

## PROJECT

Coridor 16: G105: R3 – Costești – Țîpala – G106 (nr. RFP:  
LRIP/CS/04)

## PROIECT

Coridorul 16: G105: R3 – Costești – Țîpala – G106 (nr. RFP:  
LRIP/CS/04)

## CLIENT



Republic of Moldova

## CLIENT



Î.S "Administrația de Stat a Drumurilor"

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## DESIGN STAGE

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MEDIU ȘI SOCIAL

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MANAGEMENT PLAN

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**G105: R3 – Costești – Țîpala – G106 (LRIP/CS/04)**

# **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**11 / 2018**

**4th Release**

**Republic of Moldova – Ministry of Economy and Infrastructure –  
State Road Administration**

Republic of Moldova – Ministry of Economy and Infrastructure – State Road Administration  
Local Roads Improvement Project  
Corridor 16: G105: R3 – Costești – Țîpala – G106 (RFP No.: LRIP/CS/04)  
**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**Cover Page**

<b>Project Title</b>	Corridor 16: G105: R3 – Costești – Țîpala – G106 (RFP No.: LRIP/CS/04)
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## CORRIDOR 16, ROAD SECTIONS:

### **G105: R3 – Costești – Țîpala – G106**

- Detailed design and bidding documents for Section km 0+000 – km 22+300;
- Update the existing design and preparation of bidding documents for Section km

22+300 – km 34+600



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## LIST OF ACRONYMS

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asl	above sea level
BD	Bidding Documents
CC	Construction Contractor
CEMP	Construction Environmental Management Plan
DBH	Diameter at breast height
BD	bidding documents
EHSM	Environmental Health and Safety Manager
EIA	Environmental Impact Assessment
ESMP	Environmental and Social Management Plan
ESMF	Environmental and Social Management Framework
GoM	Government of Moldova
ICB	International Competitive Bidding
IDA	International Development Association
Km	kilometre
LPA	Local Public Authority
LRIP	Local Roads Improvement Project
MoARDE	Ministry of Agriculture, Regional Development and Environment
MS	Method Statement
MEI	Ministry of Economy and Infrastructure
NCB	National Competitive Bidding
NC MD	Normative in Construction. Road Construction
NGO	Non-government organization
O&M	Operation and maintenance
OP	Operational Policy
PMC	Project Management Consultant
PPE	Personal protective equipment
QA	Quality assurance
RoW	Right of Way
RSP	Regional Sector Program
SE	Supervision Engineer
SEE	State Ecological Expertise
SRA	State Road Administration
SSEMP	Site-specific environmental management plan
ToR	Terms of reference
WB	World Bank

## 1. INTRODUCTION

### 1.1. Project Context

Thematic social studies, recently conducted by the World Bank, show that the population of the Republic of Moldova is not satisfied with the state of intercommunity roads. And this is regardless of how citizens move - with public transportation or with their own car. If every village has public transportation to the district centre, then between the villages in different districts, because of the poor quality of the roads, it is missing, causing local residents great difficulties to travel to relatives, acquaintances, business partners, etc. Surveys show that the lowest degree of contentment is observed in relation to the physical state of the roads and sidewalks in the villages. The Country Partnership Strategy between the World Bank (WB) and the Government of the Republic of Moldova supports the improvement of access to social services in rural areas, especially in educational and medical institutions, and improvement of farmers' access to markets and export opportunities, which are on the agenda of Moldova. As the rehabilitation of national roads is getting bigger, it is necessary to guarantee the good quality of other communication routes in all climatic conditions so that the local population has quick and safe access to the facilities offered by educational and medical institutions, to market their agricultural production, to move to the workplace in the neighbouring area, others.

The inter-community roads were built more than 30 or 40 years ago and were neglected for many years after Moldova has become independent. Due to the insufficient regional and village budgets, the financing of repair and maintenance of local roads was poor. As a result, many of these roads are currently in a bad or deplorable condition. Access roads to the countryside are basically crushed stone roads that need to be asphalted, and the ones that are paved require repair, improving drainage and sidewalks arrangement, implementing road safety measures, especially around schools, kindergartens, medical centres, etc.

The project on Local Government Management and Local Financing Policy from the World Bank's resources started in 2014. Out of the 28 corridors initially identified and appreciated as priority for the first and second investment phase for the Local Roads Improvement Project, there were selected up to 10 corridors. This report on the Environmental Management Plan refers to Corridor 16 located in Ialoveni district. (See Figure 1-1 and Table 1 -1).



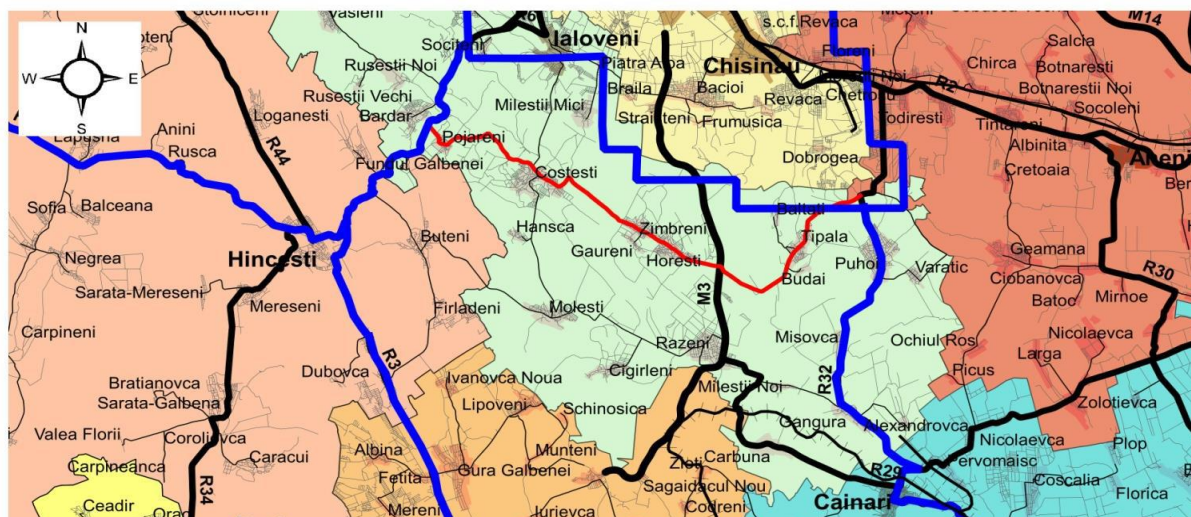


Figure 1 - 1: Location of sub-projects under the Local Roads Improvement Project

Corridor no.	Corridor name	Corridor length (km)	Actual Stage
	Development Region North		
C5	R13 – Ivanovca – Izvoare – Vanțina – Ocolina – M2	35.5	Detailed design
	Development Region Centre		
C8	R1 – Cornești – Sinești – Cornova – Onișcani – Răciula – R21	48.5	Under Construction/rehabilitation
C10	M2 – Țîntăreni – Chiștelnița – Ignăței – Trifești – R20	36.5	Detailed design
C11	M2 – Peresecina – Hîrtopul Mare – Izbiște – Ohrincea – R23	33.2	Construction Works tendering
C13	R1 – Pîrlița – Bălănești – Seliște – R25	40.9	Construction Works tendering
C16	R3 – Pojăreni – Costești – Horești – Țîpala – R32	34.6	Detailed design
	Development Region South		
C24	R34 – Gotești – Ciobalaccia – Tartaul – R56	43.3	Detailed design
C25	R26 – Mihailovca – Sadaclia – Iordanovca – R3	22.4	Detailed design
	<b>Total</b>	<b>294.9</b>	

Table 1-1: Sub-projects under the Local Road Improvement Project (Source: SRA)

## **1.2. Project Implementation and Schedule**

The Local Roads Improvement Project will be implemented by the State Road Administration (SRA) under the general supervision and responsibility of the Ministry of Economy and Infrastructure (MEI). The SRA's responsibilities include public procurement, financial management, contract management, Project and Program monitoring, evaluation and reporting.

Public procurement for the works is planned under National Competitive Bidding (NCB). If following detailed design, the estimated cost for the implementation of works will exceed USD 5 million, bidding documents for International Competitive Bidding (ICB) will be prepared.

## **1.3. Environmental assessment**

When planning and executing the works, the Creditor of the Local Road Improvement Project decided to apply only the World Bank's Operational Policy (OP) 4.01. on Environmental Assessment. The project was classified as 'Category B', which means that a separate Environmental Management Plan (PMM) is required for each sub-project. This is in conformity with national procedural requirements, according to which, as part of the detailed design documentation, an environmental compartment must also be prepared.

Under current legislation, environmental assessment for this type of roads project does not require full detailed impact assessment studies, implementation projects are not subject to examination and approval by the Ministry of Agriculture, Regional Development and Environment. In general, the proposed interventions for implementing sub-projects under the Local Road Improvement Project will be limited to the rehabilitation and maintenance of existing rural roads. There will be no deviations from existing alignments, with all proposed interventions being planned to the limit of the existing road area. Through villages, however, it may be necessary to relocate the fences that are located on the road infrastructure. The impact on the environment due to the interventions will in fact be limited and can easily be kept under control due to the implementation of appropriate actions to solve environmental problems (addressing air and water pollution problems, managing construction waste and hazardous materials, protecting the existing vegetation at the edge of the road, solving safety issues on construction site, organizing transport circulation for construction materials, etc.). An important aspect is the use of existing licensed quarries for the construction works, therefore, no big impact is expected in relation to the sources of construction materials acquisition.

Overall, environmental hazards related to proposed rehabilitation measures are expected to be of a small to moderate degree, mostly having a local and temporary aspect, depending on the site. Environmental and Social Management Framework for the Local Roads Improvement Project does not provide for involuntary relocation or removal.

## **2. LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK**

### **2.1. Environmental Legislation**

The environmental policy and legal framework of the Republic of Moldova for the road sector applicable to the Project were analysed in the Environmental and Social Management Framework

for the Project<sup>1</sup>. The national requirements for environmental assessment of projects are provided mainly by the Law on Ecological Expertise of 1996 and Law on Environmental Impact Assessment of 2014. Other laws and codes that are relevant in designing and implementing the Project are provided in Appendix 3. However, during the Project's implementation, this list shall be reviewed and updated or completed, including any potential recent changes.

The environmental regulatory framework for roads is largely harmonized with European requirements, with the exception of some regulations and standards that were approved in the Soviet period. Currently some of these are reviewed and updated with WB support and proposed for approval by line ministries. Partially approved versions of these documents, which are in the possession of the SRA departments, may serve as additional material for the development of environmental plans.

## **2.2. Institutional Framework**

The key participants with responsibilities in the ESMP implementation process are:

- The SRA;
- The SRA's Project Management Consultant (PMC);
- The SRA Consultant as Project manager acting as Engineer on Construction supervision of Works;
- The Contractor

All of these have or will have their own environmental specialist on the team to oversee, coordinate and monitor the implementation process. At the District level institutions like the District Ecological Inspections and Centers for Public Health will also be involved, e.g. through inspections of the Contractor's work sites and monitoring compliance of operations with the national legislation or as active participants in ad hoc committees. Locally, Mayoralties or other representatives of the local community will also be involved, e.g. in case of grievance or helping to solve a local issue.

The SRA is the executing authority of the project and will be responsible for the proper implementation of the Project, including the ESMP. The SRA will receive support from a Project Management Consultant (PMC), who will assist in contract management and Project implementation, based on best practices, together with the Consultant in Technical Construction Supervision / Engineer-Supervisor and Contractor.

The present ESMP will be attached to the Bid and Contract Documents and as such become a binding element of the construction contract. The Contractor (CC), employed by the SRA, will be responsible for implementing most of the measures addressed in this ESMP in accordance with the provisions of his contract. After signing the contract and before commencing the works, the Contractor will have to hire an environmental specialist to prepare the Contractor's Construction Environment Management Plan (Section 7.1), detailing the way of implementation environmental management program in this ESMP. For this Contractor's ESMP, it will be required to obtain the approval from the SRA and the Consultant-supervisor of the works. This plan shall be elaborated 30 days after signing the contract.

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<sup>1</sup> The ESMF is based on the Sector Environmental Assessment (SEA) which represents the EA framework document that was prepared for the previous WB road rehabilitation project in Moldova. The SEA was updated accordingly, taking into account the particularities of the current project and last developments of the country's EA policy, legal and institutional framework.

In order to carry out its activities in accordance with national legislation on environmental protection and in accordance with the requirements of the creditor and for compliance with the obligations defined in its Contractor's ESMP, the Contractor will employ a qualified Environment, Health and Safety Technical Manager with relevant training and experience in this field.

Monitoring and enforcing coordinated measures to minimize impacts are important aspects of the implementation process. For a secure execution of all works in accordance with the requirements of the contract, including for the implementation of the EMP, the SRA Consultant in Supervision - Project Manager or Engineer-Supervisor will be responsible for overseeing all of the Works as a whole executed by the Contractor, including ESMP implementation.

The supervising engineer will need to maintain regular communication links with the SRA/Environment Specialist of SRA and provide to the SRA reports according to a defined plan (see Section 8.2 of this report) or when necessary in case of some unforeseen incidents. Any issues that will require immediate attention will need to be taken into account by the Contractor and IMMEDIATELY inform the Engineer-Supervisor. In the event of environmental accidents, the competent Environmental Protection Authorities shall be informed of these cases. In order to fulfill its obligations under the environmental monitoring program, the Engineer-Supervisor shall cooperate with the accredited laboratories of the State Ecological Inspectorate, the Academy of Sciences of the Republic of Moldova or other laboratories that will perform the necessary tests and issue reports about the results.

On site, the Contractor shall be responsible for promptly determining the remedial actions in case of incidents and for informing the SRA Project Manager and the SRA Environment Specialist on any such incidents. The Contractor shall regularly prepare reports, presenting them to the Engineer-Supervisor (see Section 8.3). In the event of any pollution incidents, immediate remedial measures shall be taken in order to remedy the situation and to solve rapidly and professionally the problems related to the risk of environmental damage.

### 3. METHODOLOGY

This ESMP for Corridor 16 within the Local Roads Improvement Project was prepared in compliance with the provisions of the Environmental and Social Management Framework for the Project<sup>2</sup> in order to:

- Comply with all relevant environmental requirements of the Parliament and Government of the Republic of Moldova;
- Achieve sustainable and environmentally and socially acceptable development interventions for road rehabilitation;
- Inform the SRA and the Contractor(s) on environmental management strategies and measures that will be applicable to implement the sub-projects;

In accordance with the Terms of Reference for the preparation of this ESMP the following issues were addressed:

- Identification of impacts that are likely to occur at the various stages of the Project;
- Outline of measures to be adopted in project planning and detailed design to avoid or minimize adverse impacts on the environment and affected communities;

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<sup>2</sup> Local Roads Improvement Project: Environmental and Social Management Framework. SRA, June 2015

- Formulation of specific mitigation measures to avoid or at least to minimize potential adverse impacts during preconstruction, construction, and the operational phase of the Project;
- Preparation of a plan to monitor the proper implementation of mitigation measures and their effectiveness in combating potential adverse impacts;
- Establishment of an institutional mechanism for implementation, monitoring the Environmental Management Plan, and reporting.

This Environmental Management Plan was initially prepared based on the review of specific Project documentation provided by the SRA (see references in Appendix 4) and other existing information, including satellite images.

In February 2018, site visits took place to confirm the existing information, to record the environmental objectives with problems and with possible impacts, as well as the social and economic ones, to be taken into account, in particular, during construction or operation of the road and to develop measures to minimize impacts, as required by the Environmental Management Framework and Terms of Reference (ToR). To document on-site conditions and for the planning process, photos and videos taken while driving along the road served as information.

In order to prepare a document that meets the requirements, the team involved in the study also reviewed the documentation of the public consultations held by the SRA in 2015<sup>3</sup> for Environmental Management Framework.

#### 4. DESCRIPTION OF THE PROJECT

In order to achieve the objectives of the Local Roads Improvement Project, it is envisaged to implement the following:

- Ensure paved areas along the entire road of the project;
- Repair or replace existing structures, as appropriate;
- Ensure appropriate drainage, both longitudinal and transversal, in accordance with national standards in force;
- Provide pedestrian sidewalks and street lighting on the most frequented sections of the Project road;
- Provide protection means (e.g. protection guardrails) in the areas most exposed to risks;
- Rehabilitation of property entrances and land rehabilitation, as necessary;
- Provide road inventory and signing in accordance with applicable standards and norms;
- Provide rumble strips and road signing, as appropriate, to increase pedestrian safety in sensitive areas.

During the implementation of the Project, it cannot be excluded that in some places it may be necessary to relocate the municipal technical networks, the decentralized water sources. These decisions will be taken in agreement with the owners of the objectives, the LPA, the local population.

The designed speed of transportation for the Category IV road is in accordance with NCM D 02.01:2015, i.e. 80 km/h for flat sections, 60 km/h - for hilly sections and 40 km/h - on steep

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<sup>3</sup> Summaries of these meetings had been provided in the EMF, 2015



sections. For sections crossing settlements the designed speed is 50km/h, however, lower 30 km/h design speed may be adopted locally to ensure safety – e.g. in front of schools.

#### **Data form Technical Project:**

Width of semi-carriageway: 3.50m

Sidewalks within villages: 1.50m

Pavement: paved

2 Bridges (B01, L=12m, ch: 8+930 and B02, L=12m ch: 10+812.80)

66 existing culverts

#### **Pavement**

43.000 m3 Embankment material from borrow material

83.000 m3 Excavation of unsuitable material and disposal

113.000 m3 of gravel material (drainage layer, base course, levelling material)

66.000 m<sup>2</sup> Cold recycling of the asphalt concrete pavement

10.000 m<sup>3</sup> Wearing course of asphalt concrete

9.900 m<sup>3</sup> Base course of asphalt concrete

477 trees to be removed and 1193 new trees must be planted instead of those grubbed up.

No schools and kindergartens are located immediately near the road.

