



PROJECT Corridor 5: R13 - Ivanovca - Izvoare – Vanțina - Ocolina - M2 (LRIP/CS/07)	PROIECT Coridorul 5: R13 - Ivanovca - Izvoare - Vanțina - Ocolina - M2 (LRIP/CS/07)
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CLIENT <div style="text-align: center;">  Republic of Moldova </div>	CLIENT <div style="text-align: center;">  Î.S “Administrația de Stat a Drumurilor” </div>
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DESIGN STAGE ENVIRONMENTAL AND SOCIAL	FAZA DE PROIECTARE MEDIU ȘI SOCIAL
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TITLE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	TITLU PLANUL MANAGEMENTULUI DE MEDIU ȘI SOCIAL
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SCALE / SCARA	DOCUMENT NUMBER / DOCUMENT NUMAR 1234-EN-GENR-001-4	DATE / DATA 11 / 2018
	TECH. NO. DESIGN PART NO. REV. PROIECT NR. PROIECT PARTE NR. REV.	

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Corridor 5: R13 - Ivanovca - Izvoare – Vanțina - Ocolina - M2 (LRIP/CS/07)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

11 / 2018

5rth Release

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

CORRIDOR 5, ROAD SECTIONS:

R13 – Ivanovca – Izvoare – Vantina – Ocolina - M2

Section I:

- Road L77 Mândâc – Zgurita – Cainarii Vechi - Mărculești, km 58.17 - 49.14;
- Road L193 Trifănești - Alexandrovca - Izvoare, km 0.00 - 4.00;
- Road L77 Mândâc - Zgurita - Cainarii Vechi - Mărculești, km 43.54 - 41.03.

Section II:

- Road L107 Soroca - Cainarii Vechi, km 0.00 - 19.90



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LIST OF ACRONYMS

asl	above sea level
BD	Bidding Documents
CC	Construction Contractor
CESMP	Construction Environmental Social Management Plan
DBH	Diameter at breast height
BD	bidding documents
EHSM	Environmental Health and Safety Manager
EIA	Environmental Impact Assessment
ESMP	Environmental Social Management Plan
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
MTRI	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 center, 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 neighboring 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 centers, 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 12 corridors. This report on the Environmental Management Plan refers to Corridor 5 located in Florești and Soroca districts.

(See Table 1-1).

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

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 – Țințăreni – 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 – Țipala – 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
Total		294.9	

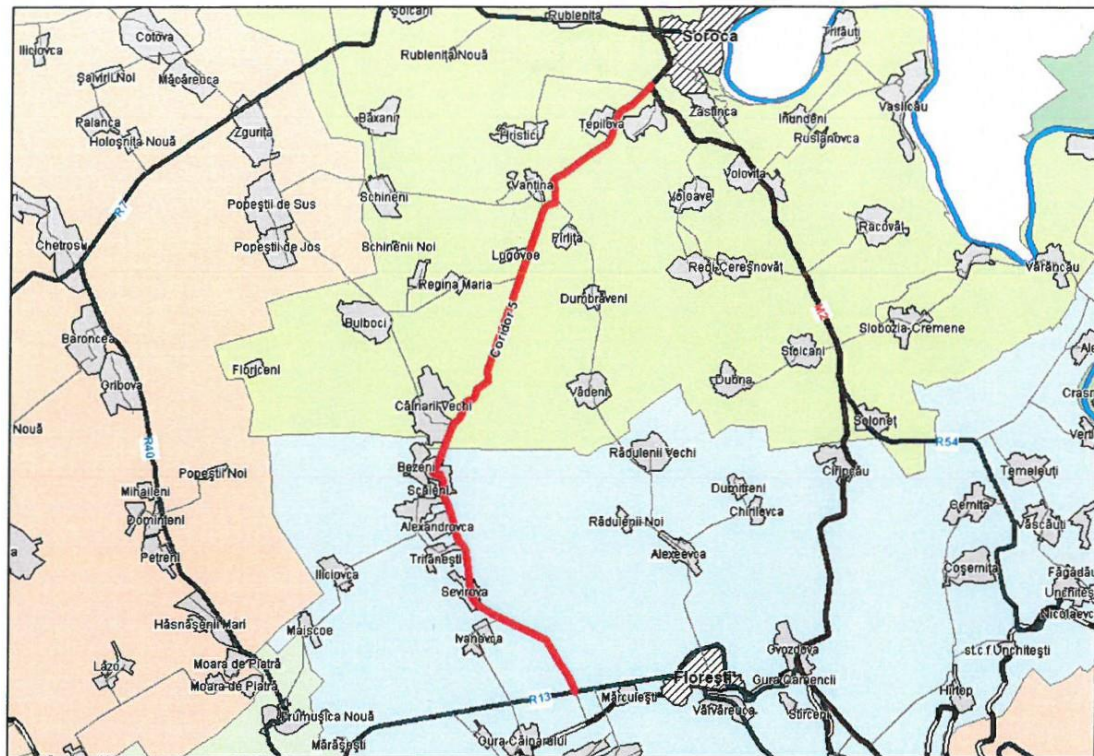


Figure 1-1: Corridor 5 of the Sub-project.

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 (ESMP) 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. The 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 analyzed in the Environmental and Social Management Framework

for the Project¹. 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 8.1), detailing the way of implementation environmental management program in this ESMP. For this Contractor's ESMP, it will be required to obtain the

¹ The ESMP 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.

approval from the SRA and the Consultant-supervisor of the works. This plan shall be elaborated 30 days after signing the contract.

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 ESMP, 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 fulfil 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 5 within the Local Roads Improvement Project was prepared in compliance with the provisions of the Environmental and Social Management Framework for the Project² 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;
- 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 December 2017, 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 and Social Management Framework and Terms of Reference (TDR). 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 2015³ for Environmental and Social Management Framework.

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

³ Summaries of these meetings had been provided in the EMF, 2015

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 APL, 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 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. Width of semi-carriageway: 3.50m (2.75m at Izvoare). Sidewalks within villages: 1.0m – 2.0m. Pavement: paved

DATA FROM THE TECHNICAL PROJECT:

Structures

0 Bridges

34 existing culverts

Pavement

8.500 m³ Embankment material from borrow material

185.000 m³ Excavation of unsuitable material and disposal

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

217.000 m² Cold recycling of the asphalt concrete pavement

10.000 m³ Wearing course of asphalt concrete

1.800 m³ Base course of asphalt concrete

Trees

124+75+17+52= 268 trees to be removed

310+188+43+130= 671 new trees

No schools and kindergartens are located immediately near the road.

Bus stops

Section I:

At Sevrova village km 51+660 on the left side of the road section with new shelter and without lay-by.

At Sevrova village km 51+820 on the right side of the road section with existing shelter and without lay-by.

Near the connection with the road L195 to Ivanovca at km 53+500 on the left side of the road section with new shelter and lay-by.

Near the connection with the road L195 to Ivanovca at km 53+600 on the right side of the road section with existing shelter and lay-by.

