

**Corridor 24: R34 – Ciobalaccia – Tartaul – R56 – Baimaclia –  
Enichioi – R37 (RFP No.: LRIP/CS/09)**

# **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

**AUGUST 2018**

3<sup>rd</sup> Release

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

Republic of Moldova – Ministry of Economy and Infrastructure – State Road Administration  
 Local Roads Improvement Project  
 Corridor 24: R34 – Ciobalaccia – Tartaul – R56 – Baimaclia – Enichioi – R37 (RFP No.: LRIP/CS/09)  
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**Cover Page**

<b>Project Title</b>	Corridor 24: R34 – Ciobalaccia – Tartaul – R56 – Baimaclia – Enichioi – R37 (RFP No.: LRIP/CS/09)
<b>Country</b>	Republic of Moldova
<b>Client</b>	Ministry of Economy and Infrastructure – State Road Administration
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Name	Signature	Date

**CORRIDOR 24, ROAD SECTIONS:**

**R34 Ciobalaccia – Tartaul – R56 – Baimaclia – Enichioi – R37**

*Section I:*

- Road L606 Vișniovca – Baimaclia, km 0.00 – 22.15.
- Road L619 Gotești – Tartaul, km 0.00 – 14.93.



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## LIST OF ACRONYMS

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asl	above sea level
BD	Bidding Documents
CC	Construction Contractor
CEMP	Construction Environmental Management Plan
DBH	Diameter at breast height
BD	bidding documents
EHSM	Environmental Health and Safety Manager
EIA	Environmental Impact Assessment
EMP	Environmental 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
MRDC	Ministry of Regional Development and Construction
MS	Method Statement
MEI	Ministry of Economy and Infrastructure
NCB	National Competitive Bidding
NC MD	Normative in Construction. Road Construction
NGO	Non-government organization
O&M	Operation and maintenance
OP	Operational Policy
PMC	Project Management Consultant
PPE	Personal protective equipment
QA	Quality assurance
RoW	Right of Way
RSP	Regional Sector Program
SE	Supervision Engineer
SEE	State Ecological Expertise
SRA	State Road Administration
SSEMP	Site-specific environmental management plan
ToR	Terms of reference
WB	World Bank

## 1. INTRODUCTION

### 1.1. Project Context

Thematic social studies, recently conducted by the World Bank, show that the population of the Republic of Moldova is not satisfied with the state of intercommunity roads. And this is regardless of how citizens move - with public transportation or with their own car. If every village has public transportation to the district 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 neighbour 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 10 corridors. This report on the Environmental Management Plan refers to Corridor 24 located in Cantemir district. (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 –	36.5	Detailed design

	Trifești – R20		
C11	M2 – Persecina – Hîrtopul Mare – Izbiște – Ohrincea – R23	33.2	Construction Works tendering
C13	R1 – Pîrlița – Bălănești – Seliște – R25	40.9	Construction Works tendering
C16	R3 – Pojăreni – Costești – Horești – Țîpala – R32	34.6	Detailed design
	Development Region South		
C24	R34 – Gotești – Ciobalaccia – Tartaul – R56	43.3	Detailed design
C25	R26 – Mihailovca – Sadaclia – Iordanovca – R3	22.4	Detailed design
	<b>Total</b>	<b>294.9</b>	