#### **Bus stops**

CH 8+250 at Costetsi village	Left	Lay-by, existing shelter
CH 8+335 at Costetsi village	Right	Bus stop
CH 8+880 at Costetsi village	Left	Lay-by, existing shelter
CH 8+970 at Costetsi village	Right	Bus stop
CH 9+510 at Costetsi village	Left	Lay-by, existing shelter
CH 9+570 at Costetsi village	Right	Bus stop
CH 10+310 at Costetsi village	Left	Lay-by, Bus stop
CH 10+420 at Costetsi village	Right	Bus stop
CH 15+520 at Zimbreni – Horesti village	Left	Bus stop
CH 15+615 at Zimbreni – Horesti village	Right	Lay-by, existing shelter
CH 16+925 at Zimbreni – Horesti village	Left	Bus stop on the road to Gaureni
CH 16+925 at Zimbreni – Horesti village	Right	Lay-by on the road to Gaureni, existing shelter
CH 19+630 at Zimbreni – Horesti village	Left	Bus stop
CH 19+695 at Zimbreni – Horesti village	Right	Bus stop, existing shelter

CH 20+285 at Zimbreni – Horesti village	Left	Bus stop
CH 20+360 at Zimbreni – Horesti village	Right	Bus stop, existing shelter
CH 28+420 at Țîpala village	Left	Lay-by, Bus stop
CH 28+510 at Țîpala village	Right	Bus stop, existing shelter
CH 34+560 at Țîpala village	Left	Lay-by, existing shelter

#### Village border islands

For the clear and constant perception of the urban environment that requires different driving behaviour (speed reduction and increased attention) road islands are applied at both borders of linear villages.

West entrance of village Pojareni – CH.0+773

East entrance of village Pojareni – CH.2+189

West entrance of village Costetsi – CH.7+185

East entrance of village Costetsi – CH.10+733

West entrance of village Zimbreni - Horesti – CH.15+329

East entrance of village Zimbreni - Horesti – CH.21+044

West entrance of village Țîpala – CH.27+988

East entrance of village Țîpala – CH.30+808

All permanent works will be accommodated within the existing Right of way and no additional land allocation is foreseen. The width of the roadway will not be extra-widened. Depending on the section and available space, the width will vary between 6.0 and 7.0m.

During construction, some land may need to be temporarily occupied outside the RoW to accommodate Contractor's facilities. The location and design of these facilities are not known at this stage and would be determined by the selected Contractor. Additionally, it may be necessary to temporarily use the land (e.g. for temporary storage of materials), which is set by the Contractor at a later stage. For this purpose, before commencing operations, the Contractor will have to obtain written permission (rent contract, provisional use, etc.) from the land owner and an official approval from the Engineer-Supervisor. If the land is in the APL management, the approval of the local village council will be required. For the provisional storage of waste, it is necessary to obtain the approval of the District Environmental Inspection.

Construction materials, such as sand, gravel, earth for earthworks or crushed stone, will only be obtained from existing licensed sources and will be transported only on the existing roads. The amount of recycled asphalt in corridor 16 will be about xxxxmc The beneficial side of asphalt recycling is:

- Natural resources are preserved;
- Land space is not taken by storing recyclable resource;
- Reduced import / export materials from project site, saving on fuel.

The r/c elements obtained from the demolition of existing culverts will be transported and temporarily stored at the SRA's base, other materials (e.g. sand, gravel) will be used for the

construction of shoulders. All new structures such as pipe or box culverts will be pre-cast elements supplied from the existing plants.

## 5. REGIONAL CLIMATE AND GEOGRAPHICAL LOCATION

### 5.1. Climate conditions

Ialoveni district is located in the central part of the Republic of Moldova in the climatic zone III. The average annual temperature is + 9.5-10.0° C, the absolute winter minimum – -27-30° C, days with temperatures above 0 degrees – 279-289, the sum of positive temperatures – 3650-3850. The average depth of soil freezing – 30-45 cm, absolute depth – 55-85 cm. Passing over the average zero-degree spring temperature occurs on March 1, at the earliest - on January 18, at latest - on April 4. Passing to temperatures below zero degrees generally takes place on November 11th, at the earliest on November 2, at the latest on February 11th. Annual average precipitation -420-460 mm. Air humidity is equal to: in winter - 1.0, spring-autumn - 5.5-9.0, winter - 10.0-13.0. The predominant wind direction - northwest and north, average speed - 3.0-4.5 m/s, in the spring days up to 10-15 m/s and more.

The district is frequently affected by drought, a phenomenon characterized by the absence of precipitation for 14 consecutive days in the cold season of the year and 10 days in the hot season of the year. Droughts have 1-2 repetitions in 5 years. Specialists record an increase in the frequency and intensity of this phenomenon. In the last decade 4 drought years have been reported (2000, 2001, 2003, 2007).

Another negative climatic phenomenon is torrential rains (rainfall) with the intensity of 0.5-2 mm/min, accompanied by lightning, storms and hail in the summer months. According to data from the last years, in the Republic of Moldova there is an increase in the frequency of these rains in the last decades, from 8.4 cases in the period 1966-1990 to 10.4 cases in the years 1991-2004.

The localities in the project are about 150 km away from Vrancea, the epicenter of earthquakes in south-eastern Europe, located in the seismic area of magnitude 7 degrees at the Richter scale. The average periodicity of earthquakes of such intensity is reported once in 35-40 years. The last powerful earthquakes of such power were more frequent and occurred in 1977, 1986, slightly weaker - in 1990.

### 5.2. Geomorphology and geology

The relief of Ialoveni district is hilly, fragmented by valleys and ravines. The average altitude is approximately 200 meters, in some places it reaches 300 or more. Predominant are sedimentary rocks of marine origin: limestone, sand, clay. The depth of deepwater layer - 120-140 meters.

Horizontal water erosion affected about 33% of the entire area, vertical erosion - 0.25%. Wind erosion is manifested in much smaller proportions; statistical data on this chapter are missing. The area of landslides represents about 0.5% of the entire territory of the district.

The river valleys, with the slopes heavily fragmented by valleys and ravines, are separated by water divides formed by almost parallel, narrow and elongated hills, mostly covered by forests.

The Valley of the Botna River, which crosses most of the localities in the project, is well-expressed, weakly winding up to Zâmbreni, in the shape of letter “V”, downstream, in the shape of a crate. The average width of the medium sector of the river reaches up to 2.5-4.0 km, the width is predominantly 1.5-3.0 km. The slopes are 80-140 m high, in some places - 180-210 m, they are



concave, steep, dismantled, made of sandy clay, valued in agriculture, planted with vineyards and orchards. The meadow is bilateral, with a variable width of 0.5-2.2 km, downstream.

The predominant soils are typical Alfisol and typical chernozems. Due to the high inclination of the territory and the deforestation of large wooded areas, most of the soils are affected by water erosion (about 56% of all agricultural land). The average depth of the deepwater layers is 160-180 meters.

### **5.3. The quality of surface water, groundwater and deep water**

Most of the territory is situated in the hydrographical basin of the Botna River, a tributary of the Nistru River. The average density of the hydrographic network in the area is 0.55 km/km<sup>2</sup>. The feeding of the river is mixed, predominantly the nival one. In the annual course of water level are well expressed the spring waters and the low waters invaded by the summer floods or the winter rains. There are no natural lakes in the middle part of the river, near the road are located two ponds intensively used for irrigation, fishing and recreation.

The ice bridge is installed in December, the ice thickness is 20-25 cm, maximum - 45 cm. The length of the stable ice bridge is about 35 days, in heavy winters - up to 112 days, and in mild winters is generally lacking. The river is free of ice at the end of February/early March.

During spring and rain floods, the river is covered with a 2-4 m water layer over a period of 2-5 days to 3-4 weeks.

The quality of the river water is of class III and IV (moderately polluted and heavily polluted). Dissolved oxygen (O<sub>2</sub>) deficiency as well as maximum variations in biochemical carbon dioxide (CBO<sub>5</sub>), mainly in summer months, are recorded. Throughout the year there are exceedances of copper compounds with maximum levels of 7 CMA. and high levels of oil pollution, where over 50% of samples exceed CMA values. Average phenol concentrations fluctuate within the range of 1.0-2.0 CMA. The main cause of high water pollution is the lack of adequate water management. Compared to the 1990s, water quality in rivers has recently improved, moving from Class IV to Class III. This is partly due to a reduction in the activity of industrial enterprises and the adoption of measures to reduce environmental pollution.

Groundwater is 30-40 percent microbiologically polluted and 75-80 percent chemical (in nitrate). The quality of deep water layers, at a depth of 120-140 meters, meets hygienic requirements for drinking water. The chemical composition of water in most wells is calcium-magnesium-sulphate.

A large proportion of the population consume water from mine wells and partly from springs. They are polluted with nitrates and pathogenic bacteria in the proportion of 75-80 percent, the main causes being the lack of sewerage networks in the presence of a large number of septic fountains without safe waterproofing, primitive village wc, inadequate management of animal and domestic waste, others. The most widespread are the diseases of the gastrointestinal system (gastritis, duodenitis), osteo-articular (osteocondrosis, radiculitis), genito-urinary (urinary lithium, nephritis, nephrosis), others related to poor water quality. Absence or excess of fluoride in the consumed water causes such diseases as dental caries and fluorosis, respectively. High concentrations of nitrates lead to the formation of methaemoglobin in the blood and cause tissue hypoxia, which is most common in children. The lack or deficiency of magnesium and calcium in water leads to increased cardiovascular disease, predominantly of ischemic cardiopathy.

#### **5.4. Organic and biotic resources**

Rich in biotic resources are forests, which occupy the area of about 10% of the territory. Here are the species of the common oak (*Quercus robur*) and the sessile oak (*Quercus petraea*), the common ash (*Fraxinus excelsior*), the littleleaf linden (*Tilia cordata*), the wild cherry (*Cerasus avium*). The widespread species of shrubs are: the Cornelian cherry (*Cornus mas*), the black elder (*Sambucus nigra*), *Euonymis verucosa*, the common hazel (*Corylus avellana*), the European bladdernut (*Staphylea pinnata*), others.

The grassy layer of the forest is represented by the species: the wonder violet (*Viola mirabilis*), *Isopyre faux-pigamon* (*Isopyrum thalictroides*), yellow anemone (*Anemine ranunculoides*), ramsons (*Allium ursinum*), others.

The steppe vegetation is represented by the genus: *Festuca*, *Colilia* or *Nega* (*Stipa*), Wild oat (*Avena*), Fir (*Poa*), Dandelion (*Taraxacum*), *Salvia*, *Artemisia*, others.

In the vicinity of the brooks, on the banks of the ponds, in the swamp areas, grow such plants as *Phragmites australis*, *Thipha latifolia*, *Thipha angustifolia*, the sedges (), the horsetail (*Equisetum telmatea*), the waterpot (*Alisma plantago-aquatica*).

The animal world is represented by the species: the fox (*Vulpes vulpes*), the brown hare (*Lepus Europeaus*), the Roe buck (*Capreolus capreolus*), the boar (*Sus scrofa*), the hedgehog (*Erinaceus europeaus*), the mole (*Talpa europea*), the lizard (*Eremias arguta*), the white stork (*Ciconia ciconia*), the pheasant (*Phasianus coechius*), others.

Among the endangered and strictly endangered plants included in the Red Book of the Republic of Moldova, which grow in the forests of the district, are: the snowdrop (*Galantus nivalis*), the white helleborine (*Sephalanthera damasonium*), the white helleborine (*Epipatus purpurata*), the heart's tongue fern (*Phyletis scolopendrium*).

The species of wild animals that are endangered and strictly endangered, protected by law, living in the natural areas of the district, are: the European ground squirrel (*Spermophilus citellus*), the wild cat (*Felis silvestris*), the steppe polecat (*Mustela eversmanni*), the stoat (*Mustela erminea*), the great bustard (*Otis tarda*), the Northern goshawk (*Accipiter gentilis*), the smooth snake (*Coronella austriaca*), the European pond turtle (*Emis orbicularis*).

There is no natural protected area in the location of the works, but at a distance of about 1 km from the road, north of Costesti village, on the left bank of Botna river, there is the outcrop of Costești, a natural objective included in the Law on State Protected Areas.1.

#### **5.5. The landscape**

The localities covered by the project are part of the steppe and forest vegetation area. Most of the territory are natural steppe landscapes that cannot be seen anywhere. The forests occupy 9.6% of the area. The dominant species are common oak, sessile oak, common ash (these species occupy about 42% of total forests), 9.1% are acacia forests, others are populated with other species (Linden tree, field maple, hornbeam tree, others).

In the localities there are small parks and groves of trees of decorative species planted in the last 20-30 years, their condition is good and satisfactory.

The practice of storing household, zootechnical, vegetal, construction waste, etc. in the unauthorized places (on the side of the roads, on the banks of rivers, ravines etc.) is widespread, which leads to the compromising of the aesthetic qualities of the natural and the agricultural landscapes.

## **5.6. Air quality**

For the localities around the road the following main sources of atmospheric air pollution with gases and dust are:

- emissions of pollutants from mobile and stationary sources;
- releases of gaseous substances and solid suspensions from the burning of household and vegetal waste;
- gas discharges from the decomposition of animal waste.

The first source is concentrated in localities and roads (unlike the other two that are dispersed), therefore there is the highest risk of pollution in those areas.

Research on atmospheric air quality in localities is not carried out, except for the annual environmental testing of cars and the investigation of air samples taken directly from the chimneys of the companies.

The environmental statistics show that about 20-25% of transport units exceed the ecological norms. It should be noted that, according to the World Health Organization, the whole territory of the Republic of Moldova is located in the moderate atmospheric air pollution area with dust and nitrogen oxide, which is the result of cross-border transport effects of air masses. Excessive air pollution leads to increased population morbidity indications with respiratory, cardiac, blood, and other diseases.

## **5.7. The noise**

Sources of noise pollution are transport units and industrial enterprises. At present, the traffic is the main source of noise pollution. According to the Ministry of Health, Labor, Social Protection, the noise level in the localities crossed by the motorways reaches 76-78 dBA, the permissible daily level is 70 dBA. The noise level in the localities located near the railways (via the district passes the Chisinau-Cainari railway line) is 11-76 dBA, the maximum permissible night time level is 60 dBA. Industrial enterprises produce noise within the range of 40-58-60 dBA, which is within the sanitary norms.

Increased pollution leads to acute illnesses such as cardiovascular, neuro-psychic, otitis, and others.

## **5.8. Soil properties**

In the area predominate common and typical chernozems, sometimes medium or poorly eroded. In forest areas predominate gray soil. The average degree of soil solvency in the district is 64 points (as a reference base for soil quality assessment serves the typical humerus chernozem, marked on the scale with 100 points). In the last few years, specialists have been witnessing the continuous reduction of soil fertility in the district. The main cause of their degradation is the loss of large quantities of humus and nutrients in the water erosion process as well as the large gap between the amount of nutrients (nitrogen, phosphorus, potassium) eliminated from the soil while harvesting the crops and the volume of fertilizers incorporated in the ground. In the district, the slopes occupy a large part of the land, which, in the absence of efficient anti-erosion measures, contributes to the gradual washing of the upper layer of soil. On the other hand, the amount of organic and mineral fertilizers incorporated into the soil decreased 15-20 times, compared to 20-30 years ago.

Sources of chemical pollution of soils have become less compared to the past. Some of the chemical storages were liquidated, toxic substances were removed. Agrochemical research shows that residual concentrations of pesticides and heavy metals do not exceed the sanitary standards in force.

The basic population is constituted of Moldovans, which are 98% of the inhabitants. As a result of migration abroad (in terms of job search), the number of inhabitants decreased considerably (to about 10-20%) compared to 15-20 years ago.

#### **5.9. Use of land and distribution of settlements.**

The basic preoccupation of the inhabitants of the villages is agriculture (phytotechny and zootechnics). The land is privatized, the basic structural unit is farms. There are also several certified farmers' associations.

They specialize in growing vegetables, including early ones (in greenhouses), field crops (wheat, barley, maize), technical (sunflower, rapeseed). There are numerous cattle herds and sheep. The agricultural areas of the area are occupied by orchards, vineyards. There is a large recreational area in Costesti village.

Some of the locals are working in the industrial enterprises, in the sphere of trade, providing other services in the towns of Chisinau, Ialoveni, Hancesti.

### **6. PROJECT ENVIRONMENTAL AND HEALTH AND SAFETY IMPACTS AND THEIR MITIGATION**

According to the concept, no major irreversible major impacts on the environment as a result of sub-projects implementation are foreseen. Most of the potentially negative impacts will be attributable to pre-construction and construction activities and as such will largely be of a temporary nature, causing minor, local, short-term negative effects, mostly reversible. To manage these impacts, the Contractor shall implement a series of preventive actions and minimization measures, as described in this section, to meet the requirements of national law and the World Bank.

The proposed impact minimization measures are presented as a summary of the current ESMP, attached to Annex 1, which will be included in the tender documentation and the construction contract. As soon as the contract is signed, the Contractor shall develop his own Environmental Management Plan with details of the implementation of this ESMP, ensuring that its activities comply with the applicable legislation and standards. Section 7 of this Report gives an overview of the proposed management mechanism related to the effective implementation and monitoring of this ESMP.

#### **6.1. The soil**

The possible impact on land near the road in the improvement process is expressed by soil pollution that causes disturbances in its normal functioning as an environmental factor, especially by affecting the bioreproductive capacity of the soil.

The genesis and evolution of soil types are directly related to the geological substrate, climatic and vegetation conditions, the relief setting, the influence of groundwater, and human intervention.

The possible sources of pollution are as follows:

- Accidental fuel and lubricant leakage to machinery supply, repair work as well as unsatisfactory technical equipment;

- backfill for the construction of road infrastructure and utility networks;
- soil infiltration of pollutants and pollutant emissions, as well as chemical reactions in contact with water;
- solid household waste.

The most important aspect of the problem is the earth mass that will support various interventions. The statement refers to earthworks that lead to soil degradation in the work area. In affected areas, full restoration of vegetation lasts between 5 and 15 years.

The negative impact on the land is expressed by the excavation / elimination of the vegetal soil layer and the change of the morphological aspect through excavations and sloping.

The negative impact on land is expressed by:

- disturbance of soil horizons, soil elimination works consisting of excavation, evacuation and transportation of surplus land (usually fertile soil);
- damage to flora and microflora due to excavations, with natural geochemical modification of soil elements.

