection is managed by cooperation between the following statutory government institutions.

The Ministry of Environmental protection and Energy represented by Ministry's Site Inspectors is the key institution in Croatia responsible for formulation and implementation of environmental policy matters. The Ministry is responsible for protection against noise and vibration, hazardous and toxic material, air pollution, ionic and non-ionic radiation, nature protection and international co-operation.

The other aspects of natural resources management related to issues of construction and operation of highways in the Republic of Croatia, are dealt with several other relevant National institutions.

National roads in Croatia are under the ownership of the State, and that role is exercised by the Ministry of the Sea, Transport and Infrastructure (MSTI). The MCTI has the overall responsibility for the sector and policy.

Croatian Motorways, Ltd (Hrvatske autoceste d.o.o. "HAC"), a limited liability company for operation, construction and maintenance of motorways, was registered and started its business activity on April 11, 2001, as one of two legal successors of Hrvatske uprave za ceste. The company is 100% owned by the Republic of Croatia.

The HAC had an active role in implementing various highway projects on behalf of the Republic of Croatia where financing was partly supported by international donors and lenders.

3 Summary of Environmental and Social Impacts

The environmental and social impacts indicate quantitative and qualitative changes in the environment during construction phase, and the subsequent opening to the traffic, as well as exceptional risks produced by an incident.

Environmental Impact Assessment of the Project was conducted in 2003 and 2004 and was supplemented by an updated Environmental Impact Study in 2016. Environmental impacts have been identified and assessed trough EIS, Decision of environmental acceptability of the Project issued by the Ministry of Environmental protection and Energy and Elaborate on compliance of the main design with environmental mitigation measures and monitoring.

At the time of the preparation of this report, social impact assessment for the Project has not been conducted and there is no socio-economic baseline of the affected communities available. Therefore, potential impacts of the Project were estimated taking into consideration only the expected Project activities.

The table 2 below includes some of the potential Project impacts. In future development of the Project the table will be updated with actual impacts and adequate remediation measures will be introduced.

3.1 Summary of Environmental Impacts and Mitigation Measures

Table 1 Summary of Possible Environmental Impacts and Proposed Mitigation Measures

Parameter	Possible Impact	Proposed Mitigation Measures
Air	During construction	
	During the phase of construction, dust will be generated by works on the site (especially during the dry period), loading/unloading of earth material, traffic of cargo vehicles running on earth surfaces etc. The negative impact of dust will manifest as impact on vegetation in the immediate vicinity of the road (10 – 30 m), wherein fine dust can be transported to even greater distances.	• Sprinkling of the site and access roads with water to prevent dusting caused by wind and vehicle traffic. • Dust suppression will be used on unsealed road surfaces, asphalt mixing sites and temporary service areas.
	Increase in emission of exhaust gases is expected due to the operation of machinery for excavation, loading and transport of excavated material and other machines (compactors, asphalt pavers, rollers). Except for the impact on the project location, additional load will be produced on all local, county and state roads where traffic will be running.	All vehicles, equipment and machinery used for construction will be regularly maintained and inspected/certificated to ensure that the pollution emission levels conform to the standards prescribed.
	During operation	
	Emission of gases (CO, NOx, HC, PM), from exhaust systems of motor vehicles during project use. The share of heavy trucks represents an important factor, especially in terms of the contribution to the concentration of nitrogen oxides.	On the locations where the project passes through the zone of significant and large areas of agricultural land and residential areas, it is necessary to monitor the quality of air during operational phase, monitor trends and implement measures if necessary.
	Emission of particulate matter (PM10, PM30), raised from the road, under the impact of strong, turbulent air motion due to passing of vehicles.	On the locations where the project passes through the zone of significant and large areas of agricultural land and residential areas, it is necessary to monitor the quality of air during operational phase, monitor trends and implement measures if necessary.
Water –	During construction	

Parameter	Possible Impact	Proposed Mitigation Measures
surface and groundwater	Impacts on the following water bodies are possible in the project area: surface water body Travnik, Karašica, Karašica drainage channel, Bojana, Halašica channel, Drava, Dalagaj, Barbara Canal, Bistra and Vučica and groundwater body "Istočna Slavonija sliv Drave I Dunava/Eastern Slavionia, Drava and Danube catchment area". Possible impacts are reduced to impacts on physical-chemical elements that support the biological elements of quality and chemical condition, which are possible in case of an accident.	Please see mitigation measures listed below.

Parameter	Possible Impact	Proposed Mitigation Measures
	During execution of earthworks, increased generation of soil and dust is possible, which may, at the time of the execution of works, cause turbidity of the watercourse, carrying away of a significant quantity of earth material, and it may have an impact on air pollution. The intensity and magnitude of the mentioned impacts are primarily conditioned by the procedures during earthworks as well as weather conditions (dry or wet weather, wind).	• When constructing a passage over a watercourse, the building site must be organized and protected against possible landslide of certain quantities of land into the watercourse. It is necessary to prevent the landslide from being taken off by the water flow or from depositing in parts of the watercourse in the period of reduced flow during the summer months. If this happens, it is necessary to arrange the removal of the same and to ensure the flow of watercourses and canals. • In all excavations that are in direct contact with watercourses or amelioration ducts, it is necessary to take into account that the smallest amount of excavated material reaches the water. • In execution of works, works on watercourses and canals will be carried out by trained and equipped workers for water works. • During the incorporation of construction material in the watercourse passage structures, it is necessary to minimize dispersion of material into the water. • In case of discharging rainwater into the watercourse, it is necessary to define and make the discharge points in such as to prevent the bank erosion at places of discharge. The bottom and sides of watercourse or canal will be, at place of motorway route crossing, covered or protected so that the riverbed is fully protected against erosion, so as the collapse or the stability of structures are not endangered. This applies also to the pillars in the watercourse or inundation, which must be protected in such a way as to prevent the erosion around the foundations of the pillars. All catchment areas where rainfall is collected will be adequately drained. At the same time, all drainage areas exposed to the pollution will be made of watertight materials to prevent the infiltration of polluted water into the soil.

Parameter	Possible Impact	Proposed Mitigation Measures
	Improper storage of petroleum products, oils and lubricants in inadequate tanks and the possibility of accidental spillage.	• It is prohibited to release potentially dangerous substances that may occur during the execution of the project or to introduce them into watercourses and dispose of in an area where danger of contamination or pollution is possible. • Any handling of petroleum products, lubricants and similar potentially harmful substances, will be carried out in the zones with the provided drainage.
	Fuelling vehicles and construction machinery and performance of necessary repairs on areas from which flowing out is possible into the surrounding area without secured protection and cleaning.	• The Contractor is responsible for establishing an emergency procedure for dealing with spills of release of these substances. He will also ensure that the relevant construction personnel are familiar with these emergency procedures. • All vehicles and plants will be well maintained to ensure that there are no oil or fuel leakages. • Maintenance of vehicles and machines to be undertaken at the areas designated for such purpose (workshop). If the maintenance of vehicles is necessary on site, spill tray and spill kits to be provided and used in order to prevent spillage and contamination, and maintenance to be undertaken at the safe distance from the river
	Increased quantities of construction, municipal and hazardous waste.	The Contractor will not dispose of any waste and/or construction debris by burning, or by burying. All waste will be disposed of offsite at an approved landfill site.