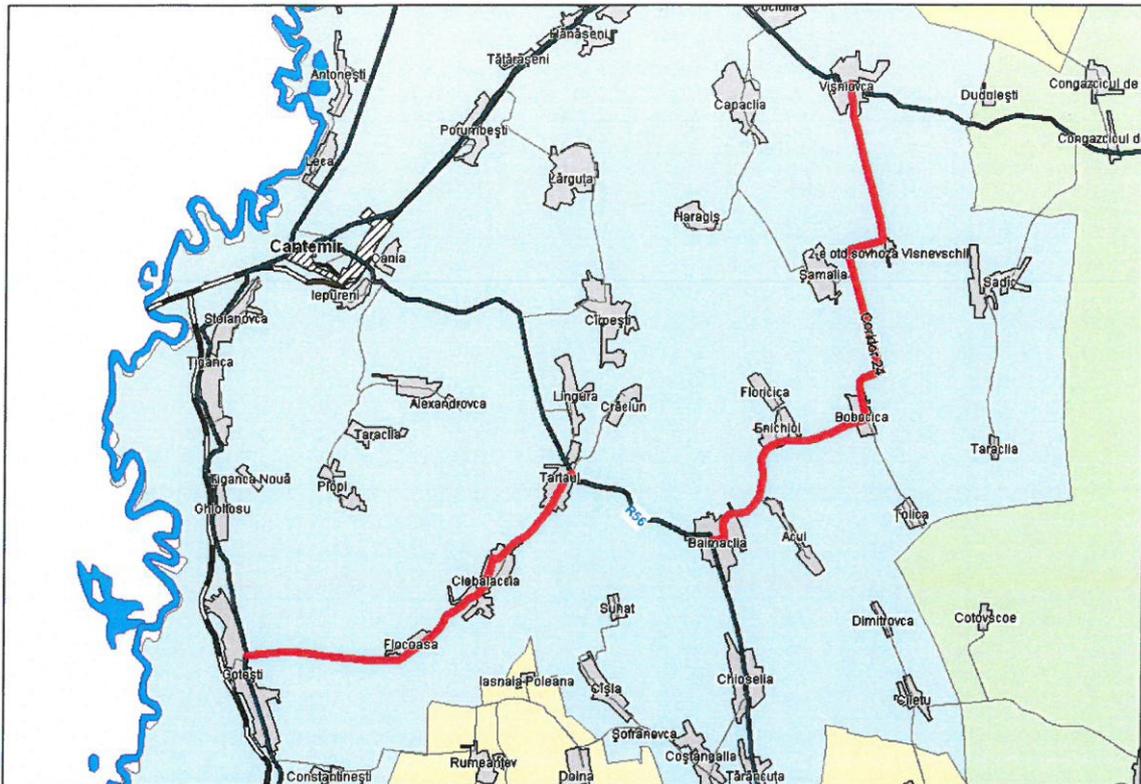


Figure 1-1: Corridor 24 of the Sub-project

## **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 (ME). 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 and Social 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. Environmental and Social Management Framework for the Local Roads Improvement Project does not provide for involuntary relocation or removal.

## 2. LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

### 2.1. Environmental Legislation

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

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

### 2.2. Institutional Framework

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

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

All of these have or will have their own environmental specialist on the team to oversee, coordinate and monitor the implementation process. At the District level institutions like the District Ecological Inspections and Centres 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

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

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 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 fulfill its obligations under the environmental monitoring program, the Engineer-Supervisor shall cooperate with the accredited laboratories of the State Ecological Inspectorate, the Academy of Sciences of the Republic of Moldova or other laboratories that will perform the necessary tests and issue reports about the results.

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

### 3. METHODOLOGY

This ESMP for corridor 24 within the Local Roads Improvement Project was prepared in compliance with the provisions of the Environmental and Social Management Framework for the Project<sup>2</sup> in order to:

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

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

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 2015<sup>3</sup> for Environmental and Social Management Framework.

#### 4. DESCRIPTION OF THE PROJECT

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

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

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

- 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

Sidewalks within villages: 1.50m

Pavement: paved

#### Structures

3 Bridges (B01, L=12m, ch:13+880.19 / B02, L=14m ch:1+166.85 / B03, L= 16m ch:3+904.40))

46 existing culverts

#### Pavement

21.800 m<sup>3</sup> Embankment material from borrow material

145.500 m<sup>3</sup> Excavation of unsuitable material and disposal

112.000 m<sup>3</sup> of gravel material (drainage layer, base course, levelling material)

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

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

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

#### Trees

237+74= 311 trees to be removed

593+185= 778 new trees

No schools and kindergartens are located immediately near the road.

#### Bus stops

##### Section I:

One double bus lay-by at Visniovca village at ch0+070

One double bus lay-by at Bobocica village at ch13+550

One bus lay-by at ch16+960 and one bus stop at ch17+130 at the eastbound direction at Enichioi village.