At the end of section I near the intersection with road R13 at km 58+550 on the left side of the road section with new shelter and lay-by.

At the end of section I near the intersection with road R13 at km 58+610 on the right side of the road section with new shelter and lay-by.

Section III:

At Căinari Vechi village km 41+100 on the right side of the road section with new shelter and lay-by. Bus stop on the other side of the road is located at Section IV.

At Izvoare village km 43+490 on the left side of the road section with existing shelter and without lay-by.

At Izvoare village km 43+490 on the right side of the road section without shelter and without lay-by.

Section IV:

Near Tepilova village at km 3+320 on the left side of the road section with new shelter and lay-by.

Near Tepilova village at km 3+380 on the right side of the road section with existing shelter and lay-by.

Near the junction with the road L100 connecting Vantina, Schineni and other villages at km 6+745 on the left side of the road section with new shelter and lay-by.

Near the junction with the road L100 connecting Vantina, Schineni and other villages at km 6+805 on the right side of the road section with new shelter and lay-by.

Near Lugovoe village at km 10+320 on the left side of the road section with new shelter and lay-by.

Near Lugovoe village at km 10+420 on the right side of the road section with new shelter and lay-by.

At Căinari Vechi village km 19+440 on the left side of the road section with existing shelter and lay-by.

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.

Section I:

North entrance of village Sevrova at km. 51+000

South entrance of village Sevrova at km. 52+470

Section II:

South entrance of village Izvoare at km. 3+040

Section III:

South entrance of village Cainari Vechi at km. 41+980

North entrance of village Izvoare at km. 42+510

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 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. ENVIRONMENTAL AND SOCIAL BASELINE

5.1. Regional climate and geography

The average annual temperature in the project implementation region (Soroca and Floresti districts) is 8-9°C, the absolute minimum for winter is -33-34°C, days with temperature over 0 degrees - 261-273, the amount of positive temperatures - 3200 -3500. The average depth of freezing of the soil - 30-50 cm, the absolute freezing depth - 60-75 cm. The first layer of snow (15-30 cm) occurs in the 3rd decade of November and may take 50-80 days until the end of February. The transition to the average temperature below zero degrees takes place in the middle of early

November (not earlier than October 25, not later than 7 December). In spring, the transition to positive temperatures takes place in the middle on March 10 (at the earliest on January 31, no later than April 15). Average annual precipitation - 470-550 mm, hydrothermal coefficient - 1.2-1.0. The coefficient of humidity is: in winter - 0.5 1.0, in spring-autumn - 2.5-9, in summer - 8.5-11.0.

The predominant wind direction - Northwest and North, average speed - 2.5-3 m/sec, on spring days up to 15 m/sec and more.

Natural phenomena more common are droughts, which repeat every 2 years out of 5, torrential rains accompanied by whirlwinds and hail in the summer months. In the Valley of Cainari River and the plains of its tributaries floods occur with the frequency of once in 10-15 years.

The localities in the corridor area are located in the seismic area with a 6-7-degree intensity on the Richter scale. The average periodicity of earthquakes of such magnitude is reported once in 35-40 years. The last strong earthquakes occurred in 1977 and 1986, a bit weaker - in 1990.

5.2. *Geomorphology and geology.*

The relief of the districts is hilly, fragmented by valleys and ravines. The average altitude is approximately 200 meters, reaching some 300 or more. Predominant are sedimentary rocks of marine origin: limestone, sand, clay. The depth of the deep-water layer is 70-100 meters.

Horizontal water erosion affected about 32% of the entire area, vertical erosion - 263 ha (0.23%). Wind erosion is manifested in much smaller proportions, statistical data on this chapter are missing. The area of landslides is about 0.6% of the entire territory of the district.

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

Most of the territory is situated in the river basin of Răut river, the main tributary of Nistru River in the Republic of Moldova. Another part of the road is located directly in the area near Nistru (village Ocolina of Soroca district). The average density of the hydrographic network is 0.48 km/km². Because of the high degree of mineralization (more than 1000 mg/lit) and water hardness in Cainari River and its tributaries it is not recommended for irrigation.

The ice bridge occurs in December, the ice thickness is 20-25 cm, maximum - 45 cm. The length of the stable ice bridge is about 35 days, in harsh 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 stormy floods, the river is covered with a 2-4 m water layer for a period of 2-5 days to 3-4 weeks. The width of the river in the average course is 2-6 m. The depth - 0.1-0.5 m.

The river's summer flows in recent years are 50-60% of the multiannual values, a phenomenon explained by the uncontrolled capture of river water and its tributaries by building a considerable number of lakes and ponds.

The quality of river water is of class III and IV (moderately polluted and heavily polluted). In all control sections, dissolved oxygen deficiency (O₂), as well as maximum variations in biochemical carbon use (CBO₅), 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. The average concentrations of phenols oscillate

within the limits of 1.0-2.0 CMA in the downstream section of Balti. 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 the reduction of the activity of industrial enterprises and the adoption of measures to reduce environmental pollution.

Natural lakes in the basin practically do not exist, and artificial ponds occupy only 0.2% of the total area. The water from the accumulation basins is used for irrigation, in fish farming, for recreation, different technical needs. A current problem is the mass clogging of water basins, eutrophication and sloughing. Many of these can no longer be exploited because of the lack of water in them.

Groundwater is 30-40 percent microbiologically polluted and 75-80 percent chemical (mainly with nitrates). The mine wells from village Lunga contain large quantities of petroleum products from the leakage of lean gas in Marculesti aerodrome area. The quality of deep water layers, at depths of 70-80 meters, meets hygienic requirements for drinking water. The chemical composition of water in most wells is calcium-magnesium-sulphate. In some, the water contains higher concentrations of fluorine.

Most rural populations (about 80%) 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 WCs, 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 an area of about 9% of the territory. The most widespread species are: common oak (*Quercus robur*) and oak (*Quercus petraea*), ash (*Fraxinus excelsior*), little leaf linden (*Tilia cordata*), wild cherry (*Cerasus avium*). The widespread species of shrubs are: Cornelian cherry (*Cornus mas*), black elder (*Sambucus nigra*), *Euonymis verucosa*, common hazel (*Corylus avellana*), European bladdernut (*Staphylea pinnata*), others.

The grassy layer of the forest is represented by the species: wonder violet (*Viola mirabilis*), *Isopyrum 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 rabbit, the Roe buck (*Capreolus capreolus*), the boar (*Sus scrofa*), the hedgehog, the mole (*Talpa europea*), the lizard, the white stork (*Ciconia ciconia*), the pheasant, 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*).

Immediately in the area of the works there are no natural areas protected by the state, such objectives included in the Law of the state protected natural areas are at a distance of 15-20 km.