Parameter	Possible Impact	Proposed Mitigation Measures
	Due to linear character of works, there is a realistic possibility of intersecting or backfilling the occasional natural drainage paths of surface waters.	• Passage over the canal must be made by construction of a bridge as upright/vertical as possible in relation to the watercourse bed, taking into account to maintain the existing flow profile. The bridge or culvert to be anticipated with deeper foundations in order to enable changes of the canal grade level. • In execution of works, works on watercourses and canals will be carried out by trained and equipped workers for water works. • Depending on the watercourse passage type – box culverts or bridges, it is necessary to arrange the execution of works in such a way that water flow capacity is always ensured, that constant flow of minimal and medium water levels is ensured, a defined organization of works, in such a manner that allows throughput of large water volumes (e.g. by completion of one half of box culverts and after completing them, to execute the second half). • When relocating the existing watercourse or canal to reduce the impact of the project on the environment and to preserve the functionality of the network of amelioration canals required for draining water from these areas, it is necessary to first excavate a new bed and ensure the flow and then fill up the old one. The same applies to structures on amelioration canals. The realization of these works must precede the earthworks on construction of motorway body. In case the canals are recipients of underground drainage, it is necessary to define and perform the drainage discharge as part of the primary relocation works. According to the foreseen construction works, the relocation of canal would take place within earthworks, under the supervision of the competent authority.

Parameter	Possible Impact	Proposed Mitigation Measures
	Washing out of mud from poorly positioned temporary or permanent stockpiles for excavated material and the material entering into the water courses and groundwater.	• During the execution of works on watercourses or canals, it is obligatory to monitor the hydrological forecasts or tendencies and be prepared for the possible removal of personnel, machinery, immovable property, temporary landfills or parts of structures that are under construction and prevent the flow of water during the floods. • Cleary defined topsoil storage and handling in contract specification and management plan and follow up with regular inspection & monitoring and reporting.
	During excavation for construction of bridges and viaducts, the dynamics and the quality status of groundwater may become impaired, especially in parts where these works are carried out under the groundwater level.	Movements of construction machinery over watercourses will be limited to the smallest extent.
	Disturbance of the existing water regime and the flood defence system.	• Passage over the canal must be made by construction of a bridge as upright/vertical as possible in relation to the watercourse bed, taking into account to maintain the existing flow profile. The bridge or culvert to be anticipated with deeper foundations in order to enable changes of the canal grade level. • Depending on the watercourse passage type – box culverts or bridges, it is necessary to arrange the execution of works in such a way that water flow capacity is always ensured, that constant flow of minimal and medium water levels is ensured, a defined organization of works, in such a manner that allows throughput of large water volumes (e.g. by completion of one half of box culverts and after completing them, to execute the second half).

Parameter	Possible Impact	Proposed Mitigation Measures
	A part of the motorway route passes through the sanitary protection zones of the well fields Vinogradi and Livade which can affect the impairment of the quality of pumped out water.	• Rainwater discharged into watercourses or canals will be – prior to being discharged - brought to the prescribed water quality level, according to the Ordinance on limit values of parameters, hazardous and other substances in waste water (OG 80/13, 43/14). • The competent utility company that manages the water well will be informed on the beginning of construction and on the possible risks for the water well. • During construction of motorway connections to the local roads, rainwater collected at places of connections, if the connection is in the sanitary protection zone, it is necessary to collect them adequately, drain to the separator and to discharge them, after the removal of fat, into the nearby watercourse.
	During operation	
	The sources of pollution are all concentrated pollution sources which discharge pollution that may pollute surface and underground waters. Storm waters that are included in the combined sewerage system are also considered sources of pollution.	Rainwater discharged into watercourses or canals will be – prior to being discharged - brought to the prescribed water quality level, according to the Ordinance on limit values of parameters, hazardous and other substances in waste water (OG 80/13, 43/14).
	Crossings over watercourses and channels. The highest risks from negative impact of the project are related to a possible increase in salt concentration during the winter months, and increased concentrations of by-products of operation and movement of vehicles (heavy metals, tires etc.).	For sections where an open drainage system is used, at places of crossing over the watercourses, it is necessary to monitor the water quality after snow melting and to control the existence of direct leaking of rainwater into the watercourses. If it appears, it is also necessary to prevent and rehabilitate the resulting spots.
	Crossings over the embankment. It is possible that the stability and safety of the embankment will be disrupted, i.e. that the function of the embankment in flood defence will be impaired.	During the use of the project, it is necessary to control that there is no depression at the flood defence embankment and to monitor the possible emergence of open water flows over the embankment or embankment damages due to erosion.

Parameter	Possible Impact	Proposed Mitigation Measures
	Relocation of the existing drainage system channels is planned on certain parts of the route, which can reduce the functionality of the drainage channel network.	After the canal has been relocated, during the use of the project, it is necessary to carry out the environmental protection measures in accordance with measures for discharge of rainwater or waste water into the local watercourse.
	Interchanges and connections to local roads. Possible negative impacts appear as a disruption to the surface run-off and in terms of water pollution caused by the discharge of polluted pavement run-off.	If near the junction and connection of a local road there is a watercourse or a canal, it is necessary to monitor the water quality and uncontrolled leakage of rainwater directly into the watercourse, and to ensure its protection against the oily and polluted rainwater that will be collected.
	A part of the motorway route passes through the sanitary protection zones of the well fields Vinogradi and Livade which can affect the impairment of the quality of pumped out water.	• At places where the project passes through the protection zone of the water well, it is necessary to secure the project, during operation and use, against the possible pollution that can occur. endangering thus the quality of the groundwater near the water well. • In places where the project passes through the zone of protection of the water well, it is necessary to monitor the quality of raw water and to coordinate the emergency measures plan in case of sudden pollution and to ensure adequate monitoring in order to avoid the deterioration of the water quality of the water well.
Noise	During construction	
	Temporary impact of the project is expected during the construction, due to the increased local traffic because of the vehicles transporting various materials to and from the building site. Consequently, during the construction at the building site, there will be an increased noise level caused by construction machinery, delivery and handling of building materials.	• Working hours/activities will be adjusted to reduce noise disturbance and working time restricted to 0630 to 1930hrs, or as otherwise agreed locally. Maintain dialogue or use grievance mechanism to allow residents to contact Project staff to make representations. • The plants and equipment used for construction will strictly conform to noise standards.
	During operation	

Parameter	Possible Impact	Proposed Mitigation Measures
	Noise levels exceeding the legal limit are expected during night time along certain motorway sections.	• It is necessary to undertake noise protection measures / solution by placing noise barriers along the motorway in the residential areas. • It is necessary to carry out monitoring of the noise levels on the locations where the project passes through the residential zone and undertake adequate measures in a case that results show increased noise levels during operation.
Soil	During construction	
	The motorway route crosses over significant and large areas of agricultural land, the degree of development of which varies considerably. Generally, cultivated agricultural land predominates in the analysed zone. Negative impact is identified due to the risk from accidental pollution (eg. oil spill) of soil directly and indirectly by pollution of surface and underground waters.	• Damages to the surrounding agricultural land will be avoided during construction of the planned project. This primarily refers to the movement of construction machinery, which will be strictly limited to the borrow pit (the motorway plot). • Disposal of surplus material from the building site or establishment of landfills or lending facilities, must be arranged in designated locations (landfills), i.e., on the ground of lowest quality (borrow pit or temporary landfill). • Parallel with the construction of the motorway, the interrupted rainwater drainage system will be brought into the operating state in accordance with design solutions.
	During operation	
	The motorway route crosses over significant and large areas of agricultural land, the degree of development of which varies considerably. Generally, cultivated agricultural land predominates in the analysed zone. Drainage has been constructed on significantly large areas. The motorway, as a structure which is introduced in the area with already formed drainage systems for surplus water, may have a significant impact on those systems.	On the locations where the project passes through the zone of significant and large areas of agricultural land, it is necessary to monitor the quality of soil and to coordinate the emergency measures plan in case of sudden pollution and to ensure adequate monitoring in order to avoid the deterioration of the soil and underground water quality.