Two bus stops at Baimaclia village at ch21+340 and ch21+400

##### Section II:

One double bus lay-by within Tartaul village at ch1+075 and one bus lay-by at the beginning of Section II.

The installation is proposed at the Intersection with transverse road R56.

Two double bus lay-bys at Ciobalaccia village at ch4+000 and ch5+170.

One double bus lay-by at Flocoasa village at ch8+970.

One double bus lay-by at the end of Section II at ch14+840.

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:

South entrance of village Visniovca at km1+320.

North and south entrances of village Bobocica at km12+780 and km14+100.

West and East entrances of village Enichioi at km16+560 and km17+910

East entrance of village Baimaclia at km20+010

Section II:

South entrance of village Tartaul at km2+010

North and south entrances of village Ciobalaccia at km3+180 and km6+345

West and East entrances of village Flocoasa at km7+790 and km9+530

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 (see next pictures) 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.

### **Section I**

Culvert L=12m km: 13+861.92



Box Culvert 2x1.50x1.50m    km: 16+469.22



Box Culvert 2.00x2.00 km: 20+697.13



**Section II**

Culvert L=14m km: 1+162.35



Culvert L=16m km: 3+904.86



Pipe Culvert 3.00x3.00m km: 4+069.47



Box Culvert 1.50x2.50m km: 6+288.77



Box Culvert 2.50x2.50m      km: 8+086.81



Box Culvert 3.00x2.00m      km: 8+621.03



## 5. ENVIRONMENTAL AND CLIMATE BASELINE

### 5.1. Regional climate and geography

Cantemir district is located in the southern part of the Republic of Moldova in the climatic zone III. The average January temperature is minus 3 degrees, for July – plus 22. The average annual temperature is + 9.5-10.0° C, the absolute winter minimum – -27-30°C, days with temperatures above 0 degrees – 279-289, the sum of positive temperatures – 3650-3850. The average depth of soil freezing – 30-45 cm, absolute depth – 55-85 cm. Passing over the average zero-degree spring temperature occurs on March 1, at the earliest – on January 18, at latest – on April 4. Passing to temperatures below zero degrees generally takes place on November 11th, at the earliest on November 2nd, at the latest on February 11th. Annual average precipitation – 475 mm, hydrothermal coefficient – 0.7-0.8. The humidity of the air (hydrothermal coefficient) is equal to: in winter time – 1.0, spring-autumn – 5.5-9.0, winter – 10.0-13.0. The predominant wind direction - northwest and north, average speed – 3.0-4.5 m/sec, in spring days up to 15 m/sec and more.

Among the most common natural hazards are droughts (no precipitation for 14 consecutive days in the cold season of the year and 10 days in the hot season of the year). In this climatic zone the droughts have 1-2 repetitions in 5 years. There is an increase in the frequency and intensity of the drought phenomenon. In the last decade, there have been five years of drought (2001, 2003, 2007, 2012).

In the summer, the rainfalls (rainstorms with the intensity of 0.5-2 mm/min) is specific to the area, accompanied by lightning, storms and hail. Hydrometeorologists in the Republic of Moldova have observed the increase of the frequency of these rains in the last decades, from 8.4 cases in the period of 1966-1990 to 10.4 cases in the years 1991-2004.

The villages in this district are about 80-100 km away from Vrancea, the epicenter of earthquakes in this region of Europe, located in the seismic area of magnitude 7-8 degrees at the Richter scale. The average periodicity of earthquakes of such intensity is reported once in 35-40 years. The last earthquakes of such strength happened more often and occurred in 1977, 1986, slightly weaker - in 1990. Earthquakes can have an impact on pumping systems and equipment, transportation and distribution of water, water quality in the source, others.

### **5.2. *Geomorphology, geology and hydrography***

Cantemir district is situated on the Tigheci plateau with gradual passage on the South Moldavian Plain, the territory is crossed by the Tigheci, Larga and partially Salcia Mare rivers; the northern part is higher and heavily fragmented by valleys and ravines, and the lower part of the south with lower slopes. As a result of erosion processes and landslides, hill-shaped hills have been formed in the meridional, higher and more compacted in the north. The highest altitude is 295 m. The western part is a lower region, consisting of old terraces, crossed by valleys and ravines. The terraces descend to the Prut's meadow.