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 an area of 8,368 ha or 9.6% of the area. The dominant species are common oak, oak, 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 investigations are carried out at random by Balti Ecological Agency). In 2008, 5327 vehicles were tested at the car technical test stations, out of which 1200 vehicles exceeded the ecological norms (22.5%). For annual environmental reports, the amount of transport emissions, as a rule, is calculated according to the volume of fuel used. It should be noted that, according to World Health Organization data, the entire territory of the Republic of Moldova, including Soroca and Floresti districts, is located in the moderate atmospheric air pollution with dust and nitrogen oxide, as a result of the cross-border transport effects of air masses. Excessive air pollution leads to increased population morbidity indexes with respiratory, cardiac, blood, and other diseases.

5.7. The noise

Sources of noise pollution are transport units and industrial enterprises. At present, in Soroca and Floresti districts, the traffic is the main source of noise pollution. According to the Ministry of Health, 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 Floresti and the district passes the Balti-Ocnita 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 rules.

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

5.8. Soil properties

In Florești-Soroca area predominate common and typical chernozems, sometimes medium or poorly eroded. In forest areas predominate grey soil. The average degree of soil solvency in the district is 61 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 Floresti 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.

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 field crops (wheat, barley, maize),

technical (sunflower, rapeseed, sugar beet). There are numerous cattle herds and sheep. The agricultural areas in the location are occupied by orchards (5.27%), vines (1.32%). Grain crops occupy the largest area - 48.52%, technical ones - 19.95%, 12.96%.

Some of the natives are working in the industrial enterprises, in the sphere of trade, providing other services in neighboring towns (Soroaca, Florești, Balti).

The basic population is Moldovans, but there are also Ukrainian, Russian, other ethnicities in some towns and villages. 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.

C5 Corridor within the Local Roads Improvement Project, located in the Soroaca and Floresti districts, comprises 5 localities with a total of 8,195 people. Altogether, Soroaca district has 74 localities with a population of 77,656 and 68 in Florești rayons with 76457 population (the 2014 census). The route passes through the following villages:

- **Ocolina** is located at 48.1255 latitude, 28.2630 longitude and at an altitude of 179 meters above sea level. This locality is managed by the administration of the town of Soroaca. According to the 2004 census, the population is 1,007 inhabitants. The direct distance to the town of Soroaca is 4 km. The direct distance to the town of Chisinau is 127 km.
- **Căinari Vechi** is located at 48.0080 latitude, 28.1250 longitude and 128 meters altitude above sea level. This locality is managed by the Mayor's Office of Cainari Vechi. According to the 2014 census, the population is 2672 people, of which: men - 1238, women - 1434. Direct distance to town. Soroaca is 25 km away. Direct distance to town. Chisinau is 153 km.
- **Izvoare** is located at 47.9765 latitude, 28.1336 longitude and 119 meters above sea level. This locality is managed by Izvoare Mayor's Office. According to the 2014 census, the population is 1 593 people, of which: men - 743, women - 850. Direct distance to town. Floresti is 20 km away. Direct distance to town. Chișinău is 149 km away.
- **Frumușica** is located at latitude 47.9616, the longitude of 28.1180 and the altitude 120 meters above sea level. This locality is managed by Frumușica Mayor's Office. According to the 2014 census, the population numbers 1 556 people, of which: men - 708, women - 848. Direct distance to town. Floresti is 18 km away. Direct distance to town. Chisinau is 147 km.
- **Trifănești** is located at 47.9435 latitude, 28.1286 longitude and 107 meters above sea level. This locality is managed by Trifănești commune. According to the 2014 census, the population numbers 1181 people, of which: men - 550, women - 631. Direct distance to town. Florești is 17 km away. Direct distance to town. Chisinau is 146 km.
- **Sevirova** is located at 47.927 latitude, 28.1508 longitude and 104 meters above sea level. This locality is managed by the Mayoralty of Sevirova. According to the 2014 census, the population numbers 1193 people, of which: men - 562, women - 631. Direct distance to town. Florești is 14 km away. Direct distance to town. Chisinau is 143 km away.

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 SMP, 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, it is proposed to make a storehouse between the localities of Vanțina and Parlița

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.

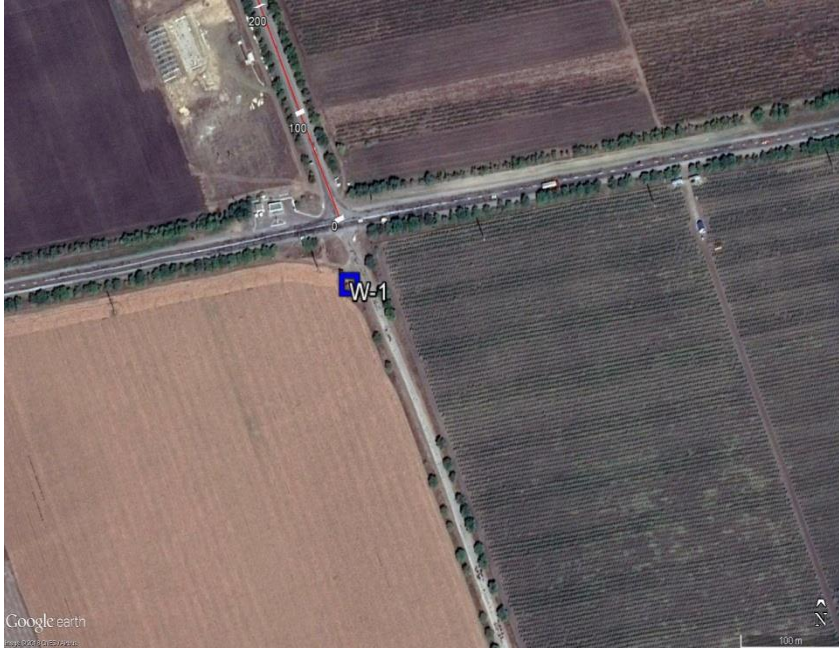
WATER WELLS TO BE TESTED

Water Point	Coordinates		Chainages	Section	G.W.L.* (m)	Measurement Date
	X	Y				
W-1	186296.12	305256.61	58+660.00	section 1	14.40	20/11/2017
W-2	180859.46	312339.14	0+068.93	section 2	4.80	23/11/2017
W-3	179812.71	315942.38	43+115.62	section 3	8.50	22/11/2017
W-4	183614.29	324726.73	11+557.20	section 4	NW	23/11/2017
W-5	183985.68	325744.91	10+473.68	section 4	6.50	22/11/2017
W-6	185125.32	329275.80	6+519.86	section 4	5.00	23/11/2017

* Ground Water Level from natural surface

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.