The main activities to reduce the impact that road reconstruction could have on the soil are:

- safe temporary storage of the soil so that it can be later re-used in the green rehabilitation works of the green areas.
- removal of contaminated soil when accidental spills of petroleum products or mineral oils are identified;
- Immediate removal of leakages by using absorbent materials, which should be stored in specially arranged places;

The excavations and the temporary storages of the excavated soil, as well as the construction works, replacement or repair of drainage structures, are potential negative impacts on drainages in the construction and surrounding areas, resulting in discomfort and dangerous road safety for all participants in road traffic and / or native population.

To prevent such situations, measures are proposed such as temporary drainage and timely information to the public on the location, type and schedule of planned activities. On the road sections of the route that pass through the villages, mud will be created during construction works and in order to minimize the discomfort, these sectors will be regularly cleaned, at certain intervals, as instructed by the Engineer-Supervisor.

## **6.2. Surface waters**

During the works, the rivers and lakes can be unintentionally contaminated by spillages and accidental spills due to working techniques, improper waste management or storage during construction, or erosion during work performed near the surface water courses. Aquatic objectives may also be polluted by uncontrolled leakage of wastewater, household and construction waste from the camp (if any). In places of construction and rehabilitation of the culverts, it is possible to disturb the waters and its silting. During the rains, the construction materials, such as gravel, sand,

the earth filler, could be washed and taken to the rivers and water courses. In order to minimize such risks, the following rules will be met:

- execution of construction works, as much as possible, during the low water flow season in order to minimize the threat of water contamination;
- carrying out excavations, minimizing the storage of materials near the running waters;
- adequate protection to prevent the washing of the earth used as material.
- minimizing the cutting of riverain vegetation during the implementation of the works.
- not admitting the sediment discharges from washing the equipment directly into surface water,
- these being unloaded in sedimentary lagoons and tanks.
- installation in workplaces near the watercourses of mobile WCs, located firmly on land and at a suitable distance from rivers / small rivers, in accordance with the legislation in force, and their regular service.
- supplying drinking water for the office and workers camps will be performed from the centralized aqueduct and connection to wastewater networks.
- monitoring the water quality of rivers and lakes.

### **6.3. Groundwater**

These are represented by mine wells and springs located within the RoW (right of way) or near the RoW (see list in Appendix 3). During construction works, there is a risk of negative impacts (e.g. dust or other air pollution when these wells do not have a cover, or unorganized surface water leakage or leakage of harmful substances in the event of accidents). The risk of pollution remains in effect during operation due to the location of wells in the vicinity of the road. In order to know the initial quality of water from decentralized sources, it is recommended to provide a water quality test plan in all the wells located at a distance of about 5 m from the edge of the road, which corresponds approximately to the width of the road. These tests will be done before starting the construction works in order to examine the current situation based on current national standards and the World Health Organization's guiding principles on drinking water quality. Water testing will be the responsibility of the Contractor, who will conclude a works contract with an accredited laboratory for these services.





Village Pojăreni



Village Pojăreni



Between villages Pojăreni and Costești



Start of the village Costești





Village Costești



Village Costești



Village Zâmbeni







Village. Horești



Village. Horești





s. Țîpala



Village Țîpala





Village. Țîpala

Depending on the test results and the number of affected wells in the RoW, the SRA will examine the possibility of local alternative sources for water supply and will include in the project the related costs. For the wells with good water quality, it can be provided drainage arrangements for floods or permanent protection measures to minimize long-term risks due to the location alongside the road, these being described in consultation with Regional or local authorities. It is probable that some wells will be in the area where road improvement works will be carried out, in which case they will be demolished but with the consent of the population who benefits from that water supply.

To minimize the risks of pollution or damage to wells and springs, the following steps will be taken by the Contractor:

- adequate coverage of all phreatic wells in the potential area of influence, which are still unprotected;
- ensuring appropriate measures to effectively eliminate water floods.
- monitoring the water quality of wells and springs out of which the population drinks.

#### **6.4. Water for construction work**

During the implementation of the Project, water will be needed for various purposes (washing of equipment, spraying of temporary road surfaces, production areas, others). As a rule, the nearest source of water (river, pond, water tank) shall be identified. The use of water from this source can only take place with the permission of the owner / manager, with the consent of the local public authority, the District Environmental Inspectorate and, in some cases, the "Apele Moldovei" Agency. It is not recommended to use water from existing centralized systems as well as artesian wells for technological purposes.

## 6.5. Green areas around the road

In order to implement the Project on C16 Corridor it is planned to clear a number of 477 trees and an unknown number of shrubs.

Based on the topographic surveys, a large quantitative estimation of the maximum possible deforestation of tree species was made (Table 2.1). These estimates are a 'worst case scenario'. In order to minimize potential deforestation, the ESMP includes provisions under which the Contractor is required to carry out carefully the operations on site, generally following the guiding principles described and illustrated below.

**Table 2.1: Clearing of trees and shrubs: Corridor 16  
- estimation in the worst case -**

Diameter	unit	quantity
< 10 cm	ha	
11 – 30cm	Piece	
31 – 60cm	Piece	

In order to cut the trees, which cannot be kept due to the proposed construction works, the Contractor shall obtain a written authorization from the District Environmental Inspectorate.

The negligence in the improvement works may be another cause of tree destruction, which may, in the worst case, cause them to dry out. In the context of the Project, such scenarios could happen during excavations, parking or driving cars or heavy machinery under or near the trees, or in case of storage of construction materials. In this regard, the most sensitive spot in the vicinity of the trees is the place under the crown of the tree till the drip line and the root system extension (radius: 1.5 m around the drip line) around the tree.

To minimize the damage to green areas at the edge of the road, the following conditions shall generally be met:

- Timely training, if necessary on a daily basis, of the personnel involved in the works near the tree alignments of the road;
- Not allowing the temporary storage of construction materials, excavated soil, inert waste and other materials in immediate vicinity to trees and shrubs (at least 1.5 meters).
- Prohibition of any excavation or compaction works near the trees without the permission of the competent institutions;
- Temporary fencing of work sites and storages around the green areas with fences (made of wood or other light material);
- Installation of tree protection signs at certain intervals. The indicators must contain the information, „Tree protection area; Respect the distance”.

The Contractor shall be responsible for the tree clearance and accidental destruction, direct or indirect, unplanned due to the carried-out activities. In order to encourage the careful and proper execution of site works, the unintended / unplanned tree losses because of the Contractor will have to be compensated, at the Contractor's own expenses at the rate of 3:1.

The trees in the RoW is the property of the SRA, therefore, for any planned deforestation, the Contractor shall obtain the agreement from the local subdivision of the SRA and the Deforestation authorization of the District Ecological Inspectorate. The cut wood after deforestation will be taken to the local offices of the SRA.

Prior to commencing tree deforestation, the Contractor, in the presence of the owner and representative of the IER, shall clearly mark the trees to be cut and properly record the number and size of these trees (the diameter at breast height), to determine the species and the place of

reference for subsequent replacement with other trees. Instead of the deforested trees, new plantations will be planted at a 2:1 rate in case of trees of DBH  $\leq 30$  cm or 3:1 rate in case of some trees taller than DBH.

To minimize the damage to bird nesting during the breeding period, their cutting will be restricted until the end of the breeding period (i.e. the limited period will be from September to mid-March).

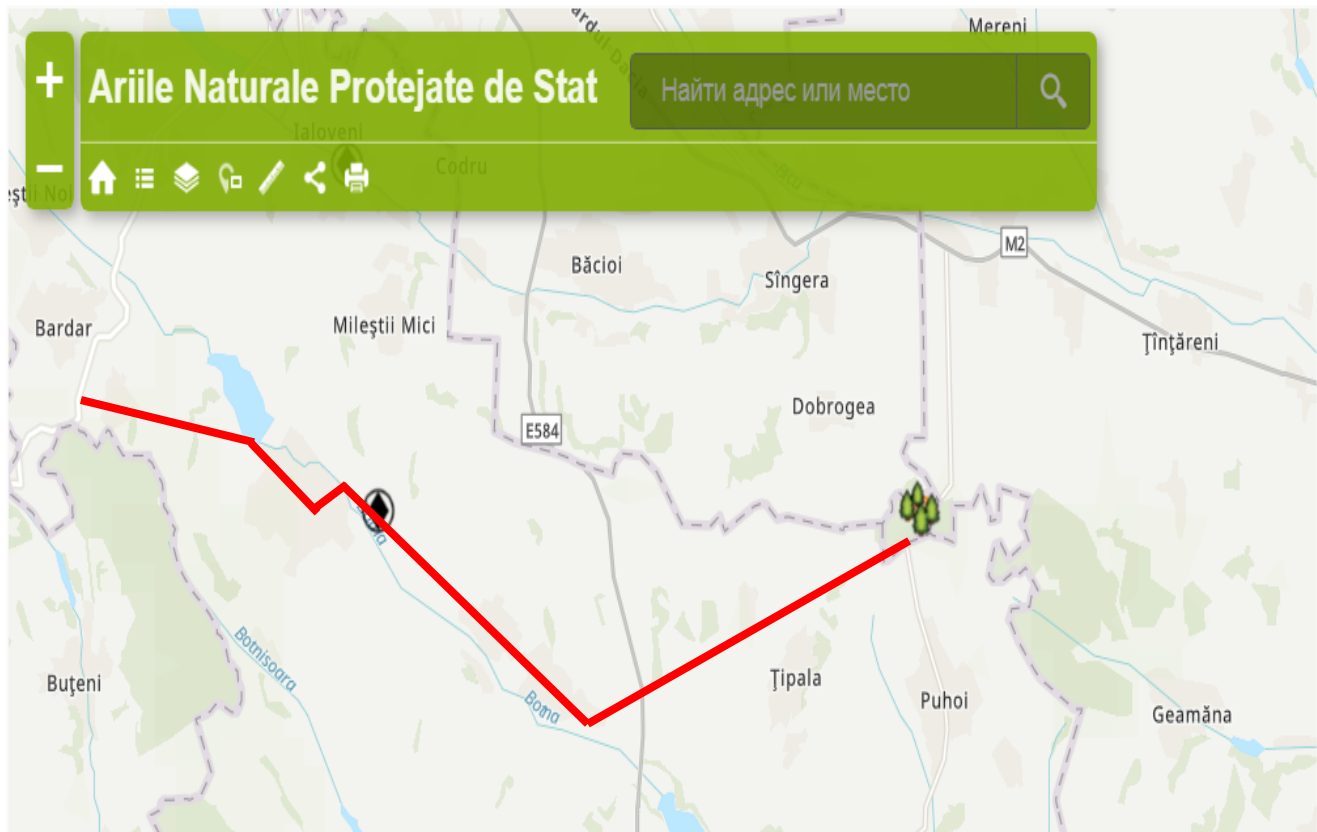
Planting of trees and shrubs along the roads of the Project is usually carried out upon the completion of these works. But if the section is released for planting before the end of the works it is recommended to plant the trees in advance. Planting details, such as compensating species, the exact planting places, interval between newly planted trees, etc., will be established in a joint consultation between the Contractor, the Engineer, the SRA representatives and the District Environmental Inspectorate. Preferably, according to the Project, only aboriginal species adapted to the environmental conditions in the area should be used for planting.

#### **6.6. Protected Areas**

In areas where rehabilitation works will be carried out near the protected areas, the Contractor shall ensure that all the works are carried out in accordance with the legislation in force. The following issues will need to be strictly avoided:

- Pollution of environmental components (air, water, soil, vegetation);
- Extraction of construction materials;
- Throwing away the excavated land;
- Disposal or temporary storage of waste;
- Destruction of vegetation - trees, shrubs and herbaceous plants;
- Destruction of terrestrial animal habitats;
- Destruction or pollution of water sources.

According to the Institute of Ecology and Geography, there are no natural protected areas within the direct work area. The closest areas are the outcrop of Costești and the forest near Puhoi village (see figure below).



## 6.7. Atmospheric air protection

Rehabilitation works are usually the cause of a temporary excess of air pollution caused by such pollutants as exhaust gases and dust, as well as pestilent odors, both on site and outside the site. Another cause of air pollution with a direct or indirect influence over a temporary period is pollutants generated during the transport, use and / or temporary storage of asphalt concrete, bitumen and other potentially hazardous materials. The main air pollutants are: dust, SO<sub>2</sub>, NO<sub>x</sub>, CO, benza-pyrene and carbohydrates. Negative impacts on air quality occur mainly in the vicinity of construction and demolition sites along the roads that lead to these sites. Careful planning and organization of work operations, the level of such impacts, and the discomfort created for natives can be reduced to an acceptable level.

Air pollution due to construction techniques and trucks for transportation of construction materials may be reduced, to a certain extent, using equipment that is in good working condition from the very beginning, maintained and serviced appropriately throughout the construction works. Establishing rules of conduct can still be a good practice of good performance - by achieving strict speed control (especially in villages) and strictly requiring workers to stop engines when it is not necessary for them to work.

In the process of construction works, under dry weather conditions, there is inevitably a high pollution with dust. This not only has an impact on health and creates discomfort for the affected local population but is also a negative safety factor for road users and construction teams. In order to minimize the risk of damage due to dust, the contract and the Environmental Plan will include provisions on regular road spraying, as necessary, during dry periods of time. When elaborating the dust suppression measures, water scarcity will be taken into account due to insufficient reserves and duly consideration will be given to the needs of local population in this respect (see below).



#### **6.8. Combating noise and vibration**

A road construction site is a mixed source of noise, consisting of separate point sources or spatial sources of permanent and temporary noise, which varies both within a separate day time and during the individual periods of construction. The noise intensity of road construction machinery depends on the type of machinery, equipment and vehicles used and on the distance between the respective construction activity and local residential developments and other sensitive receptors. The most elevated construction noise is caused by bulldozers, vibrators, compressors, excavators, and diesel trucks and also by cold recycling where milling machines will create temporarily elevated noise levels. The noise produced during such operations is short-term and localized, but can still create significant nuisance, especially where it occurs close to settlements or businesses and even more, when schools or health facilities are affected.

Elevated noise levels cannot be entirely avoided during construction, but they can be controlled at source, e.g. by fitting and maintaining appropriate mufflers on earth-moving and other vehicles on the site; by enclosing noisy equipment; by providing noise attenuation screens, where appropriate. Workers shall be sensitized about minimizing noise while working inside of or near to settlements (e.g. avoid idling of vehicles, minimizing the use of horns etc.). Local communities shall receive timely information on construction taking place in the villages. Working hours – including material transport - inside the settlements shall be limited such as to minimize nuisance for the local communities. Should unavoidable out-of-hours work occur local residents shall be given timely notice.

Where heavy equipment is used close to man-made structures (houses, walls etc.) vibration may in unfavorable cases lead to physical damage. In villages where such risks cannot be avoided the Contractor will establish the pre-construction status of any buildings that may be affected and provide compensation should damage occur as a result of construction.

#### **6.9. Construction waste**

During construction the Project will generate different types of waste, including but not limited to:

- Solid inert waste such as demolition materials, concrete, bricks, plastic, metals (e.g. empty barrels or other containers), bitumen, batteries and used tires etc.
- Waste oil and brake fluid;
- Vegetal waste from the clearance of the construction corridor (grass layers, tree branches, shrubbery, etc).
- Non-recyclable materials (e.g., resulting from the cleaning of ditches, others);
- Household solid waste and wastewater from the construction camps (if any).

To properly manage waste issues the Contractor shall prepare a comprehensive Waste Management Plan as part of his ESMP (see Section 7.4). This Plan will establish all types of wastes generated under the Project and identify their respective management along the mitigation hierarchy (avoid; recycle; dispose) in line with the applicable legislation.

#### **6.10. Health protection of workers and labor safety**

Road improvement works do not exclude health and safety risks, so all workers will need to be equipped with the necessary personal protective equipment, according to the standards in force and the relevant legal requirements for the risks at the individual workplace. The road constructions require the following equipment from the personal endowment, but not limited to:

- Protective footwear: Shoes with non-slip sole and cannot be pierced. Footwear with a protected toe to prevent crushing injuries to the toes (when working around equipment or heavy objects that can fall over the toes);
- Protective gloves: Workers should wear appropriate gloves depending on the work performed (e.g. rubber gloves for heavy duty concrete work, gloves for welding, insulated gloves and sleeves, when there is a risk of exposure to electric current);
- Protective helmets: Workers must wear helmets made of rigid material in case of objects falling over their heads, hitting the head of some fixed objects, or accidentally contacting the head with a dangerous place i.e. electrocution;
- Ear protection: In the event of a loud noise during the operation of a chain saw or heavy noisy technique, ear protectors / ear muffs shall be worn;
- Clearly visible clothing: All workers, including emergency response brigades in exceptional cases, which can occur at the roadside and are at risk from traffic, transport, or work equipment in the organization area temporary road traffic, shall always wear brightly colored clothing with reflective effect, visible during day and night.

The responsible person of the Contractor (EHSM) will organize for all the workers before starting the work, basic training on risks at individual workplaces.

For health and technical security purposes, Health conveniences on site (mobile WCs) shall be provided at appropriate locations after consultation with local authorities. Responsible for the service of these commodities will be a sub-contractor, who will take care of them at certain intervals and in accordance with the legislation in force. The places proposed for these conveniences will be determined by the Contractor / Manager of the Contractor responsible for the environment and technical security and will be approved by the Engineer-supervisor before starting the works.

In case of employment of a large number of not local workers that are accommodated on the site, a specific HIV/AIDS awareness campaign shall be organized, foreseen at an early stage of project construction works and repeated over appropriate intervals.

Since the Project Beneficiary (SRA) is not required to select the location of the camp for office and containers for workers, selecting the place to create the conveniences and operating these facilities is one of the Contractor's tasks. For this, it is necessary that the Engineer-Supervisor's opinion be obtained in time. The SRA, however, encourages the Contractors to explicitly use the existing facilities for accommodating their staff and the existing industrial facilities in the area as they are at a distance close to the road site. The proposed environmental management mechanism will be described in the Contractor Specific Plan, developed and approved in the manner established by the Engineer, for the construction phase, detailing the approach and measures (see Section 7.4 of this Report). If the Contractor decides to place his living quarters with all working facilities, accommodation of workers, kitchens and / or offices with all necessary hygienic facilities, shall be taken all necessary measures for an appropriate solid waste management system and sewer operation.