Most of the district is situated in the basin of the Larga River, which starts from two springs near the village of Cârpești and runs off in the Prut river. The length of the river is 33 km, slope – 4.4%. There are 16 tributaries with a length of less than 10 km and a total length of 40 km. The reception basin is located on the Tigheci Hills, elongated from northeast to southwest. The average height of the basin – 140 m, the surface – 151 km, the length – 30 km, the average width - 5,0 km, the density of the hydrographic network – 0,48, the coefficient of meandering – 1,23. The relief is hilly, very dismembered, the slopes on the left of the valleys are steep, on the right – not so steep. The valley is slightly winding, V-shaped, with a width of 2.3 to 5.3 km. The slopes are 100-150 m high. The meadow starts from the village of Cârpești, it is bilateral, with lowland vegetation, estimated: average width – 100-180 m, maximum – 220 m near Flocoasa village. The riverbed is predominantly dry, a little winding, without branching, stable, at the spring it is artificially deepened. The average width is 3-6 m, maximum 6 m (village Focoasa). The riverbed is smooth, muddy, in some places sandy.

Native rocks in the basin are presented by different types of clay and sand. From the deep layers, mineral water (Enichioi), natural gas (Ciobalaccia) is extracted.

### **5.3. *Volume and quality of surface and groundwater***

The Tigheci, Larga, Salcia Mare rivers flow into the territory of Cantemir district. Large spring waters usually begin in the last days of February – the first half of March (the earliest manifestations of the phenomenon were recorded on February 23, the latest on March 30. During the intense melting of snow, the rise of the level lasts 2-9 days, the lowering – 7-15 days. In the years with low snow quantity, the phenomenon practically does not occur, the level increase does not exceed 20-30 cm. During the summer there are 2-3 river floods.

The monitoring of water quality in the Larga River is missing. But according to some investigations of the Cahul Ecological Agency carried out in the Prut River Basin, where the Larga River flows, the water quality corresponds to the third and fourth classes (moderate and heavily polluted) respectively.

There are built 67 ponds in the rivers' riverbeds, the surface of the water mirror is about 400 ha. The water is used for small irrigation, fish farming, and recreation. Some of the older aquatic basins have a high degree of silting, 14 are dry.

In Cantemir district, there are recorded 1627 shallow wells and springs, out of which 110 are set up. About 85% of the wells do not have good drinking water, a safe source of drinking water being the village aqueducts.

In the district there are recorded 76 artesian wells, in functioning condition – 45, only in 15 wells the water is drinkable. The volume of pumped water is 650 350 cubic meters per year. The depth of water extraction is from 110 to 400 m. Most of the water quality in the artesian wells does not meet the sanitary requirements because of the high degree of mineralization (up to 6000 mg / dm<sup>3</sup>), the hardness reaches 90 mol/m<sup>3</sup>, it contains supernormal concentrations of ammonia, hydrogen sulfide, bromine, boron, others.

#### **5.4. The landscape**

Most of the territory of the district is exploited for agricultural purposes, so the plantations of vines, orchards, field crops predominate. Only a few secular forests, acacia forests and windbreak forests, mostly of the acacia species, are encountered. In the meadows of the rivers and on some versants, there were preserved degraded sectors with steppe vegetation, willow trees. Due to the lack of precipitation and excessive grazing, in summer the vegetation of the meadows dries up, revealing the soil and the native rocks that appeared on the surface due to the processes of water erosion of the soil. Alignments of trees around the roads (predominant species - walnut, poplar, acacia) are in good and satisfactory condition. Several sectors near the roads, banks of ravines, ponds, including in the outskirts of localities, contain piles of domestic, vegetable, zootechnic, construction waste which considerably reduce the landscape value of the land.