WATER WELLS INVENTORY W-01

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 58+660</p> <p>Section 1</p> <p>X= 186296,12</p> <p>Y= 305256,61</p>	

PICTURES



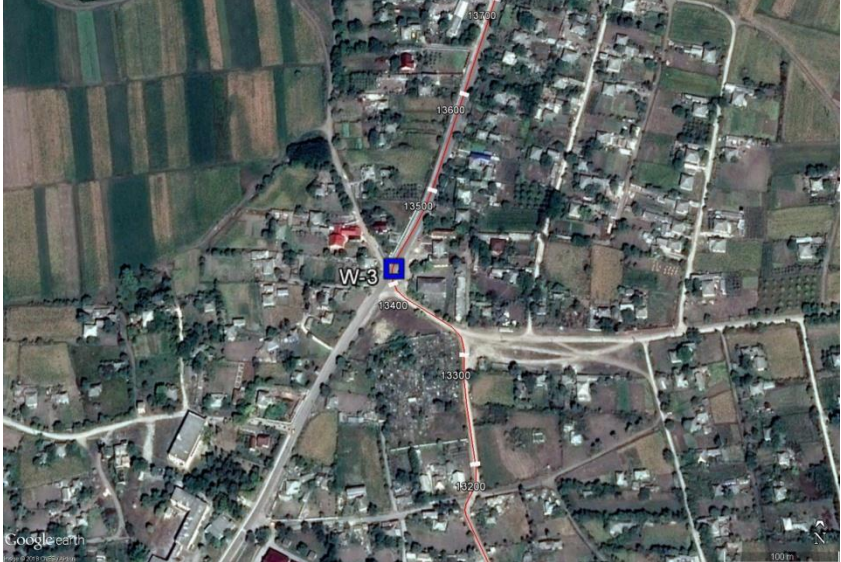
WATER WELLS INVENTORY W-02

INFO		MAP
TYPE:	Well	
LOCATION:	0+068.93	
	Section 2	
X=	180859,46	
Y=	312339,14	

PICTURES



WATER WELLS INVENTORY W-03

INFO	MAP
TYPE: Well LOCATION: 43+115.62 Section 3 X= 179812,71 Y= 315942,38	

PICTURES



WATER WELLS INVENTORY W-04

INFO MAP

TYPE: Well
 LOCATION: 11+557.2
 Section 4
 X= 183614,29



PICTURES




WATER WELLS INVENTORY W-05

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 10+473.68</p>	



WATER WELLS INVENTORY W-06

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 6+519.86</p> <p>Section 4</p>	

PICTURES



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 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.

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 ≤ 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).

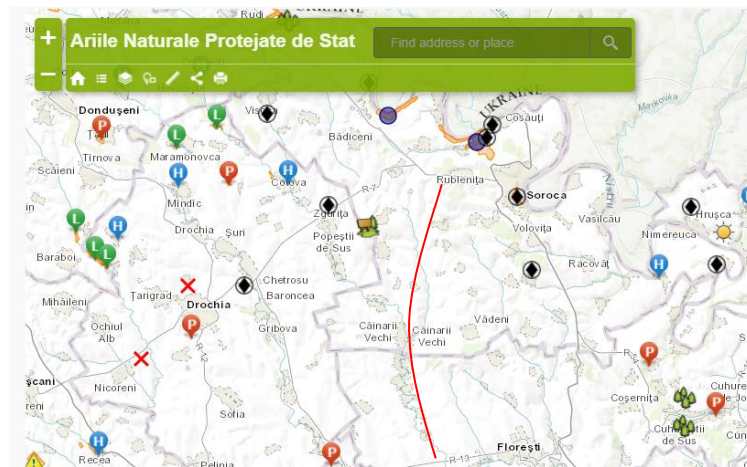
Planting of trees and shrubs along the roads of the Project is usually carried out upon the completion of these works. But if the section is released for planting before the end of the works it is recommended to plant the trees in advance. Planting details, such as compensating species, the exact planting 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.

No any protected areas are in the RoW or immediate vicinity. According to Map of Institute of Geography and Ecology no any State Protected Areas are closer than 4 km from RoW.



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, SO₂, NO_x, 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.

It is anticipated that the most affected localities will be Regina Maria, Ocolina, Trifanesti, Sevrova and Izvoare due to the fact that the works will be directly in the village intravilan, near the public institutions.

Where heavy equipment is used close to man-made structures (houses, walls etc.) vibration may in unfavourable 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 8.4). 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 8.4 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 5						
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+
Ocolina	1.669	794	875	367	1.060	242
Căinarii Vechi	2.672	1.238	1.434	476	1.651	545
Izvoare	1.593	743	850	278	970	345
Frumușica	1.556	708	848	297	1.032	227
Trifănești	1.181	550	631	213	787	181
Seirova	1.193	562	631	213	748	232
Ivanovca	999	506	493	293	616	90

* data retrieved from statistica.md

In the localities Ivanovca, Seirova, Trifănești, Frumușica, Izvoare, Cainarii Vechi and Ocolina activate 7 educational institutions:

Corridor 5		
Locality	Educational Institution	No. of pupils
Ocolina	Ocolina Gymnasium	95
Căinarii Vechi	Căinarii Vechi Gymnasium	
Izvoare	Izvoare Gymnasium	145
Frumușica	Frumușica Gymnasium	322
Trifănești	Trifănești Gymnasium	75
Seirova	Seirova Gymnasium	80
Ivanovca	Ivanovca Gymnasium	28

* Data retrieved from www.afla.md

According to the data provided by the National Patrol Inspectorate over the last 3 years there have been 3 accidents on this road sector, 2 of which have been classified as serious and one as minor. The first accident occurred in the village of Vanțina in 2015, there was a collision due to skidding, an adult was severely injured in a slope curve due to inadequate speed and reduced visibility. Two more accidents occurred in 2016, the accident in the village of Izvoare took place in August, and an 81-year-old was slightly injured after a frontal collision of two cars, all involved having the seat belt buckled, and the accident was caused by the inattention of a driver who had undertaken to change the direction without checking. The third crash occurred near the village of Vanțina, following the collision with an obstacle due to skidding, 2 people were severely injured and one died, all involved in the accident were adults, the accident occurred because of exceeding the legal speed limit.

year	2015	2016	2017
no. total accidents	1	2	0

Serious accidents	1	1	0
Minor accidents	0	1	0

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 (APPENDIX 7: grievance redress mechanism)

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 task⁴. 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 8.3), update the ESMP as required (see Section 8.4), review photocopies (drafts), emergency plans, designs for temporary

⁴ 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

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 8.5).

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 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 IIF 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 (Cloud) 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 According to the Legal Framework for Environmental Management 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 a plan indicating sensitive receptor 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 CEMP 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 Mechanism⁵ as part of the Stakeholder Engagement Plan for the Local Roads Improvement Plan. This Grievance Mechanism will be fully applicable to all sub-projects under the Local Roads Improvement Plan.

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

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 8.3 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 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 Environmental and Social Management Framework (ESMF) in the form of a summary to the MEI, the Ministry of Agriculture Regional Development and Environment, the Ministry of Health 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 this ESMF Legal Framework, and then revised on the basis of comments received. The final version of the ESMF Legal Framework was posted on the ASD website, the information being displayed on the World Bank Infoshop.

At the level of current sub-projects, the first round of public consultations was organized on the planned activities and the proposed environmental management measures in the year of 2015.