In the Contractor's ESMP shall be included measures to ensure safe storage and relocation of potentially hazardous materials, such as fuels, lubricants and other products, while minimizing the risk of accidental leakage and pollution soil or waste water. Also in this Contractor's ESMP will be addressed the anti-incendiary requirements for the camp area and its territory.

#### **6.11. Organization in exceptional emergency situations**

In order to assure proper professional measures in case of accidents or injuries, a contingency plan should be prepared in exceptional emergency situations. On site shall be the elementary medical first aid equipment offered in the camps, taking into account, when elaborating the plan, the distance to the nearest hospital. In order to maximize the efficiency of such organizational measures, it will be essential for workers to know and be aware of the established procedures and facilities available.

#### **6.12. Road traffic and road safety**

Construction activities inside the settlements and also outside these areas will have a temporary impact on local traffic and on road safety – for both motorized and non-motorized road users. This relates to the presence and movement of large construction vehicles on narrow rural roads, to construction taking place in small villages with restricted space and to the actual rehabilitation of the roadway itself. Ongoing construction sites do not only represent temporary obstacles but can also be dangerous for motorists or generally for users of the public space where construction takes place.

To effectively manage such issues the Contractor shall prepare a Road Traffic and Safety Management Plan identifying risks that may occur during the various stages of construction and that may affect road users / users of public space in villages. The Plan will describe efficient traffic and road safety management arrangements that will be implemented at the various stages of construction including specific provisions for motorists, cyclists, and pedestrians as appropriate. Proper securing of ongoing construction sites during construction and out of working hours (e.g. during the night and / or during weekends or public holidays) shall be specifically addressed. The Plan will require approval by the Traffic Police (Patrolling Police) as well as timely review and approval from the Engineer-Supervisor.

Road safety and road safety issues will be identified in this plan and temporary organizational measures will be presented, which will need to be provided at all stages of road rehabilitation and in all places where there are road safety issues and risks. Measures may include but not be limited to the provision of flagmen during the day, the use of various types of signalization, temporary detours, provision of temporary safety barriers, provision of appropriate measures and/or devices to secure road safety where construction sites may need to be left open during the night.

Appropriate training of all construction workers on the provisions of the Plan and strict enforcement thereof will help to maximize efficiency. Active communication with the local authorities, timely information of the public on construction schedules can help to increase awareness and preparedness of road users and to generally increase road safety conditions during construction.

#### **6.13. Access to land and properties**

Construction activities and especially the relocation of utilities and construction of drainage structures and pedestrian walks in the villages bear the risk to cause temporary disruption of access to land and properties. To minimize associated nuisance, the Contractor shall envisage appropriate and timely provisions for alternative access and provide such local facilities as to ensure all time accessibility of relevant assets, including agricultural land. Early communication with the affected individuals will be important to increase the acceptance of such temporary inconveniences and to achieve a good relationship with the local population.

#### 6.14. Operational Impacts and Their Mitigation Measures

Operational impacts mainly relate to the gradual deterioration of road conditions and drainage, due to inappropriate maintenance or a complete lack thereof, ultimately resulting in road safety problems. Typical maintenance aspects are: proper functioning of drainage facilities, landslide and erosion control; regular seasonal inspections of signage and replacement of worn-out materials and monitoring of roadside vegetation and tree or shrub plantations on landslide areas which require regular timely pruning / trimming to ensure healthy growth and longevity and to minimize risks from falling branches.

As per the concept of the Local Roads Improvement Project the SRA's Project Management Consultant will – among other things - assist in developing a Road Maintenance Manual which will also address environmental aspects. As the maintenance provisions to be developed for that Manual will also apply to the present sub-projects, no further details are provided in this Environmental Management Plan.

Improved rural roads often encourage unsafe driving behavior such as over-speeding, ultimately resulting in increased accident numbers. Such issues would be monitored by the Traffic Police which ensures the implementation of the legislation.

#### 6.15. Positive Impacts

Upon completion, the Project will have positive long-term environmental and socio-economic impacts on people's welfare, road health and safety, and better conditions through reduced vehicle operating costs, reduced number of accidents; reduced emissions from vehicles thanks to smoother traffic without bumps on road surface after improvement and will also reduce dust pollution.

Road access to settlements and markets will also improve, resulting in the development of new business opportunities, etc. The environment will benefit from reduced risk of soil pollution and erosion, from reduced water pollution due to improved, safe and cleaned road drainage systems, from the elimination of dust nuisance due to a paved road surface. A reduced risk of landslides, stable slopes through new plantations in sensitive sections will add to the overall improvements.

### 7. SOCIAL ASPECTS

#### 7.1. The Social Impact

The objectives related to social impact management are:

Ensure a minimum impact on public health, including the prevention of the spread of HIV/AIDS, STDs or potential trafficking in human beings, including young people and women.

Reducing the impact due to interruption during construction of utilities such as electricity, gas, running water and sewage.

Corridor 16						
Municipiul/Raionul Orașul/Comuna Municipality/County City/Commune	Total	Sexul Sex		Grupa de vârstă, ani Age group, years		
		masculin male	feminin female	0-17	18-64	65+

Pojăreni	967	445	522	202	677	88
Costești	10.907	5.419	5.488	2.472	7.658	777
Zâmbreni	2.588	1.267	1.321	592	1.769	227
Horești	3.511	1.751	1.760	845	2.396	270
Țipala	4.280	2.120	2.160	1.125	2.891	264

\* data retrieved from statistica.md

In the localities Pojăreni, Costești, Zâmbreni, Horești, Țipala activate 5 educational institutions:

Corridor 16		
Locality	Educational Institution	No. of pupils
Pojăreni	Pojăreni Gymnasium	76
Costești	Costești Lyceum	661
Zâmbreni	Zîmbreni Lyceum	375
Țipala	Țipala Lyceum	575

According to the data provided by the National Patrol Inspectorate in the last 3 years, 9 road accidents (including a minor accident in 2018) occurred on this road sector, of which only 2 were serious. A serious accident occurred in 2015 in Costești, the pedestrians who walked on the left side of the road were hit by a truck, an old man died after the accident, the accident took place because of over-speeding. Also in Costesti there occurred three other minor accidents in 2015, a child was hit and suffered light injuries because no priority was given to pedestrian crossing, a man was hit by a motorcyclist due to inadequate speed, but the injuries were mild, the third accident happened when a car hit an obstacle as a result of skidding, and the driver, an old man, suffered only minor injuries. The accidents on this road that took place in 2017 and 2018 were classified as 4 minor and 1 very serious, because of the excessive speed were hit 2 pedestrians that walked on the right side of the road leading to their death. All five road accidents occurred in the village of Costesti. In those 4 minor accidents, 2 children and 2 adults suffered because of counter-circulation, drivers' recklessness, as well as child reluctance (7-14 years old).

year	2015	2016	2017/18
no. of total accidents	4	0	5
Serious accidents	1	0	1
Minor accidents	3	0	4

## 7.2. Social Impact Monitoring Committee

The Social Impact Monitoring Committee (hereinafter SIMC) should will be established to provide community support in monitoring the social/environmental impact of the reconstruction of Local Roads Improvements Project (LRIP). The SIMC will be developed as a social, nongovernmental and non-political structure. It will be established on a project basis with members from sub-project affected localities with the aim to provide community inputs in monitoring of environmental/ social impact on the local communities that may arise in course of Project implementation.

The SIMC will strive to strengthen stakeholders' engagement, increase transparency and promote trust. In addition, the SIMC will facilitate communication between Project communities and Contractors with an aim to create mutual understanding between the interested parties and to create a friendly, cooperative, participatory atmosphere within the Project communities and will collect the complains please see the (**Error! Reference source not found.**)

## 7.3. Mitigation measures

1. Mitigation measures of the social impact specifically related to resettlement (as defined in WB OP4.12) must be respected. The objectives of the document, with reference to social issues, are:

- Ensure that adverse effects on the affected population, other than resettlement, are avoided or attenuated.
- Ensure that the benefits of road rehabilitation are proportionate to all affected persons, women and men, the elderly, the young and the disabled.

2. Recommended mitigation measures include:

- Planning construction activities to avoid or reduce their impact on shops and businesses along the road and houses.
- Preparing a Mobility and Accessibility Facilitating Plan (MAFP) in accordance with the construction plan in order to avoid or reduce the impact of road closure and of blocking the access to properties. This will be the responsibility of the contractor, with the support and approval of the Engineer.
- Informing potentially affected people about the MAFP and about the plan of construction and road closure activities.
- Public consultation during the design period on the expected social benefits, such as improving access to markets, bus stops, etc. which occurs with each affected community. The purpose of this activity was (1) to ensure that relations with the affected communities remain positive during the project construction process and during the exploitation period; (2) to treat the specific needs of the components of this document and (3) to ensure that the project has a specific policy for relations with third parties.
- Development of a Mitigation Plan of Trafficking in Human Beings (THB), which may be part of the Occupational Health and Safety Plan or a separate Plan. This will be the responsibility of the contractor, with the support and approval of the Engineer.
- Trafficking in human beings is defined as the recruitment, transportation, transfer, hosting or receiving of persons through threats or the use of force or other form of coercion, kidnapping, fraud or deception, abuse of power or due to a vulnerability position or by offering or receiving payments or benefits to obtain the consent of a person exercising control over another person for the purpose of exploitation. Exploitation includes at least



exploitation of prostitution or other forms of sexual exploitation, forced labor or services, slavery or practices similar to slavery, slavery or organ harvesting.

- Avoiding conflicts with local communities by providing the resources required for workers' needs in stores on the site camp and organizing site visits.
- Potential avoidance of spreading vector diseases and communicable diseases such as STDs and HIV/AIDS through awareness programs and prevention activities among construction workers.
- Preparing workers to avoid conflict situations through guidance and awareness programs.
- Conduct awareness programs about HIV/AIDS prevention and STD for the affected population in the vicinity of the site camp areas.
- Organizing awareness programs for workers on the subject of trafficking in human beings and zero tolerance policy.
- Informing the public on the timing and duration of interruption of water, electricity, post, telecommunication or other services.
- Avoiding damage to utilities by ensuring that vehicles and equipment are used by qualified personnel and this is adequately supervised.
- Informing the affected community about the program when the utilities need to be relocated or services should be interrupted.
- The THB mitigation plan should include, but is not limited to:
  1. A signed declaration whereby the Contractor certifies that throughout the term of the contract he is not employed and does not facilitate or allow THB.
  2. The contractor will ensure that THB is not tolerated by employees or contract workers and that engagement in the THB has as a consequence the suspension or termination of employment or the contract.
  3. Raise awareness of employees, subcontractors and temporary workers on this topic, including the provision of information on risk areas and penalties for involvement in THB. Raising awareness will be ensured by organizing several training programs for contractor staff and subcontractors.

#### HIV/AIDS and STDs Prevention Measures:

- Launching awareness programs on HIV/AIDS and STDs prevention for PAP in the vicinity of the site camp
- Launching awareness programs on HIV / AIDS prevention and STDs for construction workers
- Introducing intervention clauses in the construction contracts for the prevention of HIV and STDs
- Discourage drug abuse (alcohol and narcotics). Taking into consideration local work force when hiring for construction and maintenance sites.
- Focus on transportation workers with high-risk behavior (including young workers), ensuring an education at their level.
- Conceiving general messages to the workforce as well as men and women.
- Use professional organizations such as NGOs and COs that deal with HIV prevention.

- Designing HIV prevention programs in communities along the road, adapted to specific needs, local language and traditional/preferred communication tools.
- Popularization and increase of condom acceptability through condom promotion campaigns and social marketing in communities along the road.
- Free distribution of condoms to men and women, construction workers, women working in the project area and young people.

Provide complete information on access to HIV and STDs services

- Educate communities and workers about how to avoid STDs, how to recognize the common symptoms of STDs, and how to seek treatment through confidential addressing systems.
- Provide information on voluntary testing and counseling services in the project area or anywhere near the project area
- Make public the existence of anonymous voluntary testing and counseling services (testing, pretesting and post-test counseling)

Provide information on access to opportunistic infections

- Educate people how to avoid opportunistic infections, how to recognize the common symptoms of these diseases, and how to seek treatment.

Study health care aids and services in transport organizations and evaluate worker involvement in receiving HIV and AIDS care.

A requirement and a reporting system to the SRA (ASD) and the responsible government authorities, of suspicions or known THB incidents, as well as the relegation of potential victims to law enforcement agencies.

## 8. ENVIRONMENTAL MANAGEMENT ASSESSEMENT

### 8.1. ESMP Follow-Up and Contractual Aspects

The ESMP as attached in Appendix 1 of this report together with the Contractor's Construction ESMP are the bases for environmental management when implementing the Project. The Contractor's document shall be submitted within 30 days of the contract award and Preconstruction and Construction works can only commence once the Contractor's ESMP is approved by the SRA and the Engineer-supervisor.

The bidding documents shall contain two sections related to environmental issues:

Firstly, a basic clause indicating that the Contractor will be responsible to follow the requirements of this ESMP and that he is expected to prepare his own ESMP for the Project. Secondly, this ESMP shall be annexed to the Bidding Documents to ensure the bidders will be fully aware of their environmental duties under the Project and to help him to consider the related costs in their proposals.

The Contract Documents should follow a broadly similar pattern. The Contract should specify that the Contractor(s) is (are) responsible for implementing the ESMP via his/their ESMP. Again, the



ESMP should be included in an Annex to the Contract so the Contractor(s) will be liable for any non-compliance with the present ESMP.

The Contractor(s) will be responsible to prepare the ESMP based on the provisions of the present ESMP. CESMP preparation will start once the contract has been signed. For this purpose the Contractor will need to appoint or hire a qualified and experienced environmental expert / Environment, Health & Safety Manager who is fully aware of the national Code of Law and who will ensure compliance of the CSMP with this ESMP.

In preparing the bidding documents and construction contract the SRA will clearly address the following:

- The Contractor is expected to fully implement environmental mitigation measures as prescribed in the ESMP and to perform all works according to the applicable national construction, health protection, safeguard laws and rules and in compliance with relevant legislation on environmental protection;
- The cost of the required environmental mitigation measures shall be included in the Contractor's BoQ as a lump sum item. In addition, the water quality will be analyzed and the noise level measured.
- The Contractor shall be expected to carry out their environmental obligations in an organized and timely manner and to perform their duties meeting high standards for all activities addressed in this ESMP;
- Construction materials such as gravel; stone, sand, etc. shall be supplied only from existing quarries and borrow pits with approved licenses, permits, and/or approvals.
- All equipment used for construction works must meet internationally recognized environmental standards, and the site arrangements during construction must be such as to ensure that worker's health and safety as well as the health and safety of all road users at any time.
- The contractor shall recruit, at the construction stage, an Environmental, Health and Safety Manager (EHSM), who will coordinate and supervise the Contractor's obligations under the environmental protection contract, update the Contractor's ESMP, if necessary, and report about working operations throughout the construction period. The Environment, Health and Safety Officer will coordinate work with the SRA and other institutions as necessary, and ensure the overall quality and compliance of work operations with all environmental laws and standards; The manager responsible for Environment, Health and Safety will be recruited on a full-time salary as a member of the Contractor's team.

## **8.2. General management arrangements and Team organization**

The SRA is the Implementing Agency of the Local Roads Implementation Project. As per the loan agreement between MTRI/SRA and the WB, a Project Management Consultant (PMC) will support

the SRA in this task<sup>4</sup>. The SRA's local environmental specialist will support the PMC team by monitoring the implementation of contractual provisions with respect to environment, Health & safety management and reporting and by reviewing any materials produced by the Contractor.

The SRA's Supervising Engineer shall be on site to oversee all construction activities on a day to day basis, including the implementation of the provisions of the ESMP. An environmental specialist will also be appointed to the SRA's construction supervision team (either on a part time / intermittent basis or full time). This environmental specialist will directly report to the Supervising Engineer. He will undertake supervise environmental monitoring undertaken by the Contractor, carry out various visual inspections of relevant aspects of construction throughout the site, inspects borrow pits and waste storage areas, and other potentially affected areas and will review the Contractor's ESMP and its updates, his progress reports and other documentation on environment, Health and safety elaborated by the Contractor / the Environmental, Health and Safety Manager (EHSM). Should any incidences or irregularities be observed on site the Engineer's environmental specialist may require the Contractor to undertake additional testing at Contractor's expenses or to follow any other related directions specified by the construction supervision team.

The Contractor shall appoint a full time Environmental Manager responsible who will be directly responsible for the Legal Expertise of the Environment and the complete, proper and timely implementation of all ESMP provisions and legal compliance of all activities. The Environmental Manager will undertake day-to-day monitoring of the construction site, the Environmental, Health and Safety Manager will prepare monthly progress reports (see Section 7.3), update the ESMP as required (see Section 7.4), review photocopies (drafts), emergency plans, designs for temporary facilities, etc. In addition, the Environmental Manager will be responsible to liaise with external parties (e.g. Government inspectors) and to follow-up complaints on environmental matters that may be raised by affected individuals, local communities or any authorities as provided in the SRA's Grievance Mechanism and established under the Project (see Section 7.5).

On his team the Contractor will also appoint a Health & Safety Specialist to oversee the due implementation of all necessary measures related to proper health and safety conditions at the construction site, to provide safe arrangements for traffic and for all other road users throughout the construction period. This will include but not be limited to appropriate signage of the construction site during construction and out of work periods, proper management arrangements for the health or safety workers or site visitors, etc.

### 8.3. Reporting

The Contractor to the Engineer-supervisor (Project Manager)

The Contractor, with support of his Environment Management and the H&S specialist, will prepare and submit to the Engineer-supervisor his monthly compliance reports in respect to this ESMP and approved CESMPs, including general progress, monitoring results or information on any incidents and corrective measures/actions taken. These reports will be prepared in both English and Romanian languages, in hard copy and electronic versions. In case of any environmental

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<sup>4</sup> According to the ToR the Project Management Consultant will provide assistance to the SRA for project management under Component A, institutional reform and strengthening under Component B, and capacity building and training for both Components A and B. Among many other tasks the Project Management Consultant will also be involved in the Development of a *Local Road Planning, Design, Construction and Maintenance Manual* which will also address environmental aspects

accidents the Contractor shall immediately inform the Engineer-Supervisor and appropriate authorities for further resolution of the problems.