#### **5.5. Organic and biotic resources**

The forests in Cantemir district constitute about 6 thousand ha or 9% of the territory. Some of them are secular, but most of the areas have been planted in the last 40-50 years, being subject to regeneration cuttings. Greater massive forests are located near the villages of Tigheci, Cârpești, Lărguța, Baimaclia and others. In the dendrological structure of the old forests there is predominantly the common oak (*Quercus robur*) and the downy oak (*Quercus pubescens*), in new ones – the Bodalla silver wattle (*Acacia silvestris*). Other species found more often in the forests of the district are: the field elm (*Ulmus carpinifolia*), the Tata maple (*Acer tataricum*), the littleleaf linden (*Tilia cordata*), others. Around the creeks grows Mediterranean and nemoral species of shrubs: the European smoketree (*Cotinus coggygria*), the common dogwood (*Swida sanguinea*), the wayfarer (*Viburnum lantana*), the blackthorn (*Prunus spinosa*), others. In the litter and meadows, we meet the sparrow grass (*Asparagus tenuifolius*), Solomon's seal (*Poligonatum latifolium*), *Aegonychom purpureo-caeruleum*), the suter (*Sedum maximum*), others. On the hillsides and on the slopes, there are predominantly the *Stipa capillata*, *Festuca valesiata*, *Poa angustifolia*, the *Bromopsis inermis*, the *Elytrigia repens*, the *Stipa lessingiana*, the wormwood (Austrian *Artemisia*), others.

On the banks of ponds, brooks, aquatic plants grow such plants as *Phragmites australis*, the lesser bulrush (*Thipha latifolia*, *Thipha angustifolia*), the frog grass (*Hydrocharis morsus-ranae*), the great horsetail (*Equisetum telmatea*), the European water plantain (*Alisma plantago-aquatica*), others

The animal world is represented by the species: the brown hare (*Lepus europaeus*), the fox (*Vulpes vulpes*), the hedgehog (*Erinaceus eoropaeus*), the Eurasian badger (*Talpa europaea*), the least weasel (*Mustela nivalis*), the mole (*Talpa europea*), the lizard (*Lacerta viridis*), the water snake (*Natrix natrix*), the common quail (*Coturnix coturnix*), the white stork (*Ciconia ciconia*), the pheasant (*Phasianus colchicus*), others.

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 pine marten (*Martes martes*), the steppe polecat (*Mustela eversmanni*), the multi-coloured lizard (*Eremis arguta*), the tawny eagle (*Aquila rapax*), the great bustard (*Otis tarda*), the meadow viper (*Vipera ursini*), the European pond turtle (*Emis orbicularis*).

The following protected areas are protected under the protection of the state: the geological monument of Cociulia quarry located about 10 km from Corridor 24, Alunis Forest Reserve near the Ciobalaccia village at 8 km from the repair road, the forest landscape reserves near the village of Antonești (in the Prut's meadow), near the village of Chioselia, as well as the Codrii Tigheciului reserve, near the villages Lărguța and Capaclia. No protected area above is crossed by corridor 24.

### **5.6. Air quality**

In Cantemir district, the main sources of atmospheric air pollution with gas and dust are car transport (in the Prut Valley passes the Chisinau - Cahul road which is quite crowded), some industrial enterprises, the forges (49), the gas stations. Another source, characteristic for the spring and autumn months, is the burning of domestic and vegetal waste.

In the rest of the territory, the impact of air transport on the air is somewhat lower because the middle territory of the country is not crossed by any important motorway. Data on concentrations of gas in the atmosphere were not found, such research was not carried out. No data on instrumental environmental control carried out in recent years at technical testing stations in the district during technical review have been found but the statistics show that about 20% of cars have exceeded the concentration of toxic compounds in the emission gases. At the same time, it should be noted that, according to World Health Organization data, the entire territory of the Republic of Moldova, is located in the moderate atmospheric air pollution with dust and ozone as a result of the cross-border transport effects of air masses as well as local emissions of pollutants. Specialist sources state that excessive air pollution leads to increased indications of the morbidity of the population with respiratory, cardiac, blood and other diseases.