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) 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

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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
				<p><i>Road rehabilitation works will involve various – yet unspecifiable – contractor activities requiring management of environment, health and safety issues</i></p>	<p><i>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:</i></p> <ol style="list-style-type: none"> 1. Contractor's Environmental Management System; 2. Pre-construction planning (topsoil removal and temporary storage; temporary protection of roadside trees); 3. Health & Safety Management Plan; (including incident management, trainings, performance reporting, medical treatments, hazardous operations, emergency etc.); 4. Site and Camp establishment - if any – and operation (siting, topsoil clearing; camp establishment, effluent; waste management; fires; demobilisation); 5. Waste / hazardous waste management (general waste generation; Waste separation and transport; Waste storage, handling & disposal (incl. hazardous waste; disposal etc.); 6. Fire safety; 7. Oil and fuel & chemicals management; 8. Spill prevention and response; 			<p>CESMP is complete and approved</p>	<p>During Project Preparation / mobilisation</p>	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
				<p>Road safety during construction</p> <p>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</p>	<p>Prepare a Road Traffic & Safety Management Plan.</p> <ul style="list-style-type: none"> 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; 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; Obtain approval of the Plan from Raional Road Police (Politia de Patrulare) prior to the start of construction Timely inform the public on construction schedules and actively communicate with the local authorities. Inform all construction workers on the provisions of the plan; Deliver toolbox talks as 'continued training' for the workers and following any significant incident; strictly enforce its provisions; 	Site checks	Throughout construction site	<p>Road Traffic & Safety Management Plan is prepared and approved by Rayonal Road Police (<i>Politia de Patrulare</i>)</p> <p>Workers are informed and trained on the provisions of the Road Traffic and Safety Management Plan</p>		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
				Temporary construction activities and material transport have potential to cause nuisance and give raise to complaint	<ul style="list-style-type: none"> Share timely and comprehensive information on the relevant practical aspects of the agreed Grievance Mechanism with <ol style="list-style-type: none"> stakeholders all responsible team members 	Stakeholder consultation	Throughout construction site	All stakeholders are aware of the Project Grievance Mechanism and its provisions	Prior to start of construction	Work specs	n.a.	CC	CC
				Siting, construction and operation of Contactor's yard / camp (e.g. with offices; workshop; material storage areas and staff accommodation facilities - if any⁶) 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"> CESMP 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; Consult with local officials prior to site selection; Site selection to observe relevant criteria to primarily protect the general public and sensitive environmental receptors. Obtain approval from SRA / SE and responsible local authorities; 	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"> Ensure adequate distance to nearest residential area. to 	Site inspection	-,-	The valid permit / approval is available prior to	Prior to start of	Work specs	n.a.	CC	CC

⁶ 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	
SP	C	O	D							install	operate	Install	Operate
					minimize interference with the environment and the well-being of local communities (e.g. noise, dust, vibration etc.); <ul style="list-style-type: none"> Consider prevailing wind directions to minimize risk of nuisance; Limit size of to the absolute minimum to minimize need to clear vegetation; Provide appropriate drainage; Paved areas, incl. vehicle parking areas, workshop and fuel storage areas are to drain to an oil and water separator; Fuel storage areas are not located within 20m of a water course; Contractor facilities are to be contained within an adequate security fence. 			the start of operations	construction				
					<ul style="list-style-type: none"> Ensure full compliance of all proposed site arrangements, procedures and activities with the provisions of GD No 80 of 09.02.2012. 								
					<ul style="list-style-type: none"> Restore and clean-up site upon completion of construction in line with the provisions of the approved CESMP 	Monitor implementation	Contractor's yard	Site cleaned up in accordance with approved CESMP	Completion of construction works	Work specs	n.a.	CC	CC
				Worker's Health & Safety Creation of health risk for staff handling hazardous materials	<ul style="list-style-type: none"> Provide such training as appropriate to ensure that the staff handling potentially hazardous substances at the site is aware of potential risks 	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	
SP	C	O	D							install	operate	Install	Operate
					associated to their activities and knows how to practically protect themselves								
				General health and safety risks at the construction site	<ul style="list-style-type: none"> 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.); Ensure that PPE will be worn by workers at all times. 	Monitor compliance	Throughout construction site	All workers wear the required PPE in accordance with the risk of their work place at all times; Stock of PPE available on site.	Throughout construction Prior to the start of works;	Work specs n.a.	CC	CC	CC
					<ul style="list-style-type: none"> Prepare an Emergency Response Plan. The distance to the nearest hospital is to be taken into consideration when setting up this plan; 	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	CC
					<ul style="list-style-type: none"> Keep basic first aid equipment at the construction camp; 	Monitor compliance	Construction camp	Basic aid equipment available at the contractor's yard or camp	Throughout construction	Work specs n.a.	CC	CC	CC
					<ul style="list-style-type: none"> Provide basic safety training on the risks of the individual workplace to all members of the construction crew; Brief workers on arrangements for first aid and cases of emergency; Repeat at such intervals as 	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 available first aid	Prior to the start of works and throughout construction	Work specs n.a.	CC	CC	CC

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SP	C	O	D							install	operate	Install	Operate
					appropriate			arrangements					
					<ul style="list-style-type: none"> Provide mobile toilets at appropriate locations along the route and ensure proper service intervals. Service contract to be signed with an approved service agent; 	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"> 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) 		Construction site and all temporary and or mobile facilities	Compliance with provisions of the legislation	Prior to the start of construction; during construction	Work specs	n.a.	CC	CC
				<p>Construction materials</p> <p>Sourcing of materials</p>	<ul style="list-style-type: none"> Construction materials will be exclusively sourced from quarries and borrow sites that hold appropriate license under Moldavian legislation; 	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 noise and dust pollution and also to create road safety hazard;	<ul style="list-style-type: none"> Carefully select haul routes to minimize nuisance of local residents through noise and dust and to possibly minimize risks of road safety – especially when passing through villages 	Check approved method statements on material transport, monitor	Haul routes	Selected haul routes avoid sensitive areas					