The Engineer-supervisor to the SRA

Based on the Contractor's monthly documentation the Engineer-Supervisor will provide quarterly progress reports to the SRA, documenting the progress of activities in the field of environment, health and safety and ESMP implementation together with the prescribed monitoring activities carried out during that reporting period.

The SRA to the WB / MEI

The SRA will prepare and submit to the WB bi-annual reports on the implementation of the ESMP and on the results environmental monitoring. The WB will review these reports and undertake periodic monitoring visits. Upon request additional specific information can also be provided to the WB.

The SRA will also prepare an annual Report to MEI. (FMR) reports. Quarterly monitoring reports (FMR) will be submitted to IFI Financial Institutions.

#### **8.4. The Contractor's Management Plan**

As at this stage of the Project, many environmental aspects are still unknown, e.g. there are no footprints, the location, schedule are not known, etc. Examples of such aspects are the location, layout and management of the construction camp or Contractor's Plant (if any); arrangements for the preparation of asphalt; routes for material transport; types and quantities of waste (from contractor's facilities or the construction waste) including proposed location requirements and arrangements for their temporary storage, collection and final disposal, drainage provisions etc. Some general guidelines addressing these issues are provided in the Environmental and Social Management Framework and this ESMP, the details, however, can only be elaborated by the Contractor when the final details and specific framework conditions for Project implementation will be known.

To properly implement all environmental management obligations under his contract the Contractor shall establish an Environmental Management System and appoint qualified staff as to ensure that this system will function effectively and meet the expectations of the Client and the World Bank. The Environmental Management System will be described in the Contractor's Environmental Management Plan (CESMP) which must be developed by the Contractor and submitted within 30 days of the contract award. Pre-construction and construction cannot commence until the CESMP is approved by the Client and his Supervision Consultant.

The CESMP will be the lead environmental management tool for the Project that defines the procedures for implementing the environmental mitigation measures and for achieving the objectives set out in the present Environmental and Social Impact Assessment Report and the ESMPs for the respective Lots. The CESMP outlines the Contractor's environmental policies and management structure, describes his approach to environmental management throughout the construction period and clearly defines the roles and responsibilities with regard to reporting on environmental aspects at the construction phase. An Environmental Risk Assessment will be undertaken as part of CESMP preparation and management control measures devised to eliminate and/or minimize those identified impacts. Reviews of the CESMP are undertaken at set intervals or as and when required and new information added as appropriate.

Referring to the CESMP, the working area is defined as any area where there will be a requirement for temporary or permanent works to facilitate the construction works on the motorway. The working area thus includes any off-site areas required for access, storage, material extraction or other temporary activities of the Contractor.

The risk assessment would address the potential impact created during the temporary construction period (e.g. construction noise/dust/pollution risks) and any permanent impacts that are influenced by the proposed construction methods. Site-specific environmental issues would be addressed in this document and strategic details on how these shall be controlled across the Project would be provided. A list of construction management aspects and site-specific issues to be addressed is provided in the present ESMP in the Appendix 1.

The Contractor's Environmental Manager will be a full-time staff in the Contractor's management team. He will be responsible for coordinating and managing all environmental activities during the construction phase. In particular, the Contractor's Environmental Manager would carry out the following duties:

- Develop and continuously review and update the CESMP;
- Environmental inductions and training of personnel including sub-contractors and visitors;
- Liaison with local officials and regional and other regulatory authorities;
- Timely report any incidents in accordance with Client's specifications;
- As required prepare site-specific environmental management plans and construction method statements, work instructions and other special procedures;
- Design and manage the details of the environmental monitoring program, including noise, vibration and dust and review of routine reports;
- Review and improve method statements for environmental aspects prior to work starting;
- Identify environmental competence requirements for all staff on the Project and ensure delivery of environmental training to personnel within the Project team;
- Monitor construction activities performance to ensure that identified and appropriate control measures are effective and ensure compliance with the approved CESMP;
- Monitoring of the program for environmental works, and preparation of status reports as necessary;
- Responding in case of incidents and providing feedback to interested or affected parties;
- Act as the main contact between the regulatory Authorities and the members of the Project on environmental issues;
- Provide advice and liaison with the construction teams to ensure that environmental risks are identified, and appropriate controls are developed and addressed in the method statements;
- Offer assistance in the development and delivery of environmental training for site personnel and sub-contractors;
- Environmental audit of subcontractors and suppliers;
- Ensure that Project environmental requirements are implemented by all subcontractors so that the requirements are cascaded down to all personnel working on the project;

To support the Environmental Manager and to meet his environmental management duties under the contract the Contractor may decide to appoint further staff such as a Site Environmental Representative and a Foreman. The site environmental representative would report to the Contractor's Environmental Manager and be directly involved in managing and coordinating

environmental activities on site. The foreman would report on environmental activities to the site environmental representative.

The CESMP will be reviewed by SRA's environmental specialist and the SE and require formal approval to be obtained from SRA/ the SE prior to the start of works. Having an approved CESMP in place will also facilitate environmental monitoring as the approved approaches will be used as a reference for the assessment of the CC's environmental performance.

As a rule, all measures proposed in the CESMP shall reflect 'best practice' approaches and be compliant with the applicable legislation. As a minimum the following aspects of site preparation and construction shall be addressed:

Site Establishment / Camp Establishment & Management (if any): Site preparation, top soil clearance and temporary storage, vegetation removal; Layout of the Contractor's site and camp (if any) with details of the proposed measures to address adverse impacts resulting from its installation. Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance to nearest water source / body. Full description of the construction works / disturbance footprints: range of preparatory and construction works / activities; description of the land that will be disturbed by the (construction) works; description of the land / present land use immediately adjacent; site plan showing the full extent of the works area of the proposed construction, including a map with the full construction boundary and disturbance footprint marked clearly over a current aerial photograph. Information on the location of any important waterways or adjacent vegetation to be protected, or the location of proposed sediment and erosion traps; Operational management arrangements (e.g. energy supply; solid & liquid waste management; effluent management; hazardous materials; fire safety; etc.; measures to safeguard nearby communities;); site & camp demobilization.

To ensure that the operation of work camps does not adversely affect the surrounding environment and residents in the area, including through the potential spread of STIs and HIV/AIDS the contractor will provide HIV and STI prevention materials for construction workers, especially for foreign workers, such as booklets, pamphlets, posters. The Contractor will also report monthly the number of foreign workers which are on the site and if they were instructed.

Waste and Wastewater Management: All construction waste materials such as asphalt, drums, lumber, sand and gravel, cement bags as well as wastewater from the construction camp, offices, cafeteria (if any) etc. shall be collected, stored and disposed of according to the applicable legislation. Mobile toilets from throughout the construction site will be serviced by a licensed contractor. Materials that cannot be reused or recycled shall be taken to an approved landfill site for safe disposal. Hazardous waste shall be stored and removed from the site on demobilization in line with the applicable legislation. The CESMP shall address all aspects of waste and wastewater management, including details of temporary waste storage, transfer and pre-treatment prior to final disposal or recycling, indicating all final disposal alignments in compliance with national legislation and best practice procedures.

For the recycling or disposal of solid or liquid waste in accordance with the requirements of the law, licensed / approved facilities must be used, with a careful attitude and respect for the order of disposal of all waste to be discharged from the site. As part of the Plan, the Contractor is expected to prepare forms for waste handling operations in accordance with the storage order, which will be used to control waste discharged from the site. In this way, the waste controller will keep a copy of the forms and the driver always have an accompanying copy, being sure of signing this form at the



final unloading site. All records shall be kept by the Contractor for audit purposes and demonstrating that the Project is compliant with best practices and legislation.

**Oil, Fuel and Chemicals Management:** on site shall be registers with records of the respective materials, all necessary procedures for storage, transport and use of oils and fuels, chemicals, refuelling of the Plant and the technique and procedures to minimize the risk of contamination of groundwater and soil. For the storage of all oils and fuels after use, secondary tanks with a capacity of 110% shall be used and any spillages shall be removed as soon as possible. All cases of discharges will, according to the Plan, be mentioned in the report. Further on, after training, permanent on-the-job training sessions will be organized, repeated each time some serious incidents occur.

**Spill Prevention and Response:** identification of the types of work with hazardous substances; inventory of substances used; Aspects usually addressed in this plan include, but are not limited to, leakage prevention measures and leakage contamination measures; procedures in case of emergency; management according to a plan, training; leakage traceability and leakage facilities or site inspections.

**Soil Management:** will include a description of the proposed measures to preserve top soil; to minimize the effects of wind and water erosion on stockpiles, to minimize fertility loss of top soil; timeframes; haul routes and disposal sites.

**Dust Management:** Will include the proposed approach to effectively address dust-related problems along the road and all access roads in the vicinity of human settlements along the road and construction sites; a description of the equipment used and the indication of the water source for the implementation of the Plan;

**Air and Noise Pollution Management:** Possible effects of air and noise pollution can be most effectively mitigated at source. Based on an inventory of all construction equipment the Contractor shall describe strategies and practical measures that are planned during construction to avoid or at least minimize noise pollution and to generally minimize emissions from any construction vehicles and machinery.

**Mobile asphalt plant:** applicable legal framework/standards; site specific aspects; sensitive receptors present in the vicinity of the proposed site; site preparation including drainage; operational aspects (waste management and control, both solid and liquid, e.g. from the use of bitumen, fuel oil and diesel); noise management; air quality management – including dust management on site; water management; emergency management and reporting procedures; social aspects – safety of the public; stockpiles; site rehabilitation after closure (clean-up from pollution and debris; revegetation). Proposed environmental monitoring program and auditing;

**Construction materials:** As per the provisions of the Environmental and Social Management Framework only existing licensed borrow pits and quarries shall be used to implement the Project. To this regard the CESMP shall provide information on site operators; license / permit details; Indication of proposed transport routes, supported by some plan indicating sensitive receptors such as residential areas or schools;

**Vehicle and equipment maintenance:** Proposed approach for washing construction vehicles; effluent handling; refuelling; fuel and lubricant handling;

**Site Rehabilitation:** Clearance and rehabilitation of the construction site and removal of the Contractor's facilities is the responsibility of the Contractor. This includes the removal of all waste materials, machinery and any contaminated soil. The CESMP shall also contain a Plan for the



hand over, sale or removal of all plant vehicles and machinery to ensure that no unserviceable items are left on the construction site. All construction sites and work areas will be rehabilitated so that these can be returned as close as possible to their previous uses. This includes the stabilization and landscaping of all of the construction sites. No waste will be left on site after the works are completed. Should the Contractor fail to remove the waste the SRA is entitled to withhold payment and to arrange the clean-up and deduct the cost of the clean-up and administrative charges from the final payment.

#### **8.5. Health & Safety Management**

The legal minimum requirements for safety and health at temporary and mobile construction sites are set out in Government Decision No. 80 of 09.02.2012. This piece of legislation is based on the transcription of EU Directive 92/57/CEE of 24.06.1992 and Directive 89/391/CEE and provides a comprehensive set of requirements and measures that the Contractor will have to comply with. The provisions include the requirement to prepare a Health and Safety Management Plan. This Plan is to be drafted by the 'safety and health coordinator' during the project preparation stage and must contain all measures envisaged to prevent occupational hazards that may occur during the activities on the site.

The Contractor's Health & Safety Management Plan shall be an integral part of the CESMP which is submitted to the SRA and the Engineer-Supervisor for their review and approval prior to the start of any activities on site.

The Contractor will have to ensure that all workers are familiar with the contents of the plan. Depending on the duration of construction the plan may also need to be evaluated regularly to ensure that it conforms to current operation and conditions. To ensure effectiveness of such plan it will be essential that all personnel know their respective responsibilities. The plan should address the following:

- Hazard identification / assessment;
- Emergency resources;
- Communication system;
- Administration of the plan; emergency response procedure;
- Communication of the procedure.

#### **8.6. Road Traffic & Safety Management Plan**

To minimize risks potentially affecting public health and safety during construction the Contractor shall prepare a Road Traffic & Safety Management Plan. This plan shall identify the relevant risks and describe the arrangements envisaged to effectively minimize accident risks associated with construction traffic, construction of structures etc. Typical issues are vehicle and machinery movement; road access; compliance with traffic safety principles; signalization; security of specific sites; construction site arrangements during the night; visibility and dust management etc. Clearly, the arrangements will differ depending on the location and respective activity, e.g. construction inside or outside settlements.

#### **8.7. Grievance Mechanism**

Construction activities will inevitably entail a variety of activities which have potential to result in complaints and grievance. Typical issues that may be of concern to local communities, affected individuals or even to workers could relate to safety, to general disturbance from noise or dust, to

inconveniences caused by the transport of materials, disturbance of access to property or land or even damage to property etc.

To practically deal with such issues and to ensure full compliance with the relevant WB requirements and based on international standards the SRA has established a Grievance Mechanism<sup>5</sup> as part of the Stakeholder Engagement Plan for the Local Roads Improvement Project. This Grievance Mechanism will be fully applicable to all sub-projects under the Local Roads Improvement Project.

Prior to the start of construction information on the relevant practical aspects of the Grievance Mechanism will be communicated to all members of the Contractor's team and also be introduced to representatives of the local communities in due time.

## 9. ENVIRONMENTAL MONITORING PLAN

A Monitoring Plan has been developed to support implementation of the ESMP (Appendix 2).

Monitoring will mainly be the responsibility of the Contractor and the SRA site supervision team. Some regional governmental agencies such as the District Ecological Inspectorates, Health Inspectorates or other public institutions may also be involved in monitoring issues that fall into their areas of responsibility.

The frequency of monitoring varies depending on the respective issue (see Appendix 2). Reporting of monitoring results shall be organized as described in Section 7.3 of this report. Besides the documentation of the actual results monitoring shall also identify the need for corrective actions, such as mandatory actions required by Moldovan environmental legislation, by World Bank EHS Guidelines and/or any mitigation measures imposed by agreements and permits in place, issued by relevant stakeholders.

To maximize efficiency of any site measurements, the following broad approach is proposed:

- Identify the closest / most affected sensitive areas (e.g. residential building; school) by the working sites, regarding air and noise pollution;
- List the Moldovan regulations and WB standards (if any) that define limit values for the mentioned pollutants, in ambient air and residential areas;
- Undertake measurements (air pollutants concentrations, noise levels) in the vicinity of the working sites;
- Compare the measurement results with the regulated limits such as:
  - Limit values;
  - Alert thresholds for sensible utilities (residential areas);
  - Intervention thresholds for sensible utilities (residential areas).
- Propose corrective actions in order to mitigate the environmental issues identified on the working sites.
- Issue a report.

## 10. PUBLIC CONSULTATION AND DISCLOSURE

The procedures for communication such as grievance mechanisms, stakeholder identification and disclosure of information are laid down in the SRA's Stakeholder Engagement Plan (2016) which

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<sup>5</sup> State Road Administration (2016): Local Roads Improvement Project - Stakeholder Engagement Plan

was specifically prepared for the Local Roads Improvement Program. This Plan was formally approved and hence guides the public consultation and information disclosure during the preparation and implementation of the Project.

To ensure successful Project implementation and effective environmental management previous and planned public consultations and information disclosure under the Local Roads Improvement Project are as follows:

#### **10.1. Project Preparatory Period 2014 - 2015**

At the preparatory stage of the Project, the SRA has provided the preliminary version of the Environmental and Social Management Framework (ESMF) in the form of a summary to the MTRI, the Ministry of Infrastructure and Environment, the Ministry of Health, Labor, Social Protection and other relevant agencies for consideration and comment. The full English document and the Executive Summary with all Romanian accompanying tables were posted on the ASD web site on December 1 and 8, 2014 to be widely publicized.

On December 18, 2014, the SRA was consulted on the preliminary draft of the ESMF, and then revised on the basis of comments received. The final version of the ESMF was posted on the ASD website, the information being displayed on the World Bank Infoshop.

#### **10.2. Project Preparatory Period 2016 – 2017**

After the internal review of the Local Roads Improvement Project in 2016, the SRA made adjustments to sub-projects for implementation, and a detailed design contract was signed, including for ESMP Plans for three corridors. As part of the current detailed design process and formal requirements, a further public consultation will be organized to provide information on the Project, the mechanism and the proposed environmental management measures.

Information on this ESMP (Preliminary Version) will be publicly displayed on the SRA website ([www.asd.md](http://www.asd.md)) for comments and suggestions. There, the ESMP will be available for comments for 30 days, according to Moldovan legislation, after publication. Comments received during the new public consultation sessions will be reviewed by SRA and WB specialists. Recorded data on public consultations, including newspaper ads, the list of attending participants will then be attached to this ESMP, then re-posted in the final version on the SRA website and the World Bank Infoshop.

## APPENDIX 1: ENVIRONMENTAL MANAGEMENT PLAN

Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost US \$		Institutional responsibility	
SP	C	O	D							install	operate	Install	Operate
				<i>Road rehabilitation works will involve various – yet unspecifiable – contractor activities requiring management of environment, health and safety issues</i>	<p><b>Contractor to prepare a Construction Environmental and Social Management Plan (CESMP) and obtain approval thereof the SRA / SE prior to start of works. The following issues are to be addressed as a minimum:</b></p> <ol style="list-style-type: none"> <li>1. Contractor's Environmental Management System;</li> <li>2. Pre-construction planning (topsoil removal and temporary storage; temporary protection of roadside trees);</li> <li>3. Health &amp; Safety Management Plan; (including incident management, trainings, performance reporting, medical treatments, hazardous operations, emergency etc.);</li> <li>4. Site and Camp establishment - if any – and operation (siting, topsoil clearing; camp establishment, effluent; waste management; fires; demobilisation);</li> <li>5. Waste / hazardous waste management (general waste generation; Waste separation and transport; Waste storage, handling &amp; disposal (incl. hazardous waste; disposal etc.);</li> <li>6. Fire safety;</li> <li>7. Oil and fuel &amp; chemicals management;</li> <li>8. Spill prevention and response;</li> </ol>			CESMP complete approved is and	During Project Preparation / mobilisation	22 000	n.a.	SRA	n.a.