### **5.7. Noise impact**

Just like the atmospheric air pollution the main sources of noise are transport units, trains and industrial enterprises. Some noise research conducted by the Ministry of Health shows that the noise level in the localities crossed by the motorways reaches 76-78 dBA, the permissible daily level is 70 dBA. Industrial enterprises produce noise within the range of 40-60 dBA, which is within the sanitary rules. The noise level in the localities located near the railways (Chisinau - Cahul - Giurgiulesti railway line passes through the district) is 11-76 dBA, the maximum permissible night time is 60 dBA. The localities in Cantemir district are not crossed by any major motorway, except for Chisinau - Cahul road in the west and the industrial enterprises work at low efficiency, thus the noise pollution does not pose a risk to the health of the population. More frequent maladies related to excessive noise are cardiac, neuro-psychic, otitis, and others.

### **5.8. Soil properties**

The area of agricultural land in the district is 64690 ha, the common and carbonate chernozems are the most widespread. 42% of the land area is affected by erosion, the average degree of soil solvency in the district is 57 points (as a reference base for the assessment of soil quality serves the typical humerus typical chernozem, appreciated at the 100-point scale). The natural fertility of soils is constantly diminishing.

Degradation occurs due to the loss of large amounts 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 with the crop harvested and the volume of fertilizer incorporated in the ground. The versants 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 has decreased several times, compared to 20-30 years ago.

As regards the chemical pollution of soils, the situation is gradually normalizing. Only occasionally, where there were once vineyards and orchards, there are copper concentrations higher than the norms. Since the amount of chemical substances used to protect plants against diseases and pests has decreased hundreds of times and new chemicals have a much shorter decomposition period, the soils have practically been cleared of pesticides. It was cleared from chemicals and part of the chemical stores that were permanently a strong source of pesticide pollution were demolished.

### **5.9. Socio-economic aspect**

C24 Corridor within the Local Roads Improvement Project is located in Cantemir and comprises 51 localities with a population of 52,115 (the 2014 Census). The area of the district is 868 square km, the agricultural land occupies about 65 thousand ha. The basic preoccupation of the inhabitants of the villages is agriculture (phytotechny and zootechnics). Large agricultural enterprises (agricultural cooperatives) specialized in growing grapes, fruits and field crops (wheat, sunflower, corn) are few. The land is allocated to farmers who process them individually or join in associations.

The following villages are located along the rode:

1. Gotești is a locality located at 46.1477 latitude, 28.1672 longitude and 32 meters above sea level. This locality is managed by the Mayorality of Gotesti. According to the 2014 Census, the population numbers 4088 people, of which: men - 2024, women - 2064. The direct distance to the town of Cantemir is 13 km. The direct distance to the town of Chișinău is 114 km.
2. Flocoasa is located at 46.1527 longitude 28.2513 and 48 meters altitude above sea level. This locality is managed by the administration of Ciobalaccia village. According to the 2004 Census, the population is 684 inhabitants. The direct distance to the town of Cantemir is 13 km. The direct distance to the town of Chisinau is 108 km.
3. Ciobalaccia is located at latitude 46.11744, longitude 28.2872 and 53 meters altitude above sea level. This locality is in the administration of Ciobalaccia village. According to the 2014 census, the population numbers 3017 people, of which: men - 1510, women - 1507. Cantemir is 14 km away. The direct distance to the town of Chisinau is 104 km.
4. Tartaul is at 46,2069 latitude, 28,3213 longitude and 83 meters altitude above sea level. This locality is managed by the Mayorality of Tartaul village. According to the 2014 census, the population numbers 1836 people, of which: men - 960, women - 876. The direct distance to the town of Cantemir is 15 km. The direct distance to the town of Chișinău is 99 km.
5. Baimaclia is located at 46.1872 latitude, 28.3869 longitude and 257 meters altitude above sea level. This locality is administered by the Mayorality of Baimaclia. According to the 2014 census, the population numbers 2649 people, of which: men - 1332, women - 1317. Cantemir is 23 km away. The direct distance to the town of Chisinau is 96 km.
6. Enichioi is located at 46.2216 latitude, 28.4200 longitude and 98 meters above sea level. This locality is managed by the Mayoralty of the Enichioi. According to the 2014 census, the population

Republic of Moldova – Ministry of Economy and Infrastructure – State Road Administration  
Local Roads Improvement Project  
Corridor 24: R34 – Ciobalaccia – Tartaul – R56 – Baimaclia – Enichioi – R37 (RFP No.: LRIP/CS/09)  
numbers 1776 people, of which: men - 882, women - 894. The direct distance to the town of Cantemir is 25 km. The direct distance to the town of Chisinau is 91 km.