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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
				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"> Carefully plan construction works to minimize pollution risk through accidental spillage or accidents; Ensure proper condition of transport vehicles at all times; Train workforce on proper management practices and safe handling and transport of materials; Avoid overloading and / or effectively cover haul trucks; Ensure prompt clean-up of any spills of construction materials. 	compliance Monitor compliance		All haul trucks are in proper technical condition and properly loaded and / or covered; No major spillage of construction materials					
				Construction water 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"> 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 	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
				Air quality impact through construction emissions and side activities Temporary impact on air quality through increased emissions from construction traffic and equipment, potentially affecting local residents, road users and the construction crew;	<ul style="list-style-type: none"> CC to ensure that all construction equipment and vehicles will be in proper technical condition at all times; Ensure regular maintenance and servicing of all construction machinery and haulage trucks throughout construction; Strictly implement speed controls - especially within 	Monitor implementation	Throughout construction site	No vehicles / machinery emitting excessive visible smoke; speed limits are		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
					villages; <ul style="list-style-type: none"> Strictly require workers to shut down engines that are not directly needed. 			observed; rules for minimizing public nuisance are observed by CC's staff					
				Temporary generation of elevated levels of suspended dust through material transport and storage	<ul style="list-style-type: none"> Cover all trucks carrying fine materials with tarpaulin to minimize dust generation; 	Monitor implementation	Throughout construction site	All haul trucks transporting fine materials are covered			CC	CC	
					<ul style="list-style-type: none"> Sprinkle construction site and haul routes as appropriate / as directed by the Engineer during dry periods or in case of complaints; Ensure that only approved sources of water will be used for dust management; 	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"> Cover all fine material stockpiles materials or take other precautionary measures as appropriate or directed by the SE to minimize dust pollution effects; Ensure no burning of waste is undertaken without the consent of the Engineer 	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
					<ul style="list-style-type: none"> 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 	Check SSEMP and monitor implementation	-,-	Approved CESMP & permit are available and agreed management measures duly implemented				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
					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.								
				Risk of temporary nuisance of local residents through asphalt plant operations	<ul style="list-style-type: none"> Site for mobile asphalt plant to be located at a minimum distance of 500m downwind of potential sensitive receptors (dwellings); 	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"> Obtain approval for selected site from responsible authority prior to start operations 	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 monitoring during the full duration of the existence of the asphalt site. All legal provisions and best practice approaches are to be complied with.	Site checks; CESMP compliance	Plant site	Waste management arrangements are in place and functioning in compliance with SSEMP provisions	Prior to the start of construction works	n.a.	n.a.	CC	CC
				Damage to land / soils due to: - Land reclamation for siting of the mobile asphalt plant, if needed / reduced land use	<ul style="list-style-type: none"> Removal and storage of top soil for subsequent site rehabilitation as required; Implementation of other site 	Site check	Proposed plant site	Topsoil has been removed and properly stored in line with provisions	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
				options; - Site preparation works / earthworks; - Construction of temporary access roads. 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; Accidental soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the vicinity of the mobile asphalt plant; Land damage / soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transport and laying.	management measures in compliance with provisions of the approved CESMP			of the CESMP Site permit is available and the proposed management measures duly implemented in compliance with CESMP provisions					
				Increased risk of fire	<ul style="list-style-type: none"> • CESMP to address increased fire risk by appropriate safety provisions • Waste is not allowed to burn on site. 	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
				Construction noise impact Temporarily elevated noise levels through the operation of heavy equipment; potential noise impact on specifically	<ul style="list-style-type: none"> • In case that noisy construction activities are unavoidable and likely to affect communities or other sensitive receptors CC to 	Monitor implementation; Interviews with officials or local	Village sections of Project route	Local communities have received timely	Construction inside villages	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
				sensitive receptors Disturbance of local residents in village sections along the project route	provide timely information on the location and schedule to the local authorities. • 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.). • Suspend construction activities during public holidays • Should unavoidable out-of-hours work occur local residents shall be given timely notice.	residents		information about the construction schedule No construction taking place on evenings / weekends / holidays					
				Operation of noisy construction equipment	Control construction noise at source, especially when working in in villages, e.g. • Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site; • Enclose noisy equipment / use silenced construction equipment for specifically noisy operations while working inside settlements / neat to sensitive receptors (e.g. vicinity to hospital, schools, kindergarten); • Avoid idling of vehicles and minimize use of horns.	Monitor implementation	Village sections of Project route						
				Impairment of access; public nuisance resulting	• Take appropriate provisions for alternative access and provide	Visual inspections	Village sections	All properties / facilities are					

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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>from earth works and drainage construction; disruption of access to land and properties</p>	<p>such local facilities as to ensure all time accessibility of relevant assets including agricultural land;</p> <ul style="list-style-type: none"> • Within village sections clean-up muddy road sections at such intervals as to minimize nuisance and as directed by the SE. 			<p>properly accessible throughout construction; no muddy road sections; no complaints</p>		n.a.	n.a.		
				<p>Impact on local water resources</p> <p>Pollution risk through contaminated runoff / erosion / accidental spillage / inadequate storage of construction materials or unmanaged construction waste disposal</p>	<ul style="list-style-type: none"> • Provision of appropriate drainage of all work sites throughout the construction period; • Cover storage areas for construction materials; • Ensure proper management of any solid or liquid construction waste throughout the construction period in accordance with the approved CESMP on construction waste management and applicable national legislation; • Consult with local officials to identify possible areas for the temporary storage of waste 	<p>Monitor implementation</p>	<p>Throughout construction site</p>			n.a.	n.a.	CC	CC
				<p>Demolition of drainage structures; construction of new culverts may cause pollution of local streams / rivers</p>	<ul style="list-style-type: none"> • As much as possible construction should be undertaken during the low flow season to minimize the threat of water contamination; • Excavation should be done such as to minimize stockpiling of materials near flowing water; • Appropriate protection should be provided to prevent soil 	<p>Monitor implementation</p>	<p>Construction sites of new drainage structures</p>	<p>Protective / precautionary measures are implemented at the site</p>		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
					materials to be washed away. <ul style="list-style-type: none"> • Cutting riparian vegetation shall be reduced to the minimum required to implement the works. • The discharge of sediment laden construction water directly into surface watercourses or ponds will be forbidden. • Sediment laden water will be discharged into settling lagoons and tanks prior to final discharge. • Where construction takes place close to surface streams mobile toilets shall be provided at the work site on stable ground and at appropriate distance from the river / stream in line with the applicable legislation and regular servicing ensured. 								
				Pollution risk for local groundwater wells 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"> • Provision of appropriate cover for all local groundwater wells in the potential area of influence that are yet unprotected; • Provision of appropriate storm water drainage arrangements. 	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
				Soil erosion Earth works and the utilization of heavy construction equipment entail the risk to cause soil erosion and	The CC is responsible to ensure that erosion is contained by soil conservation and protection methods.	Site checks	Construction site		Site preparation			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
				indirectly destabilize adjacent areas	The CC will: <ul style="list-style-type: none"> - Reduce the extent of excavations to minimize erosion risk; - Apply soil conservation and soil protection methodologies in sensitive areas to prevent / minimize storm water runoff carrying eroded materials offsite; - Avoid excavations and operating machinery in wet conditions. 								
				Construction waste Demolition and construction and works will generate different types of waste incl. but not limited to: <ul style="list-style-type: none"> - Solid inert waste such as demolition material, concrete, bricks, plastic, metals, bitumen and (shredded tyres) etc. 	As part of his CESMP the Contractor will prepare a comprehensive Waste Management Plan . This Plan will establish all types of wastes 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: <ol style="list-style-type: none"> 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 	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
					<p>pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities.</p> <p>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.</p> <p>4. Construction waste will be collected and disposed properly in an approved registered landfill by licensed collectors</p> <p>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.</p> <p>6. Records of waste disposal will be maintained as proof for proper management.</p> <p>7. No temporary storage of waste in flood-prone areas.</p> <p>8. Regular transportation of construction materials will be carried out without stockpiling of large batches of materials at construction sites.</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
				- Waste oil									
				Vegetation clearance (trees; shrubs) 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					
				Impact on existing roadside trees Unavoidable tree losses: 141 trees, Ø 10-30cm 137 trees, Ø 30-60cm	Records of unavoidable losses of roadside trees Do not apply	Site checks	Construction site	No tree felling occurs				CC	CC
				Based on design information the total unavoidable tree losses will be 141 trees, Ø 10-30cm 137 trees, Ø 30-60cm	Compensation of tree losses: Upon completion of construction compensate all tree losses (planned and unintended) through new plantations within the RoW; • Unintended / accidental tree losses will be replaced at a ratio of 3:1 at the CC's own expense.	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					