Parameter	Possible Impact	Proposed Mitigation Measures
	Road traffic has a very significant impact on the cleanness of the environment and its abiotic and biotic components, including emissions of NOx, CO, CO2, VOC into the atmosphere, surface storm water run-off from the pavement, which contains oils, salts and different types of impurities – for example, heavy metals. There is the regular negative impact due to the risk from accidental pollution of soil directly and indirectly by pollution of surface and underground waters.	On the locations where the project passes through the zone of significant and large areas of agricultural land, it is necessary to monitor the quality of soil and to coordinate the emergency measures plan in case of sudden pollution and to ensure adequate monitoring in order to avoid the deterioration of the soil and underground water quality.

3.2 Summary of Social Impacts and Proposed Mitigation Measures

Table 2 Summary of Possible Environmental Impacts and Proposed Mitigation Measures

Impact	Description	Positive / Negative	Likelihood 5-Very high 1-Very low	Mitigation Measure
Pre-Construction Phase				
Loss of land	Construction land	N	4	Development and implementation of LARP
	Agricultural land (cultivated and not cultivated)	N/P[1]	5	Development and implementation of LARP
Loss of crops	Annual and perennial plants	N	5	Development and implementation of LARP
Physical displacement	Loss of housing resulting in physical relocation	N	1	Development and implementation of LARP
Economic displacement	Inability to continue with agricultural production	N	4	Development and implementation of LARP
	Loss of income from land lease	N	3	Development and implementation of LARP
	Loss of rural infrastructure (irrigation systems, informal access roads)	N	3	Development and implementation of LARP
	Loss of auxiliary structures	N	2	Development and implementation of LARP
	Loss of agricultural activities for subsistence production	N	3	Development and implementation of LARP
	Loss of grazing areas for livestock	N	2	Development and implementation of LARP

[1] In case of uncultivated land expropriation could result in benefits due to favorable compensation rates

Impact	Description	Positive / Negative	Likelihood 5-Very high 1-Very low	Mitigation Measure
	Loss of business facilities	N	1	Development and implementation of LARP
Construction Phase				
Economic displacement	Encroachment – construction activities outside of site boundaries (Construction machines, works, excess deposit materials, waste, etc.)	N	5	Development and implementation of LARP
	Excess dust impacting crop development	N	4	Please see Table 1 Air
	Temporary loss of access to property due to disconnected rural roads	N	4	Development and implementation of LARP Changes in design
	Damage to existing rural infrastructure (irrigation systems, informal access roads)	N	4	Development and implementation of LARP
	Increased travel time and cost due to damaged or disrupted local roads	N	4	Development and implementation of LARP Changes in design
	Damage to private property and failure from contractor to remedy damages (fences, auxiliary structures, houses, etc.)	N	3	Development and implementation of LARP Please see Table 1 Noise
	Loss of agricultural production due to soil contamination	N	3	Development and implementation of LARP
Temporary land acquisition	Additional income from land lease	P	4	
	Loss of potential for agricultural production due to soil contamination (failure to reinstitute land)	N	3	Development and implementation of LARP Please see Table 1 Soil
Employment opportunities	Local recruitment for construction	P	5	Conduction of Analysis to identify the scale of available local workforce and supplier potential and determine
	Local suppliers of good and services	P	5	

Impact	Description	Positive / Negative	Likelihood 5-Very high 1-Very low	Mitigation Measure
				the scope of resources to be sourced locally
	Indirect employment – Higher turnover due to increased workforce in the area (catering, accommodation providers, cafes, restaurants, gas stations, etc.)	P	5	
	Informal employment and other violations of workers' rights (e.g. child labour, forced labour, compensation and working hours, etc.)	N	3	Development and implementation of Labour Management Plan
Community Health and Safety	Escalation in the number of accidents due to increased number of vehicles present in the area and/or damages to local road network;	N	3	Development and implementation of Traffic Management Plan
	Safety issues caused by the lack of site fencing and demarcation and the risk of unauthorized people entering the construction sites	N	3	Development and implementation of Community Health, Safety and Security Management Plan
	Contamination of soil and/or water	N	3	Please see Table 1, Water and Soil
	Unexploded ordinances	N	1	Confirmations that location conditions issued by relevant authorities have been properly considered in the design. Development and implementation Unexploded Ordinances Preparedness and Response Plan
Archaeology	Damage to cultural heritage and archaeological sites	N	3	Confirmations that location conditions issued by relevant authorities have been properly considered in the design. Development and implementation of Chance Finds Procedure
Operational Phase				

Impact	Description	Positive / Negative	Likelihood 5-Very high 1-Very low	Mitigation Measure
Loss of access to property	Permanent loss of access to property due to disconnected or severely damaged rural roads	N	3	Development and implementation of LARP Changes in design
Economic displacement	Loss of agricultural production from traffic nuisances and inadequately designed/performed construction works (dust, flooding due to poor drainage systems, land contamination)	N	2	Development and implementation of LARP Please see Table 1 Air, Water and Soil
Employment	New employment opportunities for operation and maintenance activities	P	5	
Connectivity	Improved connectivity for the transport of goods, services and people; faster intercity communication, easier access to education, health care and other facilities	P	5	

4 Environmental and Social Management Plans

Framework ESMP would provide the Company and its Contractors with a strong foundation to develop EBRD compliant management plans prior to construction.

ES Management Plans will be developed based on impact assessment provided in the Environmental Impact study and the framework ESMP, decisions of the relevant Ministry departments, and other related documentation. Several management plans will be developed to address impacts identified and implemented as part of the Project's Environmental and Social Management System (ESMS). List of Management Plans to be developed is included in chapter 4.1.

These ES Management Plans will be considered in-conjunction with each other, as combined they form a fully integrated plan and environmental evaluation rather than separate documents.

4.1 List of Management Plans to be developed

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Waste and Wastewater Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer/ IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding national and local legal requirements related to: • waste management, • types of waste which will be generated during the Project execution, • waste management hierarchy (prevention, reducing, reuse, recycling and disposal), • waste management operations, • waste segregation procedures, • on site temporary waste storage, • site rules of waste collection and storage, • transportation of waste, • recycling and disposal, • guides on management of waste based on type (communal, construction, etc.), • management of wastewater resulting from construction activities (stone works, concrete production, etc.) and sanitary wastewater, • list of identified ES impacts, • list of mitigation measures and corrective actions, • defined responsibilities for the implementation (Contractor's to provide Plan to the Subcontractors and his own staff and undertake ongoing monitoring and review of waste management activities across the Project sites and facilities including Subcontractor's, Subcontractor's responsibilities, number of nominated personnel and contact details, waste management services providers), • training programme, • monitoring programme, • reporting.