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				<p>9. Mobile asphalt plant (site preparation; site management; operation; demobilisation);</p> <p>10. Resource management (incl. energy, water, aggregates, living resources);</p> <p>11. Sites proposed for material extraction*; material storage;</p> <p>12. Materials (handling and transport; spill management; storage; traffic machinery and equipment accidents);</p> <p>13. Logistics management (vehicle and machinery movement; road access; travelling speed; compliance with traffic safety principles);</p> <p>14. Vehicle and equipment maintenance (vehicle washing; effluent handling methods statement; refuelling; fuel and lubricant handling);</p> <p>15. Protection of roadside trees / tree plantations;</p> <p>16. Site rehabilitation;</p> <p>In developing the CESMP the CC will be responsible to ensure compliance of the proposed approaches with the applicable legislation and best practice. The plan will be updated periodically as appropriate.</p>								
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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				<b>Road safety during construction</b> During construction the CC will be responsible for the safe management of traffic and for safety of the public space in the construction-affected settlements – both during and out of working hours	<b>Prepare a Road Traffic &amp; Safety Management Plan.</b> <ul style="list-style-type: none"> <li>Identify the various types of risk for road users / users of public space in villages that may occur during the various stages of construction. The Plan shall specify temporary measures to address any of these risks as appropriate at any stage of road rehabilitation;</li> <li>Plan to include measures both inside and outside settlements; measures for securing construction sites during and out of working hours; specific measures during the winter as appropriate;</li> <li>Obtain approval of the Plan from Rayonal Road Police (Politia de Patrulare) prior to the start of construction</li> <li>Timely inform the public on construction schedules and actively communicate with the local authorities.</li> <li>Inform all construction workers on the provisions of the plan;</li> <li>Deliver toolbox talks as 'continued training' for the workers and following any significant incident; strictly enforce its provisions;</li> </ul>	Site checks	Throughout construction site	Road Traffic & Safety Management Plan is prepared and approved by Rayonal Road Police ( <i>Politia de Patrulare</i> )  Workers are informed and trained on the provisions of the Road Traffic and Safety Management Plan		Work specs	n.a.	CC	CC
				<b>Temporary construction activities and material</b>	<ul style="list-style-type: none"> <li>Share timely and comprehensive information</li> </ul>	Stakeholder consultation	Throughout construction	All stakeholders are aware of the	Prior to start of	Work specs	n.a.	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				<i>transport have potential to cause nuisance and give raise to complaint</i>	on the relevant practical aspects of the agreed Grievance Mechanism with a) stakeholders b) all responsible team members		site	Project Grievance Mechanism and its provisions	construction				
				<b>Siting, construction and operation of Contactor's yard / camp (e.g. with offices; workshop; material storage areas and staff accommodation facilities - if any<sup>6</sup>)</b>  Creation of pollution & health and safety risks through inappropriate storage and handling of hazardous materials and waste;  Risk of temporary nuisance or impact on public health and well-being;  Site impact (vegetation loss, erosion, soil contamination, water pollution etc.)	<ul style="list-style-type: none"> <li>• <b>CESMP</b> to address the site-specific environmental management aspects such as siting, site preparation, design, temporary operation and rehabilitation of the site upon completion of construction;</li> <li>• Consult with local officials prior to site selection; Site selection to observe relevant criteria to primarily protect the general public and sensitive environmental receptors.</li> <li>• Obtain approval from SRA / SE and responsible local authorities;</li> </ul>	Site inspection	-,-	The valid permit / approval is available prior to the start of operations	Prior to start of construction	Work specs	n.a.	CC	CC
					General guidelines for site selection may include but are not limited to: <ul style="list-style-type: none"> <li>• Ensure adequate distance to nearest residential area. to minimize interference with the environment and the well-being of local</li> </ul>	Site inspection	-,-	The valid permit / approval is available prior to the start of operations	Prior to start of construction	Work specs	n.a.	CC	CC

<sup>6</sup> Note that the SRA explicitly encourages Contractors to accommodate the workforce in the local villages and to possibly use existing industrial facilities in the region

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					communities (e.g. noise, dust, vibration etc.); <ul style="list-style-type: none"> <li>Consider prevailing wind directions to minimize risk of nuisance;</li> <li>Limit size of to the absolute minimum to minimize need to clear vegetation;</li> <li>Provide appropriate drainage;</li> <li>Paved areas, incl. vehicle parking areas, workshop and fuel storage areas are to drain to an oil and water separator;</li> <li>Fuel storage areas are not located within 20m of a water course;</li> <li>Contractor facilities are to be contained within an adequate security fence.</li> </ul>								
					<ul style="list-style-type: none"> <li>Ensure full compliance of all proposed site arrangements, procedures and activities with the provisions of GD No 80 of 09.02.2012.</li> </ul>								
					<ul style="list-style-type: none"> <li>Restore and clean-up site upon completion of construction in line with the provisions of the approved CESMP</li> </ul>	Monitor implementation	Contractor's yard	Site cleaned up in accordance with approved CESMP	Completion of construction works	Work specs	n.a.	CC	CC
				<b>Worker's Health &amp; Safety</b> Creation of health risk for staff handling hazardous materials	<ul style="list-style-type: none"> <li>Provide such training as appropriate to ensure that the staff handling potentially hazardous substances at the site is aware of potential risks associated to their</li> </ul>	Site inspection; interviews	Contractor's yard / construction sites	All staff handling hazardous materials is has been trained on potential risks	Throughout construction	Work specs	n.a.	CC	CC



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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					activities and knows how to protect themselves								
				General health and safety risks at the construction site	<ul style="list-style-type: none"> <li>Equip all workers with appropriate personal protective equipment (PPE) in accordance with the applicable standards / legal requirements / best practice and ensure that PPE will be appropriate to the risks of the individual work place (e.g. high-visibility safety apparel; boots; gloves; hard hats; ear plugs; goggles etc.);</li> <li>Ensure that PPE will be worn by workers at all times.</li> </ul>	Monitor compliance	Throughout construction site	<p>All workers wear the required PPE in accordance with the risk of their work place at all times;</p> <p>Stock of PPE available on site.</p>	<p>Throughout construction</p> <p>Prior to the start of works;</p>	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Prepare an Emergency Response Plan. The distance to the nearest hospital is to be taken into consideration when setting up this plan;</li> </ul>	Monitor compliance	Contractor's office	A comprehensive, approved emergency response plan is in place and known to the responsible staff	Prior to the start of works;	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Keep basic first aid equipment at the construction camp;</li> </ul>	Monitor compliance	Construction camp	Basic aid equipment available at the contractor's yard or camp	Throughout construction	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Provide basic safety training on the risks of the individual workplace to all members of the construction crew;</li> <li>Brief workers on arrangements for first aid and cases of emergency;</li> </ul>	Interviews with workers	Construction site; Contractor's yard; mobile asphalt plant	All workers are aware of the risks associated to their respective work place and are familiar with	Prior to the start of works and throughout construction	Work specs	n.a.	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					<ul style="list-style-type: none"> <li>Repeat at such intervals as appropriate</li> </ul>			available first aid arrangements					
					<ul style="list-style-type: none"> <li>Provide mobile toilets at appropriate locations along the route and ensure proper service intervals. Service contract to be signed with an approved service agent;</li> </ul>	Site inspection	Construction site	Mobile toilets are available on site; Service agreement with licensed sub-contractor is in place; Regular servicing takes place as per agreement	Throughout construction	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Generally, ensure timely proper implementation of all necessary arrangements and activities in compliance with any other issues specified in the applicable national legislation (e.g. Government Decision No 80 of 09. February 2012 on health and safety management)</li> </ul>		Construction site and all temporary and mobile facilities	Compliance with provisions of the legislation	Prior to the start of construction; during construction	Work specs	n.a.	CC	CC
				<b>Construction materials</b> Sourcing of materials	<ul style="list-style-type: none"> <li>Construction materials will be exclusively sourced from quarries and borrow sites that hold appropriate license under Moldavian legislation;</li> </ul>	Check permits / licenses; monitor compliance	Borrow sites and quarries	Contractor holds all required permits / licenses	Prior to the start of works / during construction works	Work specs	n.a.	CC	CC
				Transportation of construction materials by heavy trucks has potential to cause nuisance through	<ul style="list-style-type: none"> <li>Carefully select haul routes to minimize nuisance of local residents through noise and dust and to possibly</li> </ul>	Check approved method statements on material	Haul routes	Selected haul routes avoid					

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SF	C	O	D							install	operate	Install	Operate
				noise and dust pollution and also to create road safety hazard;	minimize risks of road safety – especially when passing through villages	transport, monitor compliance		sensitive areas					
				Transportation of construction materials such as soil, bitumen, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc. has potential to cause nuisance and soil and water contamination through accidental spillage	<ul style="list-style-type: none"> <li>Carefully plan construction works to minimize pollution risk through accidental spillage or accidents;</li> <li>Ensure proper condition of transport vehicles at all times;</li> <li>Train workforce on proper management practices and safe handling and transport of materials;</li> <li>Avoid overloading and / or effectively cover haul trucks;</li> <li>Ensure prompt clean-up of any spills of construction materials.</li> </ul>	Monitor compliance		All haul trucks are in proper technical condition and properly loaded and / or covered; No major spillage of construction materials					
				<b>Construction water</b> The need for construction water and water for dust management may cause ecological damage or create conflicts through competing interests with the needs of the local communities	<ul style="list-style-type: none"> <li>Identify the most appropriate source of construction water and obtain approval from local authorities on location and quantities for abstraction prior to the start of operations</li> </ul>	Check permit; monitor compliance	Construction site; approved water abstraction point	Water abstraction permit available; compliance with permit provisions	Prior to the start of works	n.a.	n.a.	CC	CC
				<b>Air quality impact through construction emissions and side activities</b> Temporary impact on air quality through increased emissions from construction traffic and equipment, potentially affecting local	<ul style="list-style-type: none"> <li>CC to ensure that all construction equipment and</li> </ul>	Monitor implementation	Throughout construction site			n.a.	n.a.		

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				residents, road users and the construction crew;	vehicles will be in proper technical condition at all times; <ul style="list-style-type: none"> <li>• Ensure regular maintenance and servicing of all construction machinery and haulage trucks throughout construction;</li> <li>• Strictly implement speed controls - especially within villages;</li> <li>• Strictly require workers to shut down engines that are not directly needed.</li> </ul>			No vehicles / machinery emitting excessive visible smoke; speed limits are observed; rules for minimizing public nuisance are observed by CC's staff				CC	CC
				Temporary generation of elevated levels of suspended dust through material transport and storage	<ul style="list-style-type: none"> <li>• Cover all trucks carrying fine materials with tarpaulin to minimize dust generation;</li> </ul>	Monitor implementation	Throughout construction site	All haul trucks transporting fine materials are covered				CC	CC
					<ul style="list-style-type: none"> <li>• Sprinkle construction site and haul routes as appropriate / as directed by the Engineer during dry periods or in case of complaints;</li> <li>• Ensure that only approved sources of water will be used for dust management;</li> </ul>	Monitor implementation		No dust nuisance / roads are sprinkled on time and at appropriate intervals		n.a.	n.a.	CC	CC
				Burning of construction waste	<ul style="list-style-type: none"> <li>• Cover all fine material stockpiles materials or take other precautionary measures as appropriate or directed by the SE to minimize dust pollution effects;</li> <li>• Ensure no burning of waste is undertaken without the consent of the Engineer</li> </ul>	Monitor implementation	Throughout construction site	Material stockpiles are covered / no obvious dust pollution originating from material stockpiles at any time		n.a.	n.a.	CC	CC



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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					<ul style="list-style-type: none"> <li>CESMP to cover all phases of the operation, i.e. site preparation, operation and decommissioning of the asphalt plant. The CESMP shall detail the site proposed for the temporary accommodation, site preparation and operation of the asphalt plant and describe the initial site conditions and environmental management arrangements proposed to minimize pollution risks and to control health and safety risks in line with the applicable national regulations, standards and best practice procedures.</li> </ul>	Check SSEMP and monitor implementation	-,-	Approved CESMP & permit are available and agreed management measures duly implemented				CC	CC
				Risk of temporary nuisance of local residents through asphalt plant operations	<ul style="list-style-type: none"> <li>Site for mobile asphalt plant to be located at a minimum distance of 500m downwind of potential sensitive receptors (dwellings);</li> </ul>	Site check	Proposed site for asphalt plant / nearest settlements	Mobile asphalt plant is located at a minimum distance of 500m downwind of potential sensitive receptors	Prior to the start of construction works	n.a.	n.a.		
					<ul style="list-style-type: none"> <li>Obtain approval for selected site from responsible authority prior to start operations</li> </ul>	Check availability of permit;	Proposed plant site	Site works compliant with permit	Prior to the start of construction works	n.a.	n.a.	CC	CC
				Generation of solid and liquid waste	CESMP to address management and proper handling of solid and liquid waste from asphalt plant operations. This aspect will need proper control and	Site checks; CESMP compliance	Plant site	Waste management arrangements are in place and functioning in compliance with	Prior to the start of construction works	n.a.	n.a.	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					monitoring during the full duration of the existence of the asphalt site. All legal provisions and best practice approaches are to be complied with.			SSEMP provisions					
				<b>Damage to land / soils due to:</b> <ul style="list-style-type: none"> <li>- Land reclamation for siting of the mobile asphalt plant, if needed / reduced land use options;</li> <li>- Site preparation works / earthworks;</li> <li>- Construction of temporary access roads.</li> </ul> <p>Impact on soil structure due to vehicle traffic and temporary storage of construction materials (cement-concrete slabs, gravel, etc.) in the immediate vicinity of road rehabilitation works;</p> <p>Accidental soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the vicinity of the mobile asphalt plant;</p> <p>Land damage / soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transport and laying.</p>	<ul style="list-style-type: none"> <li>• Removal and storage of top soil for subsequent site rehabilitation as required;</li> <li>• Implementation of other site management measures in compliance with provision s of the approved CESMP</li> </ul>	Site check	Proposed plant site	<p>Topsoil has been removed and properly stored in line with provisions of the CESMP</p> <p>Site permit is available and the proposed management measures duly implemented in compliance with CESMP provisions</p>	At the start of site preparation works	n.a.	n.a.	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				Increased risk of fire	<ul style="list-style-type: none"> <li>CESMP to address increased fire risk by appropriate safety provisions</li> <li>Waste is not allowed to burn on site.</li> </ul>	Site checks; CESMP compliance	Plant site	Firefighting equipment is in place and in proper condition in compliance with CESMP provisions	Start of construction	n.a.	n.a.	CC	CC
				<b>Construction noise impact</b> Temporarily elevated noise levels through the operation of heavy equipment; potential noise impact on specifically sensitive receptors  Disturbance of local residents in village sections along the project route	<ul style="list-style-type: none"> <li>In case that noisy construction activities are unavoidable and likely to affect communities or other sensitive receptors CC to provide timely information on the location and schedule to the local authorities.</li> <li>Within settlements restrict noisy construction activities and material transport to the period Monday to Friday 8.m. - 5a.m.; on Saturdays 8 a.m. to 3 p.m. Where schools may be affected shift work to the afternoon when lessons are finished (probably after 3p.m.).</li> <li>Suspend construction activities during public holidays</li> <li>Should unavoidable out-of-hours work occur local residents shall be given timely notice.</li> </ul>	Monitor implementation; Interviews with officials or local residents	Village sections of Project route	Local communities have received timely information about the construction schedule  No construction taking place on evenings / weekends / holidays	Construction inside villages	n.a.	n.a.	CC	CC
				Operation of noisy construction equipment	Control construction noise at source, especially when working in in villages, e.g.	Monitor implementation	Village sections of Project route						

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					<ul style="list-style-type: none"> <li>Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site;</li> <li>Enclose noisy equipment / use silenced construction equipment for specifically noisy operations while working inside settlements / near to sensitive receptors (e.g. vicinity to hospital, schools, kindergarten);</li> <li>Avoid idling of vehicles and minimize use of horns.</li> </ul>								
				<b>Impairment of access; public nuisance resulting from earth works and drainage construction; disruption of access to land and properties</b>	<ul style="list-style-type: none"> <li>Take appropriate provisions for alternative access and provide such local facilities as to ensure all time accessibility of relevant assets including agricultural land;</li> <li>Within village sections clean-up muddy road sections at such intervals as to minimize nuisance and as directed by the SE.</li> </ul>	Visual inspections	Village sections	All properties / facilities are properly accessible throughout construction; no muddy road sections; no complaints		n.a.	n.a.		
				<b>Impact on local water resources</b> Pollution risk through contaminated runoff / erosion / accidental spillage / inadequate storage of construction materials or unmanaged construction waste disposal	<ul style="list-style-type: none"> <li>Provision of appropriate drainage of all work sites throughout the construction period;</li> <li>Cover storage areas for construction materials;</li> <li>Ensure proper management of any solid or liquid construction waste throughout the construction period in accordance with the approved CESMP on</li> </ul>	Monitor implementation	Throughout construction site			n.a.	n.a.	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				<b>Demolition of drainage structures; construction of new culverts may cause pollution of local streams / rivers</b>	<p>construction waste management and applicable national legislation;</p> <ul style="list-style-type: none"> <li>Consult with local officials to identify possible areas for the temporary storage of waste</li> <li>As much as possible construction should be undertaken during the low flow season to minimize the threat of water contamination;</li> <li>Excavation should be done such as to minimize stockpiling of materials near flowing water;</li> <li>Appropriate protection should be provided to prevent soil materials to be washed away.</li> <li>Cutting riparian vegetation shall be reduced to the minimum required to implement the works.</li> <li>The discharge of sediment laden construction water directly into surface watercourses or ponds will be forbidden.</li> <li>Sediment laden water will be discharged into settling lagoons and tanks prior to final discharge.</li> <li>Where construction takes place close to surface streams mobile toilets shall be provided at the work site on stable ground and at</li> </ul>	Monitor implementation	Construction sites of new drainage structures	Protective / precautionary measures are implemented at the site		n.a.	n.a.	CC	CC