7. Bobocica is located at 46.2164 latitude, 28.4700 longitude and 102 meters above sea level. This locality is managed by the Mayorality of Enichioi. According to the 2004 census, the population numbers 344 people. The direct distance to the town of Cantemir is 31 km. The direct distance to the town of Chisinau is 89 km.
8. Visniovca is located at 46.3333 latitude, 28.4494 longitude and 113 meters altitude above sea level. This locality is in the administration of the Mayorality of Vişniovca village. According to the 2014 census, the population numbers 1 324 people, of which: men - 649, women - 675. The direct distance to the town of Cantemir is 28 km. The direct distance to the town of Chisinau is 80 km.

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

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

The proposed impact minimization measures are presented as a summary of the current ESMP, attached to Annex 1, which will be included in the tender documentation and the construction contract. As soon as the contract is signed, the Contractor shall develop his own Environmental Management Plan with details of the implementation of this ESMP, ensuring that its activities comply with the applicable legislation and standards. Section 8 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 bio reproductive capacity of the soil.

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

The possible sources of pollution are as follows:

- Accidental fuel and lubricant leakage to machinery supply, repair work as well as unsatisfactory technical equipment;
- backfill for the construction of road infrastructure and utility networks;
- soil infiltration of pollutants and pollutant emissions, as well as chemical reactions in contact with water;
- solid household waste.

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

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

The negative impact on land is expressed by:

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

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

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

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

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

## **6.2. Surface waters**

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

In order to minimize such risks, the following rules will be met:

- execution of construction works, as much as possible, during the low water flow season in order to minimize the threat of water contamination;
- carrying out excavations, minimizing the storage of materials near the running waters;

- adequate protection to prevent the washing of the earth used as material.
- minimizing the cutting of riverine 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 next Table).

## WATER WELLS INVENTORY

Water Point	Coordinates		Chainage	G.W.L.* (m)	Measurement Date
	X	Y			
W-1	204024.00	132122.83	0+700.44	1.00	30/11/2017
W-2	204032.42	132085.16	0+739.03	1.00	30/11/2017
W-3	204064.92	131962.58	0+861.43	0.20	30/11/2017
W-4	204066.99	131743.39	1+079.18	0.70	30/11/2017
W-5	204439.08	121352.78	13+203.71	4.40	30/11/2017
W-6	204560.06	120895.60	13+676.52	2.90	30/11/2017
W-7	199872.80	117359.26	20+521.17	7.50	1/12/2017
W-8	194037.74	118788.65	22+102.96	4.10	1/12/2017
W-9	193835.55	118543.76	0+355.41	9.50	1/12/2017
W-10	193743.60	118433.26	0+498.35	9.70	1/12/2017
W-11	193724.92	118359.37	0+573.11	8.70	1/12/2017
W-12	193599.70	118163.76	0+806.53	5.00	1/12/2017
W-13	193512.81	117962.68	1+024.88	4.20	1/12/2017
W-14	193334.50	117650.65	1+385.53	4.50	1/12/2017
W-15	193234.02	117459.25	1+601.43	4.70	1/12/2017
W-16	191472.70	115788.33	4+054.04	5.60	1/12/2017