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Hazardous materials and Hazardous waste Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • management of hazardous substances and waste management, • types of hazardous substances which will be used, • types of hazardous waste which will be generated during the Project execution, • types of hazardous waste which will be generated during the Project execution, • waste management operations, • waste segregation procedures, • on site temporary hazardous substances and waste storage, • site rules of hazardous waste collection and storage, • transportation of hazardous substances and waste from the site to the storage facilities, • temporary storage of oil and fuel and other hazardous substances organisation and requirements, • list of identified potential ES impacts, • list of mitigation measures and corrective actions, • defined responsibilities for the implementation (Contractor's to provide Plan to the Subcontractors and his own staff and undertake ongoing monitoring and review of hazardous waste management activities across the Project sites and facilities including Subcontractor's, Subcontractor's responsibilities, number of nominated personnel and contact details, waste management services providers), • training programme, • monitoring programme, • reporting.

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Watercourse Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • protection of the water bodies; • method statements of all works which will take place in the vicinity and inside bed of the watercourses including river regulation and bank stabilisation works; • list of identified potential ES impacts; • list of mitigation measures and corrective actions; • defined roles and responsibilities; • training programme; • monitoring programme; • reporting.
Camp Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • licenses, approvals, consents and other related documentation • camp location layouts with detailed disposition of all objects, defined water and power supply network, waste and wastewater management • defined roles and responsibilities • training programme • monitoring programme • reporting. In case of requirement for workers accommodation on site, the facilities will be designed in line with EBRD/IFC Guidance Note for workers accommodation

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Borrow pits and Deposit Sites Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • borrowing material and temporary and permanent deposition of surplus material including requirements regarding licenses, approvals, consents and other related documentation; • list of identified ES impacts; • list of mitigation measures and corrective actions; • list of identified potential ES impacts; • proposed closure and rehabilitation plan for the borrow and deposit sites; • transportation material management; • defined roles and responsibilities; • training programme; • monitoring programme; • reporting.
Cultural heritage Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • protection of cultural heritage and archaeological sites, • Project specific Chance Find procedure, • defined roles and responsibilities, • training programme, • monitoring programme, • reporting.

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Labour Management Plan	Contractor to prepare and ensure implementation; Supervision Engineer/ IESC/LTA to approve; HAC to monitor implementation trough appointed Supervision Engineer / IESC/LTA	Prior to the commencement of construction works	Plan will, as a minimum, include information regarding Lenders, international, national and local legal requirements related to: • working relationships, • child and forced labour, • non-discrimination and equal opportunity, • workers organisations, • wages, benefits and conditions of work, • retrenchment, • workers accommodation, • grievance mechanism, • requirement that these provisions are incorporated in contractual agreements with contractors, subcontractors and suppliers, in order to ensure good labour and working conditions for all employees (full time, part time, temporary, seasonal or migrant workers) and non-employee workers, • defined roles and responsibilities, • training programme, • monitoring programme, • reporting The plan will contain the requirement that these provisions are incorporated in contractual agreements with contractors, subcontractors and suppliers, in order to ensure good labour and working conditions for all employees (full time, part time, temporary, seasonal or migrant workers) and non-employee workers. The Plan will define the number of workers that will be engaged for the Project, as well as the measures to be implemented to incite local recruitment, including but not limited to, an analysis of the scale of available local workforce and supplier potential, based on which it will be determined the scope of resources will be sourced locally.

Name of the Management Plan	Responsibility for preparation, approval and implementation	Deadline for preparation	What will it contain?
Land Acquisition Resettlement Plan	HAC / Consultant to develop and ensure implementation; EBRD to approve	Upon completion of the preliminary design for the section Beli Manastir – Hungarian border	Land Acquisition Resettlement Plan will be prepared in line with the LARF and the principles and objectives of EBRD PR5 and, as a minimum, contain the following: • Socio-economic baseline survey, • List of affected land, • List of affected structures, • List of affected businesses, • List of affected people, • Entitlements of the affected people. Procedures and actions to be followed during land acquisition.

5 Implementation

5.1 Training, Awareness and Competence

Environmental training sessions will be organized in accordance with the Training Procedure.

The Training Procedure will be developed by the Contractor and approved by the Engineer with, notification to HAC prior to start of construction.

Initial training program to be prepared and approved before the commencement of works. Other yearly programs will be prepared and approved before the previous expires.

Induction Training and Employee Handbook

All Project personnel and visitors will receive the Induction training before entering the Project sites and facilities. The Project personnel and visitors to be informed about general Environmental and Social issues of the Project and possible risks of the Project activities. Presentation on the important points of the ESMS, methodology of the works and mandatory precautions to be organized.

The Induction Training includes the following subjects:

- Environmental Policy,
- Social Policy,
- Project objectives,
- Project standards,
- Environmental risks and impacts of the Project activities,
- Social risks and impacts of the Project activities,
- ES instructions of the Project sites and facilities,
- Emergency Response Plan.

After the Induction training, the Project personnel receives an Employee Handbook that contains the employee's training, identity information, emergency telephone numbers and some ES instructions. All Project personnel must carry their Employee Handbook with them if they are present on the Project sites and facilities, to be able to use it when necessary and to show it whenever they are asked for.

All visitors at the Project sites and facilities will receive the brochures with general principles of the Project's ES Management.

Determining Training Program and Frequency

The Contractor prepares training programs and organizes training sessions in accordance with the Training Procedure.

These will include:

- Training needs of the Project personnel are determined and listed,
- Initial training program will be prepared and approved before the commencement of the construction works,
- A yearly training program is prepared to meet the determined needs, the training program will be prepared and approved prior to expiration of the previous one,
- The training is recorded in the Training Participant Form. Records of all training conducted are maintained and available for inspections and audits or upon request.

As the training needs are defined, the training programs are developed and constantly updated to address changes in the Project Standards.

'Toolbox Talk' training

Site managers (Site engineer, foremen, etc.) to provide explanation on the ES issues and control methods on the daily activities on the Site trough 'Toolbox Talk' training.

'Toolbox Talk' trainings to be organized at least once a month, and more often if necessary; these training sessions are recorded and stored as Training Records by the ES Manager.

For specific situations, when necessary, external training expert will be invited for technical support related to specific trainings.