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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>Unintended damage of roadside trees</p> <p>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!).</p>	<p>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</p> <ul style="list-style-type: none"> • Temporary fencing of trees / groups of trees. for preservation <p>Within a radius of 1.5m around the drip line of existing roadside trees CC to avoid or at least effectively minimize the following activities:</p> <ul style="list-style-type: none"> • Relocation of utilities; • Driving; • Soil compaction; • Excavations; • Temporary storage of <ul style="list-style-type: none"> - fuels - chemicals • Construction materials / waste. <p>During the application of bitumen trees and any other woody vegetation will be effectively protected from physical damage.</p> <p>Timely protection of tree crowns:</p> <ul style="list-style-type: none"> • Trimming of branches where required between late autumn or early spring / outside the 	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	
SP	C	O	D							install	operate	Install	Operate
					breeding period; • 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).								
				Site clean-up / stabilization	• Site clean-up in accordance with the approved CESMP / site-rehabilitation plan. As a minimum the following shall be undertaken: • 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. • The sites shall be revegetated by - Raking or loosening any compacted ground surface areas identified for vegetation cover; - Re-spreading stockpiled top soil evenly across completed disturbed sites (including over any permanent fill stockpiles) immediately following construction works. • Sites shall be cleaned up by removing all disabled machinery and construction debris from the works areas.	Site checks	All completed work areas / permanent fill stockpiles	All sites properly re-instated / recovered with top soil			CC		

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

APPENDIX 2: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The following Environmental 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 the parameter should 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"> • To establish a reference for the assessment of construction impacts; 	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 _x , CO, SO ₂ , 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"> • To encourage the minimization of pollution and resulting nuisance; • to enforce legislation 	Contractor costs. CS to approve sampling points and reports

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		pedestrian areas		construction		
Ambient pollution noise	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 _A); Handheld equipment (analyser) 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 ³ , NO ² , NH ⁴ , CL-, hardness: CaCO ³ , SO ⁴ , pH, E. coli, total coliforms	Wells close to the road edge along C5: (as highlighted in the list in Appendix 3).	Appoint accredited lab to take probes, test water quality (NO ³ , NO ² , NH ⁴ , CL-, hardness: CaCO ³ , SO ⁴ , 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"> • To assess current water quality; • To identify wells that are unsuitable for potable water supply; • Depending on results: to close individual wells and provide alternative sources of water supply 	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 where heavy equipment	Inspection / documentation on the condition of relevant infrastructure (e.g. existing cracks on buildings or other physical damage)	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 documentation

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		will be used				
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Issue / Construction Phase	What is to be monitored?	Where the parameter should 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	Ensure compliance of performance	CC ⁷ /SE

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

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CONSTRUCTION	MATERIAL SUPPLY					
				once weekly	with environment, health and safety requirements to minimize disruption of road traffic	
Stone	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly		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

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 (neighbouring population; workers)	Noise levels (dB(A))	Most affected residential areas workplace	Handheld equipment (analyser) 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	CC/SE

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					workers	
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

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 / securing 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: 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 centreline (m)	Road side
3,3	Bus station, shallow well	15	Right
6,2	Orchard	15	Right
6,6	Interchange to Vanța	-	Right
7,5	Road to Pârlița	-	Left
10,4	Culvert, s. Lugovoe, crucifixion	-	Right
10,6	shallow well	12	Left
14,5	Culvert, ravine	-	
17,2	Culvert	-	-
18,2	Shallow well	20	Left
19,5	Road to s. Căinari Vechi, crucifixion	12	Left
20,5	Shallow well, crucifixion	25	Right
21,1	Beginning of s. Izvoare	10	Right
21,7	Shallow well, crucifixion	20, 8	Left
21,8	Shallow well -2	10,15	Right / Left
22	Kindergarten, mayoralty, school		Right / Left
22,1	Shallow well, Bus station	15	Right
22,3	Bridge over rivulets	-	-
22,6	Shallow well	15	Right

Km.	Name/type of identified object	Roadside, distance from centreline (m)	Road side
22,9	Shallow well, Culvert, Bus station	6,5	Right
23,9	Beginning of s. Frumușica	-	Right
23,8	School, Kindergarten		Right / Left
24,0	s. Frumușica, Shallow well	15	Right
24,1	Shallow well	15	Right
24,3	Shallow well	15	Left
24,3	Shallow well	12	Right
24,4	Shallow well -3, Bridge over rivulets, ravine	10-35	Right
24,5	Shallow well	20	Right
24,7	Shallow well	20	Right
24,8	Shallow well	18	Right
25,1	Road to s. Iliciovca		
26.8	Road to s. Trifănești		
26,5	Shallow well	10	Left
26,6	Shallow well	8	Right
26,8	Shallow well	25	Left
26,9	Shallow well	7	Left
26,95	Shallow well	7	Left
26,95	School	50	Left
27,0	Shallow well	15	Left
27,2	Shallow well	10	Left
27,4	End of Trifești, crucifixion	15	Left

Km.	Name/type of identified object	Roadside, distance from centreline (m)	Road side
27,7	Bridge over rivulets	-	-
29,3	Beginning of s. Sevrova		
29,9	School, cemetery	100/15	Right / Left
30,2	Shallow well	8	Left.
30,3	2- Shallow well	9/15	Left / Right.
30,4	Bus station, Shallow well.	12/10	Right / Left
30,7	Shallow well	8	Left
30,8	Shallow well	9	Left
30,85	Shallow well	10	Right
32,2	Beginning of s. Ivanovca		

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, Public Participation in Decision Making and Access to Justice in Environmental Matters	2000	Provides for the participation of the public in 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.
Legislation on Labour, Occupational Health & Safety		
Labour Code	2003	Governs all individual and collective labor relations, enforcement of regulations in the field of employment, labour jurisdiction, and other relations directly related to labour 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, Standards⁸

- 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;

⁸ 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.

- 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 Sites⁹

⁹ 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 C5 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
C5	Parlita	House of Culture	15.10.18	10.00 AM

Total number of participants was 43 for Corridor 5. From which 56% - women and 44% men.