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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					appropriate distance from the river / stream in line with the applicable legislation and regular servicing ensured.								
				<b>Pollution risk for local groundwater wells</b> Potential impact on local – partly uncovered - groundwater wells through dust and other air pollutant or through surface runoff; spillage of harmful substances in case of accidents	<ul style="list-style-type: none"> <li>• Provision of appropriate cover for all local groundwater wells in the potential area of influence that are yet unprotected;</li> <li>• Provision of appropriate storm water drainage arrangements.</li> </ul>	Inspection	Local wells along the Project route or any haul route	All wells are safely covered, and appropriate drainage provided at site	Prior to the start of construction			CC	CC
				<b>Soil erosion</b> Earth works and the utilization of heavy construction equipment entail the risk to cause soil erosion and indirectly destabilize adjacent areas	The CC is responsible to ensure that erosion is contained by soil conservation and protection methods. The CC will: <ul style="list-style-type: none"> <li>- Reduce the extent of excavations to minimize erosion risk;</li> <li>- Apply soil conservation and soil protection methodologies in sensitive areas to prevent / minimize storm water runoff carrying eroded materials offsite;</li> <li>- Avoid excavations and operating machinery in wet conditions.</li> </ul>	Site checks	Construction site		Site preparation			CC	CC
				<b>Construction waste</b> Demolition and construction and works will generate different types of waste incl.	As part of his CESMP the Contractor will prepare a comprehensive <b>Waste Management Plan</b> . This Plan will establish all types of wastes	Monitor compliance						CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				but not limited to:  - <b>Solid inert waste</b> such as demolition material, concrete, bricks, plastic, metals, bitumen and (shredded tyres) etc.	generated under the Project and identify their respective management along the mitigation hierarchy (avoid; recycle; dispose). As a minimum the following principles will be considered:  1. Whenever feasible viable materials will be recycled (except when containing asbestos). Removed asphalt will be reused on the Project through cold recycling processes; what cannot be recycled shall be managed as directed by the client for temporary storage and subsequent re-use at other road rehabilitation sites 2. Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities. 3. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. 4. Construction waste will be collected and disposed properly in an approved								

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				- Waste oil	registered landfill by licensed collectors 5. Waste oils must not be mixed with other kinds of waste but be separately collected and stored for either recycling/reuse in an environmentally sound manner or disposed of by a licensed contractor in line with the applicable legislation. 6. Records of waste disposal will be maintained as proof for proper management. 7. No temporary storage of waste in flood-prone areas. 8. Regular transportation of construction materials will be carried out without stockpiling of large batches of materials at construction sites.								
				<b>Vegetation clearance (trees; shrubs)</b> Impact on bird nesting	Schedule / execute the clearance of trees and shrubs outside the bird nesting period, i.e. restrict clearance to the period from mid' August to mid-March	Site checks	Construction site	No tree felling occurs during sensitive period		n.a.	n.a.	CC	CC
					Temporary storage of cleared materials in heaps of manageable size in accordance with disposal or re-use requirements;	Site checks	Construction site	All cutting materials are appropriately stored					

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				<b>Impact on existing roadside trees</b> Unavoidable tree losses:  477 trees, Ø 10-60cm	<b>Records of unavoidable losses of roadside trees</b>  Do not apply	Site checks	Construction site	No tree felling occurs				CC	CC
				<b>Based on design information the total unavoidable tree losses will be</b>  477 trees, Ø 10-60cm	<b>Compensation of tree losses: Upon completion of construction compensate all tree losses (planned and unintended) through new plantations within the RoW;</b> <ul style="list-style-type: none"><li>Unintended / accidental tree losses will be replaced at a ratio of 3:1 at the CC's own expense.</li></ul>	Appropriate clause to be included in the contract documents;  Check new plantations completed upon finalization of works	Work corridor alongside Project roads	All three losses were successfully replaced at the defined ratio					
				<b>Unintended damage of roadside trees</b> Construction and related activities may result in unintended direct or indirect damage and in the unfavorable case in the loss of roadside trees that grow close to the construction corridor (note that SRA considers a damaged tree to be 'lost' when 30% of the branches have been damaged!).	Plan and adopt such operational strategies as appropriate to avoid accidental losses / damage to trees. Describe the proposed approaches in a separate Method Statement (or as part of the CESMP) for the protection of roadside trees and seek approval from the SE. The measures could include but may not be limited to the following <ul style="list-style-type: none"><li>Temporary fencing of trees / groups of trees. for preservation</li></ul>	Monitor compliance	Construction site	All restrictions are duly considered, and accidental direct or indirect damage of existing roadside trees is effectively avoided					

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
					<p>Within a radius of 1.5m around the dripline of existing roadside trees CC to avoid or at least effectively minimize the following activities:</p> <ul style="list-style-type: none"> <li>• Relocation of utilities;</li> <li>• Driving;</li> <li>• Soil compaction;</li> <li>• Excavations;</li> <li>• Temporary storage of <ul style="list-style-type: none"> <li>- fuels</li> <li>- chemicals</li> </ul> </li> <li>• Construction materials / waste.</li> </ul> <p>During the application of bitumen trees and any other woody vegetation will be effectively protected from physical damage.</p> <p><b>Timely protection of tree crowns:</b></p> <ul style="list-style-type: none"> <li>• Trimming of branches where required between late autumn or early spring / outside the breeding period;</li> <li>• Duly consider pivoting range of large construction equipment that may need to be used in the vicinity of existing roadside trees and take appropriate protective measures (e.g. in the context of relocating utilities).</li> </ul>								



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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SF	C	O	D							install	operate	Install	Operate
				<b>Site clean-up / stabilization</b>	<ul style="list-style-type: none"> <li>Site clean-up in accordance with the approved CESMP / site-rehabilitation plan. As a minimum the following shall be undertaken:</li> <li>Rehabilitate all areas disturbed by the work. Provide long-term surface stability by progressively re-vegetating discrete areas of each work site as they are completed.</li> <li>The sites shall be revegetated by <ul style="list-style-type: none"> <li>Raking or loosening any compacted ground surface areas identified for vegetation cover;</li> <li>Re-spreading stockpiled top soil evenly across completed disturbed sites (including over any permanent fill stockpiles) immediately following construction works.</li> </ul> </li> <li>Sites shall be cleaned up by removing all disabled machinery and construction debris from the works areas.</li> </ul>	Site checks	All completed work areas / permanent fill stockpiles	All sites properly re-instated / recovered with top soil				CC	

## ROAD OPERATIONAL STAGE

Note that the following are only very broad and preliminary proposals. More details will be developed by the Project Management Consultant LRIP who will – inter alia - assist SRA in developing a Local Road Planning, Design, Construction and Maintenance Manual. According to the ToR for this task environmental aspects of maintenance are to be addressed in this Manual.

			<b>Maintenance of roadside drainage</b>	<ul style="list-style-type: none"> <li>• Undertake routine inspections and maintenance of drainage structures;</li> <li>• Regularly clean ditches &amp; culverts from rubbish &amp; other material that may obstruct proper functioning;</li> <li>• Provide annual funds &amp; establish procedures to provide prompt repair of roadside drainage in case of failure.</li> </ul>
			<b>Routine maintenance of roadside plantations; aftercare for new plantations</b>	<p>Undertake seasonal inspections and routine maintenance of roadside trees in the RoW (e.g. early spring / autumn) to include the following:</p> <ul style="list-style-type: none"> <li>• Seasonal trimming of trees as appropriate to ensure road safety &amp; avoid damage on utility lines;</li> <li>• Monitor the condition of all plantations within the RoW;</li> <li>• Replace any failed plantations during the following planting season (autumn / spring);</li> <li>• Acquire, use &amp; maintain appropriate gear &amp; equipment for undertaking routine management of roadside vegetation;</li> <li>• Develop &amp; adopt safety standards for the execution of vegetation maintenance</li> </ul>
			<b>Management of landslide areas</b>	<ul style="list-style-type: none"> <li>• Undertake routine inspections of known landslide areas &amp; take measures as appropriate to ensure long-term road stability;</li> <li>• Monitor &amp; rectify any new landslips or failure of existing protective plantations.</li> </ul>
			<b>Maintenance of road furniture</b>	<ul style="list-style-type: none"> <li>• Inspect road furniture on a regular basis to identify, record and rectify any damage;</li> <li>• Immediately replace failed or damaged devices.</li> </ul>
			<b>Road safety</b>	<ul style="list-style-type: none"> <li>• Monitor any black spots with increased numbers of accidents that may occur over time;</li> <li>• Analyse causes and take corrective measures as appropriate to increase road safety</li> </ul>

## APPENDIX 2: ENVIRONMENTAL MONITORING PLAN

The following Environmental and Social Monitoring Plan (ESMP) distinguishes:

- Environmental monitoring based on lab analyses and site monitoring; and
- Environmental monitoring based on visual observations made during site checks.

Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility / Cost
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LAB ANALYSES / SITE MONITORING						
Soil contamination	Hydrocarbons contaminations	Areas most vulnerable to the discharge of hydrocarbons	Appoint accredited lab to test soil conditions (total hydrocarbons from oil products)	1 x prior to start of works; 1 x upon completion of construction – same sites	<ul style="list-style-type: none"> <li>• To establish a reference for the assessment of construction impacts;</li> </ul>	Contractor costs. CS to approve sampling points and reports
Ambient air pollution	Ambient air quality during peak construction activities	Potentially most affected residential areas, closest receptors - probably school, hospital or kindergarten, houses on roadside;	Appoint accredited lab to test NO <sub>x</sub> , CO, SO <sub>2</sub> , VOC, PM10 content in ambient air	1 x prior to start of works  1 x at the peak of construction inside each village affected by	<ul style="list-style-type: none"> <li>• To encourage the minimization of pollution and resulting nuisance;</li> <li>• to enforce legislation</li> </ul>	Contractor costs. CS to approve sampling points and reports

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		pedestrian areas		construction		
Ambient noise pollution	Ambient noise levels during peak construction activities – compliance with maximum exposure limit of 70 dBA	Most affected residential areas along the Project route or along any haul route where residents may be affected by noise from transport trucks - probably school, hospital or kindergarten	Noise levels (dB <sub>A</sub> ); Handheld equipment (analyzer) with application software	During noisy construction operations inside settlements / close to sensitive receptor		Contractor costs.  CS to approve sampling points and reports
Drinking water quality:  Permanent risk of impact on local water resources due to proximity of wells to the road edge	Water quality from selected wells located close to the road edge. Quality: NO <sup>3</sup> , NO <sup>2</sup> , NH <sup>4</sup> , CL <sup>-</sup> , hardness: CaCO <sup>3</sup> , SO <sup>4</sup> , pH, E. coli, total coliforms	Wells close to the road edge along C16:  (as highlighted in the list in Appendix 3).	Appoint accredited lab to take probes, test water quality (NO <sup>3</sup> , NO <sup>2</sup> , NH <sup>4</sup> , CL <sup>-</sup> , hardness: CaCO <sup>3</sup> , SO <sup>4</sup> , pH, E. coli, total coliforms) and to assess against national and WHO standards	1 x prior to start of works  1 x upon completion of construction (only at those wells where water was initially found to be suitable for drinking purposes)	<ul style="list-style-type: none"> <li>• To assess current water quality;</li> <li>• To identify wells that are unsuitable for potable water supply;</li> <li>• Depending on results: to close individual wells and provide alternative sources of water supply</li> </ul>	Contractor costs.  CS to approve sampling points and reports
Vibration	Condition of infrastructure susceptible to damage by vibration effects	Infrastructure (e.g. houses, walls, wells etc.) in the immediate vicinity of construction sites or transport routes – especially	Inspection / documentation on the condition of relevant infrastructure (e.g. existing cracks on buildings or other	Once prior to start of works and again upon completion of construction works in respective settlement	To establish a baseline as a reference for potential claims	Contractor with construction supervision engineer visual monitoring; photographic

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		where heavy equipment will be used	physical damage)			documentation
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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate

CONSTRUCTION	MATERIAL SUPPLY					
Asphalt plant	Possession of official permit / valid license	Asphalt plant	Inspection	Prior to start of works	Confirm compliance with environment, health and safety requirements	SE
Stone quarry	Possession of official permit / valid license	Quarry	Inspection	Prior to start of works / during construction	Ensure compliance with LRIP general environment, health and safety requirements	SE
Sand and gravel pit		Sand and gravel borrow pit / separation	Inspection			Borrow pit or separation operator/ SE
Soil for embankment construction		Job site	Inspection			Borrow pit operator/ SE
CONSTRUCTION	MATERIAL TRANSPORT					
Asphalt	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly	Ensure compliance of performance with environment, health and safety	CC <sup>7</sup> /SE

<sup>7</sup> Here, CC means the CC's environmental manager / specialist

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CONSTRUCTION	MATERIAL SUPPLY					
Stone	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly	requirements to minimize disruption of road traffic	CC/SE
Sand & gravel	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly		CC/SE
Soil	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly		CC/SE
Transport routes	Compliance with approved transport routes as per CC's Method Statement	Job site	Supervision	Unannounced inspections at least once weekly	Minimize nuisance for local residents and road users	CC/SE

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate

CONSTRUCTION	CONSTRUCTION SITE					
Noise impact (neighboring population; workers)	Noise levels (dB(A))	Most affected residential areas workplace	Handheld equipment (analyzer) with application software	Maximum noise impact period during construction in settlements;  in case of complaint. If the results are unsatisfactory undertake weekly measurements	Ensure compliance of performance with environment, health and safety requirements to minimize noise nuisance	CC/SE
Vibration	Effects of vibration on properties	Properties as indicated by owners	Visual inspection	Upon complaint	Avoid any claims of owners for physical damage caused by vibrations	CC/SE
Dust impact	Air pollution (suspended particles)	At job site and in particular in residential areas;  at potentially affected schools	Inspection / visual observation	Unannounced inspections during delivery of materials and during construction; upon complaint	Ensure compliance of performance with environment, health and safety requirements;  minimize nuisance & health impact for workers	CC/SE

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Traffic disruption	Traffic disruptions; problems	At and near job site	Visual inspections; observation	Once per week at peak and non-peak hours	Requirement to minimize traffic disruption during construction	CC/SE
Access to private property / land / public facilities	Problems	Job site	Supervision	Random checks minimum weekly during construction activities	Requirement to minimize nuisance and disturbance	CC/SE
Vehicle and pedestrian safety when there is no construction activity	Visibility; safety	At and near job site	Observation	Random checks at least once weekly in the evening	Requirement to ensure safe conditions at all times	CC/SE
Water and soil pollution from inappropriate material storage, management and use	Problems; compliance with approved site management plan	Job site; contractor's yard	Inspection; observation	Unannounced inspections	Ensure compliance of performance with approved CESMP;  minimize nuisance & health impact for workers	CC/SE

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate

Worker's health & safety	Appropriate PPE is worn by all workers; organization of bypassing traffic / securement of work site; availability of potable water and mobile toilets for workers; Incidences; accidents	Job site	Inspection	Unannounced inspections during work.	Minimize risk for worker's health and safety	CC/SE
Tree plantations	Successful tree plantations / number of healthy trees growing. Replacement of any failed trees	Along the route	Inspection	Towards the end of construction	Ensure complete and successful replacement of all vegetation losses	CC/SE
OPERATION	MAINTENANCE					
In accordance with the LRIP framework arrangements a Project Management Consultant has been contracted who will – among other things - prepare a Maintenance Manual which will also address environmental aspects to be considered during maintenance.						
OPERATION	ROAD SAFETY					
In accordance with the LRIP framework arrangements a Project Management Consultant has been contracted who will – among other things – assist SRA and LPAs to conduct road safety inspections on all local roads						



### APPENDIX 3: LIST OF ENVIRONMENTAL AND SOCIAL OBJECTIVES RECORDED ALONG THE PROJECT ROAD

#### Inventory Data for Environmental and Social Objectives

Km.	Name/type of identified object	Roadside, distance from centerline (m)	Road side
0	Beginning of. corridor, crucifixion	12	right
0,4	Beginning of v. Pojăreni		
1.1	Crucifixion	8	left
1.3	Well	8	right
1.9	Monument	20	left
2.0	Stadium, kindergarten	10	left
5	End of pond		left
5.1	Well	5	left
6.6	Well	8	right
7.1	Dam , 15m		left
7.3	Landfill	5	left
7.4	Beginning of v. Costești, well	10	left
7.8	Well, crucifixion	10	left
8.0	Well	5	left
8,0	Well, crucifixion	7	right
8.1	Well	7	right
8.3	Turning to Chișinău, well	7	right
8.4	Well, kindergarten	5	left/ right
8.9	Bus station, agricultural market, bridge		
9.1	House of culture	20	left
9.3	Monument	30	right
9.3	Crucifixion, well	10	left
9.5	Sports Complex	10	left
10.0	School	15.0	left
10.2	Culvert		
10.3	Well, crucifixion	8	left
10.4	Well	8	right
10.4	Turning of road		
10.7	Well, crucifixion	9	right
10.8	Chanel, bridge over r. Botna		
11,8	Well	10	left
11.9	Smalls ponds	20	right
13.4	Culvert, gas pipeline		
15.3	Well		right
15.5	Culvert		

<b>Km.</b>	<b>Name/type of identified object</b>	<b>Roadside, distance from centerline (m)</b>	<b>Road side</b>
15.6	Beginning of v. Zâmbreni		
15.7	Well, bus station	12	right
15.9	Well	5	left
16.2	Well	8	left
16.5	Well , culvert	8	right
16.7	Bus station		right
16.7	Well	8	right
16.8	Bus station, well	10	left
16.9	Well	9	left
17.0	House of culture, bus station		left
17.0	Mayoralty	20	left
17.1	Well	10	left
17.3	Well	10	left
17.5	Well	12	left
17.7	Winery	15	right
17.8	Beginning of v. Horești		
17.8	Culvert		
18.3	Culvert, bus station		right
18.5	Well	5	left
18.6	Well	10	right
18.7	Well	7	right
18.8	School	15	left
18.9	Well	7	right
	Stadium, bus station	8	left
19.0	House of culture	30	left
	Health Center	25	right
19.3	Well	5	left
	v. Horăști		
19.5	Wells - 2	5	left
19.7	Well	5	left
18.8	Bus station	10	right
19.9	Culvert		
19.9	Well	67	left
20.0	Well	8	right
20.1	Well	7	right
20.1	Culvert		
20.2	Well	5	left
20.3	Well	6	left
20.4	Crucifixion	6	right
20.8	Bus station, well	7	right
20.9	Culvert		
21.1	Well, crucifixion	5	left
21.3	End of v. Horăști, culvert		
21.8	Well	8	left
24.3	Culvert		
24,7	Crucifixion	8	right