5.2 Consultation and Communication

External

In line with the national legislation, i.e. the Construction Act of the Republic of Croatia (Official Gazette No. 153/13, 20/17) and the Physical Planning Act of the Republic of Croatia (Official Gazette No. 153/13, 20/17), public disclosure and consultation activities were organised in connection to the development and adoption of the following spatial plans:

- Spatial Development Strategy of the Republic of Croatia (1997, amended 2013)
- Physical Planning Programme of the Republic of Croatia (1999, amended 2013)

- Spatial Plan of the Osijek – Baranja County (County Journal No. 1/02, 4/10, 3/16, 5/16 and 6/16)
- Physical Development Plan of the Town Beli Manastir (Official Journal of the Town of Beli Manastir, No. 5/06, 7/07 and 5/12)
- Physical Development plan of Ceminac Municipality (Official Journal of Ceminac Municipality, No. 2/05, 8/06, 3/11, 2/14 and 7/14)
- Physical Development Plan of Darda Municipality (Official Journal of Darda Municipality, No. 5/06, 6/06 – correction, 4/08, 6/12, 1/14 and 6/15 – consolidated text)
- Physical Development Plan of Jagodnjak Municipality (Official Journal of Jagodnjak Municipality, No. 01/07 and 07/09)
- Physical Development Plan of Petrijevci Municipality (Official Journal of Petrijevci Municipality, No. 7/03, 4/08 and 4/12)

Consultations under environmental protection laws i.e. the Environmental Protection Act of the Republic of Croatia (Official Gazette No. 80/13, 153/13, 78/15, 12/18, 118/18) were held in 2003, 2014 and 2016 as follows:

- Public consultations regarding Environmental Impact Assessment Study – "Highway: Border with Hungary – Beli Manastir – Osijek – Border with Bosnia and Herzegovina, 2003
- Public consultations regarding Environmental Impact Assessment Study – "Highway A5: border with Hungary (border crossing Branjin Vrh) – Beli Manastir – Osijek – Djakovo – border with Bosnia and Herzegovina (border crossing Svilaj), section Beli Manastir – Osijek" and "Highway A5: border with Hungary (border crossing Branjin Vrh) – Beli Manastir – Osijek – Djakovo – border with Bosnia and Herzegovina (border crossing Svilaj), section: border with Hungary – Beli Manastir", 2014
- Public consultations regarding Environmental Impact Assessment Study "Highway A5: border with Hungary – Beli Manastir – Osijek – Svilaj (corridor Vc), section I: border with Hungary – Beli Manastir and section II: Beli Manastir – Osijek, 2016

Parcelling studies are presented to all right holders over the project-affected parcels and the neighbouring parcels, prior to the start of land acquisition process.

Communication with HAC and submitting grievances are enabled through multiple channels. As part of this document package, Stakeholder Engagement Plan (SEP) containing Grievance Mechanism, has been developed. The SEP identifies all stakeholders and sets out the approach for engaging with them in each of the identified project phases (pre-construction, construction and operation), in order to ensure effective communication. Grievance mechanism is established to allow all interested parties to express their opinions and concerns and secure an effective redress system.

Internal

As part of the ESMP method of internal communications will be established and implemented (formal communication, contact lists, etc.). Establish a schedule of regular meetings where ES activities, events and accidents of the past month are evaluated, and actions agreed and/or recorded. The minutes of these meetings to be distributed to the Project Personnel through the established communication methods.

5.3 Inspection, monitoring and auditing

All controls and inspections within the Project ESMS will be carried out according to the Performance Measurement and Monitoring Procedure to be developed by the Contractor prior to the construction in line with the Framework ESMP.

The Performance Measurements and Monitoring are carried out with the appropriate check lists and follow-up lists. The corrective measures are followed up by the Contractor's ES Manager, Engineers and HACs Environmental Engineer(s) and Social Expert(s).

Inspections

The Contractor and Subcontractors perform daily and weekly inspections on the Project sites and faculties.

Internal Audit

The Project's ESMS is reviewed by the internal ES Auditors according to the Internal Audit Procedure which will be developed by the Contractor, not less than twice a year. In case Internal Audit findings reveal inconsistencies, necessary corrective actions will be undertaken in accordance with the Corrective and Preventive Actions Procedure. Development of the Corrective and Preventive Actions Procedure is responsibility of the Contractor.

External Audit

The Project's ESMS is reviewed/audited by the external auditor (Lenders Technical Consultant), at least every year.

5.4 Reporting

Prior to commencement of construction works, the Engineer determines respective reporting forms and distributes these among the Contractor and Subcontractors respectively, with notification to HAC.

The reporting forms will be reviewed at least semi-annually during the performance measurement.

Monthly Reports

Every month the Contractor compiles Subcontractors' weekly ES performance reports and prepares a monthly ES performance report. This report is submitted to HAC and Engineer for the review and approval.

Monthly ES performance reports are reviewed and adopted at monthly ES Management meetings.

The Contractor's Monthly Report will provide as a minimum information about noted environmental issues, available documentation regarding Contractor's and Subcontractor's nominated personnel for ES Management, relevant communications/correspondence, ES actions undertaken during the subject month, Non-Compliance reports, grievance log/records, monitoring results, borrow pits and deposit sites status, obtained/available permits and consents, contracts with licensed companies (e.g. management of hazardous waste, monitoring, etc.), records of generated and disposed waste, waste transfer documents, training and 'toolbox talks' register and site photographs.

Weekly Reports

The Subcontractors prepare weekly ES performance reports according to the forms approved in advance by the Engineer, with notification to HAC. Weekly reports are submitted to the Contractor at weekly meetings or other previously agreed manner and finally, submitted and approved by Engineer, with notification to HAC.

Annual Reports

At the end of each year, the Contractor prepares annual ES Report. This report will summaries all actions and activities regarding environmental and social management undertaken during annual project course. Annual Report will be submitted to the Engineer and HAC in previously agreed manner.

Project Construction Completion Report

Upon completion of the construction, the Contractor will prepare the Construction Completion ES Activity Report. This report is submitted to Engineer and HAC for review and approval.

5.5 Accidents, Incidents, Non-Conformances, Corrective, Preventive Action and Accident Investigation

Recording and Logging

All incidents (including accidents, spills, work-related illnesses, damages, near misses etc.) will be reported to the to the HAC (either via the Supervision Engineer or supported by IESC or LTA) through the Accident, Incident, Non-conformance Form to be developed as part the Accident-Incident-Non-Conformance Reporting Procedure.

Accident Investigation

For any serious incident (including injury resulting in more than 2 days' time loss, more than EUR 1,000 resulting damage, spills over 5 liters) the Contractor will inform HAC (either via the Supervision Engineer or supported by IESC or LTA) within 24h via Accident, Incident, Non-conformance Form.

In addition to this, the Contractor will provide detailed written Accident Report which will include as a minimum:

Initial Accident Report (within 3 days of the incident):

- A brief description of the accident;
- Persons and companies involved;
- Details of the accident;
- Photos/Videos.

Complete Accident Report (within maximum of 2 weeks):

- Investigation activities;
- Analyses and results (Root cause);
- Advices and Corrective and Preventive Actions (with implementation timeline);
- Lessons Learned;
- Photos/Videos

The HAC (either via the Supervision Engineer or supported by IESC or LTA) will be responsible to review and approve these reports and monitor implementation of any corrective and preventive actions identified.

6 Environmental and Social Monitoring

6.1 Environmental Monitoring

Through the ESMP, the Contractor will establish Environmental and Social Monitoring Programme of Project impacts during construction phase and operational phase.

Prior to commencement of any works, it is necessary to carry out baseline monitoring of environmental parameters and update baseline data for noise, air quality, water and groundwater, and soil quality on those points which are defined as sampling locations in the ES Monitoring Programme. ESMP will define basic parameters which will be monitored in order to determine whether the identified mitigation measures are being implemented successfully.

Following ESMP, the Contractor will develop a detailed monitoring program with specified targets for each indicator, which will be tailored to the requirements of each road sub-section and the elements of The Contractor's Environmental and Social Management System (ESMS) and site-specific ESMP. Each Contractor will develop a written monitoring program that will be evaluated by the Project stakeholders, including national statutory agencies.