- Question:** Does local roads will be used by heavy trucks and machinery? (Budeci Victor, village Pîrlița)
Answer: Yes, in accordance with the restrictions of the road code in force.
- Question:** access to agricultural land how will be done if they are near the rehabilitated road? (Morari Vasile, village Ocolina)
Answer: according to the norms, access roads will be arranged
- Question:** what kind of trees will be planted? (Bejenari Tamara, village Pîrlița)
Answer: walnuts, or maybe others according to Dendrarium plan that has to be elaborated by Construction Company will rehabilitate the road.
- Question:** there are water reservoirs near the road and access to special equipment is required, this is included in the technical project? (Morari Vasile, village Ocolina)
Answer: the technical project will include this access, just we need to go on a site visit.
- Question:** in Tepilova there is a portion of road with landslides (clayey ground and groundwater on the surface) which technical solution was proposed for that area? (Moroșan Eugeniu, village Sevirova)
Answer: the land will be enforces across the affected area.

Most of the discussions, questions and proposals raised during public hearings were linked with:

- Health & Safety issues regarding crossing the Corridors road near the localities or inside of localities.
- Rehabilitation of local roads that may be deteriorated by construction activities and associated transportation of materials.
- Associated infrastructure to main reconstructed road (bus station, illumination of road and bus stations, pedestrian crossing, secondary roads, noise barriers)
- If will be land acquisitions for road widening needs.
- Trying to solve several local community problems with help of road reconstruction project.

Minutes of meeting

Environmental & Social Impact Assessment for Corridor 5

Date	15.10.2018	
Time	10.00-12.00	
Location	Pârlița	
Consultants/ moderators	Elena Vlădicescu, Environmental Specialist SRA; Veaceslav Vladicescu, Social and environmental consultant Roughton; Garaba Vladimir, Environmental Expert Obermeyer; George Batalis, Engineer Obermeyer	
No. of participants	43	List of attendance - attached
Topics presented by Consultant (inclusive PPT)	<ul style="list-style-type: none"> - General information about purpose of ESMP documentation - General information about Project - Detailed design elements of the project in the area of locality - Project's positive involvements on the community - Specific identified possible impacts on the environment and population - Specific mitigation measures proposed. - Grievances redress mechanism - Contact information of stakeholder (environmental specialist) 	
The questions raised and/or received proposals of participants:	Answers / comments of moderators / consultants:	
1	Does local roads will be used by heavy trucks and machinery? (<i>Budeci Victor, village Pîrlița</i>)	Answer: Yes, in accordance with the restrictions of the road code in force.
2	access to agricultural land how will be done if they are near the rehabilitated road? (<i>Morari Vasile, village Ocolina</i>)	Answer: according to the norms, access roads will be arranged
3	what kind of trees will be planted? (<i>Bejenari Tamara, village Pîrlița</i>)	Answer: walnuts.
4	there are reservoirs near the road and access to special equipment is required, this is included in the technical project?	Answer: the technical project will include this acces, just we need to make a site visit.

	<i>(Morari Vasile, village Ocolina)</i>	
5.	in Tepilova there is a portion of road with landslides (clayey ground and groundwater on the surface) which technical solution was proposed for that area? <i>(Moroșan Eugeniu, village Sevirova)</i>	Answer: the land will be enforces across the affected area.
Conclusions	The most of the questions were regarding design elements and focused on Health & Safety on the road.	

SRA webpage (published 26.09.2018) with direct link to ESMP document:

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

Picture from public hearings village Pîrlița





Pîrlița 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 5

Data de 15 Octombrie 2018

Numele, Prenumele	Localitatea	Ocupația (sau funcția)	Semnătura
1. Vencelav V. Mălicera	Chișinău	Consultant de meștru	V. Vencelav
2. Garaba Nadejda	Chișinău	pensionar	M. Garaba
3. Dan Iakovov		Inglaz	D. Iakovov
4. Antonis Mastorakis		Inginer	A. Mastorakis
5. Igavordel Vlad.	Izvoare	primar	V. Igavordel
6. Moroșan Ștefan	com. Serinova	primar	S. Moroșan
7. Ceban Valentina	com. Ocolina	primar	V. Ceban
8. Ioraru Oleg	com. Ocolina	secret. consiliului	O. Ioraru
9. Ciobanu Diana	com. Perlița	secret. consiliului	D. Ciobanu
10. Godorog Felicia	com. Perlița	infin. cadastr.	F. Godorog
11. Lutcheni Maia	com. Regina Maria	secret. consiliului	M. Lutcheni
12. Wastan Radu	com. Regina Maria	inginer funciar	R. Wastan
13. Tăbîrte Vasile	com. Regina Maria	primar	V. Tăbîrte
14. Pinzari Petru	com. Scărbă	sat. Pdlit	P. Pinzari
15. Măzrîne Traian	e. Perlița	consilier local	T. Măzrîne
16. Budei Victor	e. Perlița	locuitor	V. Budei
17. Cățac Victor	e. Perlița	locuitor școală	V. Cățac
18. Agapiu Mariana	lim. Perlița	deridicatoare	M. Agapiu

Numele, Prenumele	Localitatea	Ocupația (sau funcția)	Semnătura
19. Mihaila Ignorale	com. Pirlita	contabil	[Signature]
20. Irina Ghenadii	com. Pirlita	locuitor	[Signature]
21. Iogorov Muxov	com. Pirlita	locuitor	[Signature]
22. Tisovschi Alexandru	com. Pirlita	locuitor	[Signature]
23. Tisovschi Natalia	com. Pirlita	locuitor	[Signature]
24. Tisovscaia Victoria	com. Pirlita	locuitor	[Signature]
25. Tisovschi Raisa	com. Pirlita	locuitor	[Signature]
26. Hazaș Maria	com. Pirlita	locuitor	[Signature]
27. Bota Sulfina	s. Pirlita	as. Pirlita	[Signature]
28. CALDARI ZINAIDA	SAT. PIRLITA	locuitor	[Signature]
29. CIUMAC Lidia	SAT PIRLITA	locuitor	[Signature]
30. Rotari Eugenia	s. Pirlita	locuitor	[Signature]
31. Budeci Tatiana	s. Pirlita	as. social	[Signature]
32. Buznari Teodora	s. Pirlita	locuitor	[Signature]
33. Găsițoi Zinovia	s. Pirlita	președinte	[Signature]
34. Bănițoi Lilia	s. Pirlita	bucătar	[Signature]
35. Tojița Olga	s. Pirlita	ajut. de educat	[Signature]
36. Lapuzneanu Maria	s. Pirlita	directora ș.P. Pirlita	[Signature]
37. Bota Vasile	s. Pirlita	meșter	[Signature]
38. Caldari Valeriu	s. Pirlita	profesor	[Signature]
39. Ciurac Svetlana	s. Pirlita	curier	[Signature]
40. Hazaș Maria	s. Pirlita	locuitor	[Signature]
41. Hazaș Vasile	com. Ocolina	ing. funciar	[Signature]
42. Găzaș Vladim	or. Chisnău	consult. de medicină	[Signature]
43. Vlăduțescu Elena	or. Chisnău	specialist de medicină	[Signature]
44.			

APPENDIX 6: REFERENCES

Ministry of Labor, Social Protection and Family 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.

Organi sation	Contact person	Telephone number	Email address	Postal address
Engine er	TBN			
	TBN			
	TBN			
SRA	Environmental Sepcialist			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 _____

Suggestion/opinion _____

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.