<b>Km.</b>	<b>Name/type of identified object</b>	<b>Roadside, distance from centerline (m)</b>	<b>Road side</b>
24.9	Old poplars, railways		
26.4	Well , culvert	15	left
26.7	Culvert		
26.9	Landfill		right
	V. Țîpala		
27.8	Beginning of village		
27.9	Water Castle	15	left
28.8	Crucifixion, church	8	left
28.9	Well	15	left
29.2	Well	10	left
29.3	Well, crucifixion	15	right
29.4	Mayoralty	30	left
29.5	Monument, park	10	left
29.8	Well	8	right
29.9	Bus station		right
30.0	Well	8	right
30.1	Well	10	right
30.2	Well	10	right
30.3	Bus station	7	right
30.3	Well	10	right
	Well	10	left
30.4	Well, crucifixion	10	left
30.5	Well, culvert	5-6	right
30.9	End of v. Țîpala		
31.1	Crucifixion		
31.2	Well, culvert	6	left
	Poppy Road		
31.9	Well	12	left
33.5	Forest		
34.9	End of Corridor		

Source: Consultant own records (data remain to be specified)

#### APPENDIX 4: SUMMARY OF REPUBLIC OF NATIONAL ENVIRONMENTAL LEGISLATION AND RELEVANCE TO THE PROJECT

Law/Code	Year	Relevance to the Project
Land Code	1991	Stipulates that in designing, siting, constructing, and implementing new and re-constructed objects, land protection must be considered and implemented.
Law on State Land-Tenure Regulations, State Land Survey and Land Monitoring	1992	Deals with land tenure and land-use regulations – this law may become relevant in the context of land acquisition.
Law on Environmental Protection	1993	Stipulates - among other things - that construction, re-construction, and modernization of public facilities are subject to ecological expertise procedures and that certain activities, some of which are envisaged under the Project, require permits.
Law on Roads	1995	Provides for specific conditions to be adhered to in road design.
Law on Water Protection along Rivers and Lakes	1995	Establishes water protection zones along rivers, streams and lakes and provides rules for their protection.
Law on Ecological Expertise	1996	Provides for the environmental assessment of projects
Forest Code	1996	Stipulates that in designing, constructing, and implementing new and re-constructed objects, rehabilitation and forest protection must be planned and implemented.
Law on Atmospheric Air Protection	1997	Requires maintaining standards of air quality and regulation of measures for air pollution management.
The Law on Regime of Harmful Products and Substances	1997	Addresses licensing, production, storage, transportation, and use of harmful substances that may be used in road construction works.
Law on Natural Resources	1997	Provides for the protection of natural resources – this law will be relevant in the context of land clearance.
Law on the Payment for Pollution of the Environment	1998	Provides a system of economic activities that makes it unprofitable to inflict any damage to the environment, thereby minimizing volumes of pollutant emissions and discharges into environment.
Code on Subsoil / Mineral Resources	1993/2009	Regulates the exploitation of mineral resources in the country and specifies the roles and responsibilities of different involved parties in this process.
The Regulation on Access to Information,	2000	Provides for the participation of the public in

Public Participation in Decision Making and Access to Justice in Environmental Matters		the decision making
Water Law	2011	Ensures sustainable water use and protects water resources from pollution and contamination during the construction of new facilities.
Law on Environmental Impact Assessment	2014	Provides the framework for environmental impact assessment of certain private and public projects or certain planned activities and establishes the principles and procedures for the prevention and mitigation of potential impacts on the environment and public health at the initial project stages.
Road Transport Code	2014	Provides the legal framework for organizing and arranging road, freight and passenger transport as well as any other activities related to transport activities in Moldova, in a safe and appropriate manner following competitive principles and environmental protection measures
Law on Waste	2016	Provides the state policy, legal basis, and necessary measures for the protection of the environment and public health through the prevention or reduction of adverse effects resulting from waste generation and management, through mitigating general effects resulting from the use of natural resources and through increasing the efficiency of their use. The Law will be in force as of December 2017.
<b>Legislation on Labor, Occupational Health &amp; Safety</b>		
Labor Code	2003	Governs all individual and collective labor relations, enforcement of regulations in the field of employment, labor jurisdiction, and other relations directly related to labor relations.
Law on Safety and Health at Work	2008	Establishes general principles on the prevention of occupational risks, the protection of workers at the workplace, the elimination of risk factors, consultation, participation and training of workers and their representatives, as well as general guidelines for applying the mentioned principles.

**Government Decisions, Instructions, Standards<sup>8</sup>**

- Government Decision on Approval and Introduction of State-Sanitary-Epidemiological Rules and Standards for enterprises producing asphalt-concrete mixtures (2006);
- State standard GOST 17.2.3.01-86. Nature protection. Atmosphere. Air quality control regulations for settlements;
- Temporary Construction Norms 9-79. Guide for environment and land tenure protection measures for the reconstruction of roads in Moldova, 1979;
- Construction Rules D.02.01-96: Roads and Bridges: Requirements for environmental protection during design, construction, rehabilitation, repair and maintenance of roads and bridges. 1996;
- Temporary Construction Norms 18-74. Instructions on the architectural and landscape design of roads. (1975);
- Construction Norms and Rules. 2.05.02-85. Motor Roads.
- Government Decision no 934 of 15 August 2007. Sanitary Norms for the Quality of Drinking Water. (2007).
- Government Decision No 80 of 09. February 2012: Minimum Requirements for the Security and Health at Temporary and Mobile Construction Sites<sup>9</sup>

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<sup>8</sup> Note that some of the mentioned norms and rules date back to the Soviet period. While these are still in force to date the Government of Moldova is now in the process of harmonizing its legislation with EU policies and standards.

<sup>9</sup> This GN is based based on the transcription of EU Directive 92/57/CEE of 24.06. 1992 and Directive 89/391/CEE



## APPENDIX 5: PUBLIC CONSULTATION

Public consultations on LRIP Corridor C16 that will be held in October 2018.

The ESMP is published in Romanian and English language on the website of State Road Administration for soliciting comments and suggestions.

<http://asd.md/blog/consultari-publice.html>

Also public announcements were placed on project Facebook page several days before public meetings on September 27 and October 5, 2018:

<https://www.facebook.com/localroads/>

A period of 30 days was announced for receiving of comments and proposals to developed ESMPs. At the end of this period no any writing comments were received on SIMCs address, mayor offices or SRA communication channels.

Hard copies of these documents in Romanian language are accessible to public and at the offices of local authorities of the Project area (e.g the mayor of locality). The disclosure period for the ESMP report were 20 days. Announcements in each locality, on visible places, information boards, schools, mayoralties informed the public accordingly.

Posters with advertisements about the venue, day and hour of public meetings (hearings) for discussing the ESMP document were placed on the billboards of local public authorities, rayon and local sites, schools, shops and other public places.

The public meeting is schedule as follows:

Corridor	Locality	Location	Date	Hour
C16	Costesti	House of Culture	16.10.18	10.00 AM

Total number of participants was 39 for Corridor 16. From which 28% - women and 72% men.

1. **Question:** The population request to install the bus waiting station "Colhoz-Trans" in other location, because there it is? (Rusu Ion, village Țîpala)

**Answer:** ok, will be considered

2. **Question:** If the local roads from Corridor 16 will be used by heavy trucks and machinery, we express our concerns about destroying of asphalt layer and rehabilitation of shoulders? (Țonu Daniel, village Zîmbreni)

**Answer:** ok, will be considered.

3. **Question:** He asked if his village was misplaced from the project because he saw that the name of his village is not in the name of the road. (Chicerman Anatolie, village Pojăreni)

**Answer:** the name of the road is according to the legislation, if your locality it is not in the name of the Road it is not meaning what he is not part of the project.

4. **Question** how transparent will be the tender for selecting the contractor? (Bivoil Emilia, village Costești)

**Answer:** tender is made in accordance with bank policies and national law, so there are no transparency concerns.

### Minutes of meeting

#### Environmental & Social Impact Assessment for Corridor 16

	<b>Date</b>	16.10.2018
	<b>Time</b>	10.00-12.00
	<b>Location</b>	<b>Costești</b>
	<b>Consultants/ moderators</b>	Elena Vlădicescu, Environmental Specialist SRA; Veaceslav Vladicescu, Social and environmental consultant Roughton; Garaba Vladimir, Environmental Expert Obermeyer; George Batalis, Engineer Obermeyer
	<b>No. of participants</b>	39 List of attendance - attached
	<b>Topics presented by Consultant (inclusive PPT)</b>	<ul style="list-style-type: none"> <li>- General information about purpose of ESMP documentation</li> <li>- General information about Project</li> <li>- Detailed design elements of the project in the area of locality</li> <li>- Project's positive involvements on the community</li> <li>- Specific identified possible impacts on the environment and population</li> <li>- Specific mitigation measures proposed.</li> <li>- Grievances redress mechanism</li> <li>- Contact information of stakeholder (environmental specialist)</li> </ul>
	<b>The questions raised and/or received proposals of participants:</b>	<b>Answers / comments of moderators / consultants:</b>
1	<i>The population request to install the bus waiting station "Colhoz-Trans" in other location, because there it is? (Rusu Ion, village Țipala)</i>	<b>Answer:</b> ok, will be considered
2	<i>If the local roads from Corridor 16 will be used by heavy trucks and machinery, we express our concerns about destroying of asphalt layer and rehabilitation of shoulders? (Țonu Daniel, village Zîmbreni)</i>	<b>Answer:</b> ok, will be considered.
3	<i>He asked if his village was misplaced from the project because he saw that the name of his village is not in the name of the road. (Chicerman Anatolie, village Pojăreni)</i>	<b>Answer:</b> the name of the road is according to the legislation, if your locality it is not in the name of the Road it is not meaning what he is not part of the project.
4	<i>How transparent will be the tender for selecting the contractor? (Bivoil Emilia, village Costești)</i>	<b>Answer:</b> tender is made in accordance with bank policies and national law, so there are no transparency concerns.

## Public hearing Corridor 16

### Picture from public hearings village Costești





Corridor 16 public hearings - list of attendance.

Proiectului de Îmbunătățire a Drumurilor Locale în Republica Moldova,  
finanțat de Banca Mondială, implementat de Administrația de Stat a Drumurilor

**Lista participanților**

Consultări publice

Planul pentru Managementul de Mediu și Social

Coridorul 16

Data de 16 Octombrie 2018

Numele, Prenumele	Localitatea	Ocupația (sau funcția)	Semnătura
1. Venerla Vlădicaș	Chiriac	Consultant de mediu	V. Vălcuș
2. Purici Nichita	Chiriac	Inginer ASD	Purici
3. Zieg Zieg	Țipala	Inginer civil	Zieg
4. Cosoi Mariana	Țipala	educator	Cosoi
5. Bezerdie Zinaida	Țipala	secretar APL	Bezerdie
6. Țețiu Maria	Țipala	director LȚȚipala	M. Țețiu
7. Rusu Doru	Țipala	pădurar	Rusu
8. Popot Mihail	Țipala	consilier	Popot
9. Tulbure Mircea	Țimbreu	director-adjunct	Tulbure
10. Nikolas Ana	Țimbreu	secretar Civilizatie	Nikolas
11. Țețiu Andrei	Țimbreu	educator muzical	Țețiu
12. Ionu Daniel	Țimbreu	primar	Ionu
13. Chiceaman Anabelle	Țimbreu	primar	Chiceaman
14. Postica Constantin	Costești	Arhitect - SA	Postica
15. Bivol Constantin	Costești	antreprenor	Bivol
16. Ursu Grigore	Costești	consilier	Ursu
17. Bura Roxana	Costești	SSCOM SRL manager	Bura
18. Bura Parascoara	Costești	consilier	Bura

Numele, Prenumele	Localitatea	Ocupația (sau funcția)	Semnătura
19. Bivol Elena	Costești	șofer SRL „Bivol Elena”	B. Bivol
20. Levinte Vasile	Costești	Pădurar	V. Levinte
21. Gincoba Frodan	Costești	specialist în construcții	F. Gincoba
22. Iulian Mărcău	Costești	specialist în comunicații	I. Mărcău
23. Guzean Vladimir	Costești	intendant electrician	V. Guzean
24. Borza Gheorghe	Costești	mincitor	G. Borza
25. Gheorghe Teodor	Costești	șofer tractor	T. Gheorghe
26. Paralechi Varile	Costești	șofer, Paralechi Varile	V. Paralechi
27. Guzean Andrei	Costești	șofer primar	A. Guzean
28. Luca Petru	Costești	consilier	P. Luca
29. Borza Gheorghe	Costești	consilier	G. Borza
30. Bivol Emilia	Costești	consilier	E. Bivol
31. Tudor Grigorie	Costești	Loc. Luce	G. Tudor
32. Mărcău Iulian	Costești	funcționar public	I. Mărcău
33. Mărcău Andrei	Costești	consilier	A. Mărcău
34. Gheorghe Sima	Costești	consilier	S. Gheorghe
35. Borza Tudor	Costești	ing. Cadastru	T. Borza
36. Levinte Teodor	Costești	șofer	T. Levinte
37. Condurache Elena	s. Horești	director întreprindere	E. Condurache
38. Cigoreanu Petru	s. Horești	Primar	P. Cigoreanu
39. Vlăduțescu Elena	or. Chipinău	Specialist de Mediu	E. Vlăduțescu
40.			
41.			
42.			
43.			
44.			

## APPENDIX 6: REFERENCES

Ministry of Health, Labor, Social Protection of the Republic of Moldova (2011): National Occupational Safety and Health Profile Republic of Moldova. Chisinau, 2011.

Ministry of Transport and Infrastructure (Now Ministry of Economy and Infrastructure)/ State Road Administration (2016): Stakeholder Engagement Plan. Chisinau, 2016

Ministry of Transport and Infrastructure (Now Ministry of Economy and Infrastructure)/ State Road Administration (2015): Local Roads Improvement Project: Environmental and Social Management Framework. Chisinau, June 2015.



## APPENDIX 7: GRIEVANCE REDRESS MECHANISM

The Mayor's Office Secretariat is designated as the **Reception Point** for collecting grievances/complaints from community people from the villages where SIMC operates.

The grievance redress mechanism should be communicated to community people and contact details should be made available to all.

Complaints & grievances will be addressed through the following steps and actions:

- i. First, complaints should be lodged at the Social Impact Monitoring Committee (SIMC) at the local administration offices where resolution will be attempted with the involvement of the Engineer.
- ii. The affected person/s may call Engineer representative directly and make an appointment to discuss their issues. Should the complaint arise from direct fault of Contractor to comply with environmental and social requirements set out by Employer, Engineer will take immediate action for resolution of grievance in the most prompt time by asking immediate rectification from Contractor.
- iii. SIMC shall collect, document and address grievances referred by the local police officer in case community people are not aware of the grievance mechanism established by Engineer and the grievance is filed at the local police office. Accordingly, the local police officer should be informed that citizens can choose addressing their grievance to the SIMC and ask prompt involvement of Engineer in resolving the matter.
- iv. The grievances may be recorded as anonymous, should this be asked by the affected person.
- v. The complaint/grievance will be filed in a template Letter of Complaint, attached hereto.
- vi. If no solution is reached within **14 days**, the affected person/community can further submit their case to the appropriate department of the SRA.

Organisation	Contact person	Telephone number	Email address	Postal address
Engineer	TBN			
	TBN			
	TBN			
SRA	Environmental Specialist			Chisinau, Bucuriei str. 12A MD 2004 Republic of Moldova
Relevant National Authority Refer to the list	TBN			

## Sample of Letter of Complaint

To: Representative of SIMC and Engineer

From: Mr/Mrs. \_\_\_\_\_

Village: \_\_\_\_\_ District \_\_\_\_\_

Please describe in your own words what is the problem you would like to be resolved. Your opinion is very important, so, if you have your vision how to resolve the problem, please give us your suggestion too.

**Problem/issue** \_\_\_\_\_

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**Suggestion/opinion** \_\_\_\_\_

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**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_/\_\_\_\_/201\_\_

**Cut here and give the lower part to the complainant**-----

**This letter of complaint was received by**

(Full name)

(Position)

\_\_\_\_\_ **Village** \_\_\_\_\_ **district**

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_/\_\_\_\_/201\_\_

For records and further action taken by Social Impact Monitoring Committee, keep this part of your complaint letter and bring it every time you are called for review/resolution of your complaint by the Social Impact Monitoring Committee or any other Project party.

**RESOLUTION**

Letter of complaint of Mr/Mrs \_\_\_\_\_, who has been affected by the road rehabilitation activities, living in \_\_\_\_\_ village, district \_\_\_\_\_ was reviewed by the SIMC and forwarded to the Engineer on Date: \_\_\_\_/\_\_\_\_/201\_\_

Summary of the affected person's issue:

Resolution of the issue:

Representative of the SIMC in \_\_\_\_\_ village, \_\_\_\_\_ district

\_\_\_\_\_  
(SIMC representative's full name) (position) Date: \_\_\_\_/\_\_\_\_/201\_\_

Affected person Mr/Mrs \_\_\_\_\_ agreed /  
**disagreed** (please circle what appropriate) with the resolution of SIMC.

\_\_\_\_\_  
(Signature of affected person) Date: \_\_\_\_/\_\_\_\_/201\_\_

If disagreed, please provide the person's reasons for disagreement (if possible).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In case of **disagreement** with the resolution, please advise the affected person to lodge his/her complaint to SRA for further review and recommendations.