Based on EIS and other available documentation and data, and in accordance with the identified impact significance, relevant monitoring locations will be determined and presented in the ESMP respectively.

An example of Environmental Monitoring Plan Check list is provided in Appendix B of this report.

6.2 Monitoring of environmental parameters

Parameter	Construction phase	Operational phase
Air	Regular monitoring to be envisaged for those locations where there are residential buildings located closer than 400 m, as well as in the areas where construction works will take place in close proximity of large agricultural land. In the case of a complaint from local residents, additional monitoring of the effects will be undertaken. Limit Values for air is in according to Croatian Legislation, Regulation on Limit Values of Pollutants in Air ('Official Gazette' No. 117/12).	In the first phase of monitoring which will last at least 5 years, it is necessary to carry out periodic monitoring of the air quality (1 month in a season), because in order to establish trends of air pollution it is necessary for measurement data to be obtained for at least five consecutive years. Only in the case where the results of periodic measurement indicate the necessity for further monitoring of air quality would it be necessary to carry out permanent monitoring of air quality, viz. enacting the second phase of monitoring.

Parameter	Construction phase	Operational phase
Water	Monitoring of water during the phase of construction of the highway includes determining the effects on the quality of water while construction works are being carried out in the vicinity of waterways or water collectors. For surface water, the program includes the following parameters: pH, concentration of dissolved oxygen in the water, waste materials, murkiness, concentration of organic compounds and mineral oil. Water protection measures and monitoring are based on Ordinance on Emission Limit Values for Wastewater Discharges (OG 80/13, 43/14, 27/15 and 3/16), Ordinance on the Conditions for Establishing Sanitary Protection Zones of Springs (OG 66/11, 47/13), Regulation on Water Quality Standard (OG 73/13, 151/14 and 78/15) and Waters Act (OG 153/09, 130/11, 56/13 and 14/14). The taking of samples will be done on surface waterway locations upstream and downstream from the construction site. The monitoring program is administered in such a way that it can be used to establish which construction works affect the quality of surface waterways. Samples must be taken before the commencement of works, and during works execution. Sampling will be done in monthly intervals. In the situation when the measurement results and analysis indicate an increase of negative effects, it is necessary to determine the cause of the deteriorating condition and undertake the necessary mitigation measures. Until the cause of the deteriorating condition is determined, only works which do not have an influence on pollution of surface waters may be carried out. All measurements begin one month before the beginning of preparatory works. The parameters which are the subject of monitoring are divided into the groups geological-hydrological, physical-chemical and chemical. Measurement of the basic and indicative parameters of underground waters will be done at least four times a year with an interval of at least two months. Measurements of the chemical and physical-chemical parameters are done quarterly. The days when samples are taken will depend on the level of underground water, precipitation and other geological and hydrological relations.	The monitoring program for surface waters during the operation includes monitoring of the following parameters: pH, concentration of dissolved oxygen in the water, waste materials, murkiness, concentration of organic compounds and mineral oil, then temperature, colour and odour. Domestic legal regulations which relate to the method of controlling the quantity and quality of waste water (effluent) before it is released into a recipient cannot be applied to the control of the quality of cleaned atmospheric waste water. Depending on the climatic factors, scope and structure of traffic, the composition of effluent varies during one hydrological year. Monitor of the effect of operation of the future highway on the quality of water of the recipient will be considered through emissions standards. Measuring the quality of water of the recipients is aimed at understanding the effects of runoff waste water on the quality of water in the recipient. The monitoring plan for underground waters will be done in accordance with the basic characteristics of construction of the subject section of the highway. The testing program encompasses the parameters which can be used to evaluate the current condition of the quality of underground water and the degree to which it is polluted with polluting substances from the subject section. The testing program will include the following measurements: • Terrain measurements: temperature of air and water, pH, electrical conductivity, oxidation/reduction potential, • Basic parameters: color, dissolved materials, total organic carbon, nitrogen, nitrates, sulphates, chlorides, chemical and biological consumption of oxygen, • Indicative parameters: microelements, phenols, mineral oil, polycyclic aromatic hydrocarbons, aromatic hydrocarbons, pesticides.

Parameter	Construction phase	Operational phase
Noise	Noise exposure levels are specified under the Ordinance on the Highest Permitted Noise Levels in Working and Living Environments (OG 145/04), Ordinance on the method of preparation and content of noise maps and action plans and on the method of calculating limit values of noise indicators (OG 75/09) and Noise Protection Act (OG 30/09, 55/13, 153/13, 41/16). Noise measuring equipment will be used to establish a background or baseline and then during construction to establish increases in level and hence compliance to the standards. It is recognized that the best approach to noise control during construction works is require the use of equipment which conforms to noise standards, and then monitor the issue on an ongoing basis, including reacting to any nuisance complaints by local residences or businesses. During construction the level of noise increases due to the transport of loads by heavy freight vehicles (removal and delivery of materials) and the use of the construction machinery. These sources of noise are of a temporary character and last until the completion of construction works. During the phase when works are being carried out, the level of noise must be controlled when necessary, meaning upon the occasion of a complaint being filed for an excess level of noise while works are being carried out. Within the framework of monitoring noise during the carrying out of works, the following is required: • measurement of the zero point, • measurement of the highest levels (peaks) of noise during construction, • if during the course of works the limits of allowed levels of noise are significantly exceeded, in agreement with the owner of the structure, necessary mitigation measures are undertaken. The Contractor is responsible for all consequences which arise from excess levels of noise during the phase of construction.	During operation, noise must be controlled with the goal of controlling the effectiveness of envisaged noise protection measures. Measurement of the level of noise must be carried out in intervals of five years and in cases of complaints from adjacent inhabitants. Residential object areas and additional locations which have been identified as the locations of the most endangered structures will be considered when defining monitoring locations.

Parameter	Construction phase	Operational phase
Soil	Relevant parameters for soil impact assessment are: pH, concentration of heavy metals, oils and organic substances. Soils near roads having a high frequency of traffic, as in this case, will be tested for hazardous substances, such as typical heavy metals and lead which may have accumulated from vehicle exhausts which still use leaded petrol which is still freely available in the region. The program for monitoring soil during the construction phase includes parameters which are authoritative for determining the level of endangerment of the same. There is a wide spectrum of pollutants which have been categorized into the following two groups: heavy metals and greases and oils (remains of fuel, lubricants and motor oil, antifreeze, hydraulic fluid, etc). Samples must be taken before the commencement of works, at the time when humus is being removed and when excavation or the building of embankments of earth material is being carried out. In addition to this, sampling must be undertaken outside the Monitoring Programme schedule in a case of environmental accident (eg. oil spill). In the situation when the measurement results and analysis indicate an increase of negative effects, it is necessary to determine the cause of the deteriorating condition and undertake the necessary mitigation measures. Until the cause of the deteriorating condition is determined, only works which do not have an influence on pollution of soil may be carried out.	Monitoring of soil during the operation of the highway, monitoring the effects of operation of the future Highway, on the quality of soil, must be carried out at the edge of the "buffer zone" of highway. The Contractor will ensure a preliminary testing ("zero monitoring") of soil pollutants according to the Monitoring Plan of this ESMP document. Following the preliminary testing a plan for further testing is created. For this purpose, the place of sampling is defined first. The number of samples depends on the preliminary testing and is related to the structure being tested. Parallel to the control of the quality of soil, the quality of underground water must also be monitored. The quality of underground water requires the monitoring of pollutants which are present in the soil and for the purpose of determining the effects of soil pollution on the pollution of underground water.

6.3 Social Monitoring

At the time of the preparation of this report, social impact assessment of the Project has not been conducted and socio-economic baseline of the communities in the Project footprint is not available.

In order to enable the monitoring of the Project's impact on the affected communities during the pre-construction, construction and operation phase, the magnitude of the impact and the effectiveness of the proposed mitigation measures, baseline information needs to be collected. Therefore, the following baseline studies will be conducted:

- Socio-economic baseline (sources of income, alternative sources of income (pension, welfare), agricultural production, dependant family members (old and/or disabled), etc.)
- Socio-demographic baseline (age, education, employment, housing, land ownership, size of households, etc.)
- Baseline conditions of the private assets (fences, structures, agricultural infrastructure, etc.)
- Baseline conditions of the public assets (roads, water, waste water and energy networks, etc.)

Socio-economic and socio-demographic surveys will be repeated at the end of the land acquisition process (prior to the commencement of the construction phase) for a mid-term review of Project impacts and at the end of the construction phase for an end of term impacts evaluation.

Baseline conditions of private and public assets in the Project affected area will serve as ground for determining if there is any Project-inflicted damage on them and ensuring that the damage will be adequately compensated and/or remediated.

Project specific Stakeholder Engagement Plan has been developed as part of this assignment. Its implementation is jointly the responsibility of HAC and the Contractor. All stakeholder activities (public announcements, public and individual meetings, surveys, official correspondence, etc.) will be recorded and included in Contractor's reports to HAC and annual external reports on the E&S performance of the Project.

Land Acquisition and Resettlement Framework has also been developed and it includes requirements for monitoring with designated responsibilities and defined key performance indicators.

Project impacts on the affected people and communities and the effectiveness of mitigation measures will be monitored through the grievance mechanism. All grievances will be recorded in the Grievance Log Register, which will allow their categorization and tracking. Contractor's monthly reports will contain the number of new grievances received, their summary and update on the previously unresolved ones. This will enable to assess the efficiency of the grievance

mechanism and update it accordingly and to introduce new measures to mitigate the Project impacts that caused the submission of grievances.

Examples of Social Monitoring Matrix is provided in Appendix B of this report.

Appendix A

Legal Requirements

A1 Legal Requirements

A1.1 Local and national regulatory requirements

The ESHS aspects of the operation of the Company are regulated by the standards and requirements of the national environmental legislation and legislation regarding socio-economic issues. The table below lists the main laws, which determine the national regulatory requirements with regard to environmental protection and the protection of socio-economic issues.

Component/ aspect	Relevant law (date published, date last amended)	Authority responsible for enforcement and monitoring
General	National Environmental Action Plan (OG 46/02)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
	Environmental Protection Emergency Plan (OG 82/99, 86/99, 12/01)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
	Regulation on Environmental Impact Assessment (OG 61/14)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
	Environmental Protection Act (OG 80/13, 78/15)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
	Physical Planning Act (OG 153/13)	Ministry of Construction and Physical Planning, represented by Ministry's Site Inspectors
Air	Air Protection Act (OG 130/11, 47/14)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
Water	Waters Act (OG 153/09, 130/11, 56/13 and 14/14)	Ministry of Agriculture, represented by Ministry's Site Inspectors
Waste	Act on Sustainable Waste Management (OG 94/13)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
Noise	Noise Protection Act (OG 30/09, 55/13, 153/13, 41/16)	Ministry of Health, represented by Ministry's Site Inspectors
Mining	Mining Act, (OG 56/13 and 14/14)	Ministry of Agriculture, represented by Ministry's Site Inspectors
Biodiversity	Nature Protection Act (OG 80/13)	Ministry of Environmental protection and Energy, represented by Ministry's Site Inspectors
Agriculture	Act on Agriculture (OG 149/09)	Ministry of Agriculture, represented by Ministry's Site Inspectors
	Act on Amendments to the Act on Agriculture (OG 120/12)	Ministry of Agriculture, represented by Ministry's Site Inspectors
	Agricultural Land Act (OG 39/13, OG 48/15)	Ministry of Agriculture, represented by Ministry's Site Inspectors
	Act on Amendments to the Agricultural Land Act, (NN 48/15)	Ministry of Agriculture, represented by Ministry's Site Inspectors
Physical	Physical Planning Act (OG 153/13)	Ministry of Construction and Physical Planning, represented by Ministry's Site Inspectors

Component/ aspect	Relevant law (date published, date last amended)	Authority responsible for enforcement and monitoring
planning		
Forests and wild game	Forests Act (OG 140/05, 82/06, 129/08, 80/10, 124/10, 25/12, 94/14)	Ministry of Agriculture, represented by Ministry's Site Inspectors
	Hunting Act (OG 140/05, 75/09, 14/14)	Ministry of Agriculture, represented by Ministry's Site Inspectors
Cultural assets	Act on the Protection and Preservation of Cultural Goods (OG 69/99, OG 151/03; OG 157/03 Correction, OG 87/09, OG 88/10, OG 61/11, OG 25/12, OG 136/12, OG 157/13, OG 152/14, OG 98/15 - Regulation)	Ministry of Culture, represented by Ministry's Site Inspectors
Labour	Labour Law of the Republic of Croatia Official Gazette 93/14, 127/17	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
	Law on Working Hours, Mandatory Rest Periods for Mobile Workers and Recording Equipment in Road Transport Official Gazette 75/13, 36/15	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
	Law on Gender Equality, Official Gazette 82/08, 69/17	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
	Law on Professional Rehabilitation and Employment of Persons with Disabilities, Official Gazette 157/13, 152/14, 39/18	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
	Law on Student Work, Official Gazette 96/18	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
	Law on Croatian War Veterans from the Homeland War and their Family Members, Official Gazette 174/04, 92/05, 02/07, 107/07, 65/09, 146/10, 55/11, 140/12, 19/13, 33/13, 148/13, 92/14	Ministry of Labour and the Pension System, represented by Ministry's Site Inspectors
Land acquisition	Law on Expropriation and Determination of Compensation, Official Gazette 74/14, 69/17	Ministry of Finance, represented by Ministry's Site Inspectors
	Law on Property Valuation, Official Gazette 78/15	Ministry of Finance, represented by Ministry's Site Inspectors
	Law on Management of State Property, Official Gazette 52/18	Ministry of Finance, represented by Ministry's Site Inspectors
	Law on Land Registers, Official Gazette 91/96, 68/98, 137/99, 114/01, 100/04, 107/07, 152/08, 126/10, 55/13, 60/13, 108/17	Ministry of Finance, represented by Ministry's Site Inspectors
	Law on Roads, Official Gazette 84/11, 22/13, 54/13, 148/13, 92/14	Ministry of the Sea, Transport and Infrastructure, represented by Ministry's Site Inspectors
	Law on General Administrative Procedure, Official Gazette 47/09	Ministry of Public Administration, represented by Ministry's Site Inspectors
	Law on Property and Property Relations for the Purpose of Construction of Infrastructure Buildings, Official Gazette 80/11	Ministry of Finance, represented by Ministry's Site Inspectors
Stakeholder engagement	Act on the Right of Access to Information, Official Gazette 25/13, 85/15	Ministry of Public Administration, represented by Ministry's Site Inspectors

Component/ aspect	Relevant law (date published, date last amended)	Authority responsible for enforcement and monitoring
	Regulation on Information and Participation of the Public and Public Concerned in Environmental Matters, Official Gazette 64/08	Ministry of Public Administration, represented by Ministry's Site Inspectors

In addition to these framework national laws, there is a multitude of bylaws (regulations, decrees and instructions). The bylaws that are relevant to the Project are listed below.

Name of relevant bylaw, and publication reference
Regulation on Limit Values of Pollutants in Air (OG 117/12)
National Plan of Measures for Sudden and Accidental Pollution of Waters (OG 5/11)
Ordinance on Emission Limit Values for Wastewater Discharges (OG 80/13, 43/14, 27/15 and 3/16)
Ordinance on the Conditions for Establishing Sanitary Protection Zones of Springs (OG 66/11, 47/13)
Regulation on Water Quality Standard (OG 73/13, 151/14 and 78/15)
River Basin Management Plan 2016 - 2021 (OG 66/16)
Ordinance on Packaging and Packaging Waste (OG 88/15)
Ordinance on Construction Waste Management (OG 38/08)
Ordinance on Batteries and Accumulators and Waste Batteries and Accumulators (OG 111/15)
Regulation on Management of Waste Batteries and Accumulators (OG 105/15)
Ordinance on Waste Oil Management (OG 124/06, 121/08, 31/09, 156/09, 91/11, 45/12, 86/13)
Ordinance on Waste Management (OG 23/14, 51/14, 121/15, 132/15)
Ordinance on the Waste Catalogue (OG 90/15)
Ordinance on the Highest Permitted Noise Levels in Working and Living Environments (OG145/04)
Ordinance on the method of preparation and content of noise maps and action plans and on the method of calculating limit values of noise indicators (OG 75/09)
Ordinance on the exploration and exploitation of mineral raw materials (OG 142/13)
Ordinance on the Management of Surplus Excavated Material that Represents Mineral Raw Material in Construction Works (OG 79/14)
Ordinance on the assessment of acceptability for the ecological network (OG 146/14)
Ordinance on wild animal crossings (OG 5/07)
Ordinance on strictly protected species (OG 144/13)
Ordinance on Habitat Types, Habitat Maps, Endangered and Rare Habitat Types (OG 88/14)
Regulation on the Ecological Network (OG 124/13, 105/15)
Ordinance on conservation targets and basic measures for conservation of birds in the ecological network area (OG 15/14)
Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia (OG 143/08)
Ordinance on the criteria for designating agricultural land as particularly valuable arable (P1) agricultural land and valuable arable (P2) agricultural land (OG 151/13)
Ordinance on the content, criteria for map projections, required spatial indicators and standards of physical planning

studies (OG 106/98, 39/04, 45/04, 163/04, and 9/11)
Ordinance on archaeological research (OG 102/10)
Ordinance on the content, criteria for map projections, required spatial indicators and standards of physical planning studies (OG 106/98, 39/04, 45/04, 163/04, and 9/11)
Ordinance on the content, method of elaboration and procedure of adoption i.e. approval of the hunting management acts, wild game breeding program and wild game protection program (OG 40/06, 92/08, 39/11, 41/13)
Ordinance on forest management (OG 111/06, 141/08)
Expert support document for determination of site classes and productive hunting areas on the hunting grounds of the Republic of Croatia (OG 40/06)
Ordinance on Forest Fire Protection (OG 26/03)

A1.2 Applicable EU and other international requirements and standards

The table below provides a list of applicable EU Directives and legal requirements with regard to environmental performance.

EU Directive / Standard	Requirements relevant to the current project
Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe	Requirements relevant for air emissions from point sources, air emissions from vehicles and diffuse sources, dust and particulates emissions.
The Water Framework Directive (2000/60/EC, 2008/32/EC)	Water quality standards; wastewater treatment and discharge requirements
Groundwater Directive (2006/118/EC, 2014/80/EU)	Groundwater quality standards and protection of groundwater aquifers
Environmental Noise Directive (Directive 2002/49/EC)	Monitoring environmental noise in urban and industrial areas and drawing up strategic noise maps for bigger urban municipalities
Waste Framework Directive (Directive 2006/12/EC)	Compliance with requirements for classification, reduction and appropriate treatment of generated waste
Landfill Directive (Directive 1999/31/EC, 2003/33/EC)	Ensuring that wastes are separated and disposed of appropriately by licence waste management contractors.
Directive 2011/92/EU (amending Directive 85/337/EEC) Environmental Impact Assessment	Carrying out EIA for proposed urban transport infrastructure projects
Council Directive 2001/42/EC on Strategic Environmental Assessment	Carrying out SEA of changes to the spatial plan due to major infrastructure projects
Directive 2004/35/EC on environmental liability	Identifying and managing environmental liabilities in accordance with the “polluter pays” principle
Directive 2009/28/EC on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC	Requirements regarding use of renewable sources in electricity generation and use, buildings and transport by setting national and sectorial goals, including a 10% renewable goal for final energy consumption in transport
Birds (79/409/EEC) and Habitats (92/43/EEC) Directives	Protection of sensitive bird species and wild habitats
Regulation (EC) No 595/2009	Emissions from heavy duty vehicles (Euro VI): certification rules
Act on confirmation of the Convention on the Conservation of European Wildlife and Natural	Protection of wildlife and natural habitats

EU Directive / Standard	Requirements relevant to the current project
Habitats (Bern Convention), OG International Agreements, OG 6/00, Adopted: BERN, 1979.	
Act on Confirmation of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), OG International Agreements 6/00, Adopted: BONN, 1979.	Protection of migratory species of wild animals
Act on Confirmation of the European Landscape Convention (OG International Agreements No 12/02)	

Appendix B

Monitoring Templates

B1.1 Environmental Monitoring Plan Check list

Phase, item	Which parameter is to be monitored?	Monitoring location details	Type of monitoring equipment	Frequency of sampling /measurements	Why the parameter will be monitored?	Install and operate / responsibility

B1.2 Grievance Log Register

Grievance number	Date of Receipt	Grievance Subject / Description	Complainant	Person Responsible for Resolution	Proposed Solution	Communication with Complainant[2]	Date of Resolution

B1.3 Social Monitoring Matrix

No.	Indicators	Baseline Survey	Repeated Survey
1	Average Family Size		
2	Average monthly income per household Adjusted for inflation		

[2] Notification of receipt, additional comments by the complainant, notification in case of prolonged period for grievance resolution

No.	Indicators	Baseline Survey	Repeated Survey
3	Average monthly income per household member Adjusted for inflation		
	Proportion of families without earning members		
4	Proportion of households below poverty line		
5	Proportion of households rating their economic status as: 'above average' 'average' 'modest' 'poor'		
6	Household assets		
7	Changes in economic status of households in last five years to: Better Worse		
8	Pattern of spending compensation received		
9	Changing in employment status of household members: Got employment Lost employment		

No.	Indicators	Baseline Survey	Repeated Survey
10	Households with members employed on the Project		