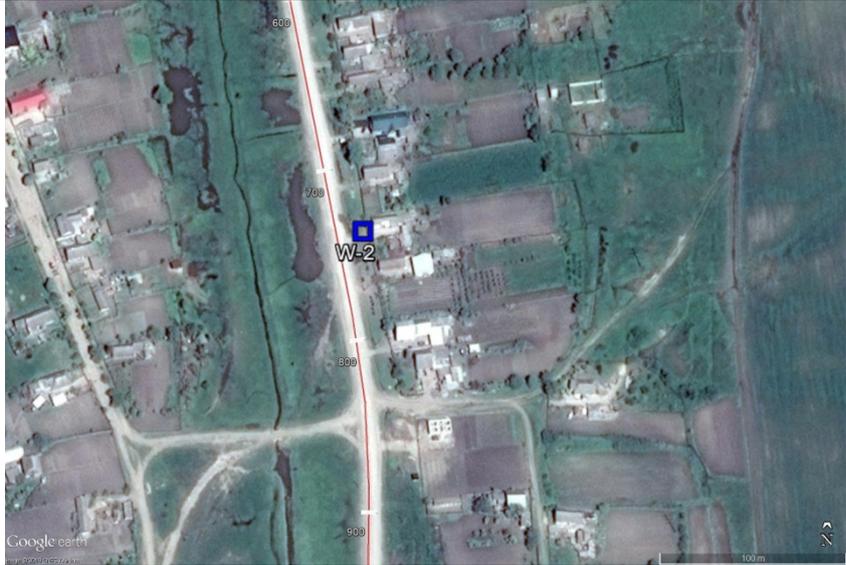
Water Point	Coordinates		Chainage	G.W.L.* (m)	Measurement Date
	X	Y			
W-17	191257.69	115793.30	4+275.77	14.50	1/12/2017
W-18	191223.97	115645.75	4+416.56	13.90	1/12/2017
W-19	191149.23	115377.76	4+694.82	6.80	1/12/2017
W-20	191101.86	115192.21	4+885.70	4.20	1/12/2017
W-21	191045.44	115051.81	5+037.29	3.20	1/12/2017
W-22	190372.95	114305.35	6+097.77	4.50	1/12/2017
W-23	190318.30	114224.19	6+194.30	4.50	1/12/2017
W-24	189429.23	113400.83	7+450.22	3.30	1/12/2017
S-1	189498.98	113625.00	7+215.25		

\* Ground Water Level from natural surface

WATER WELLS INVENTORY W-01		
INFO	MAP	
<p>TYPE: Well</p> <p>LOCATION: 0+700,44</p> <p>X= 204024,00</p> <p>Y= 132122,83</p> <p><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">1.0</td> </tr> </table>	1.0	
1.0		
PICTURES		



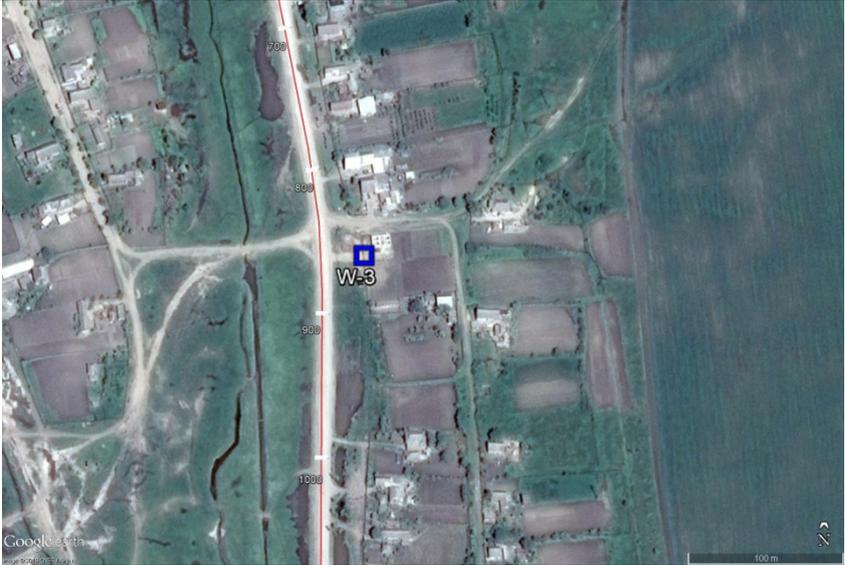
## WATER WELLS INVENTORY W-02

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+739,03</p> <p style="padding-left: 40px;">X= 204032,42</p> <p style="padding-left: 40px;">Y= 132085,16</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">1.0</div>	

## PICTURES



## WATER WELLS INVENTORY W-03

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+861,43</p> <p>X= 204064,92</p> <p>Y= 131962,58</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">0.2</div>	

## PICTURES



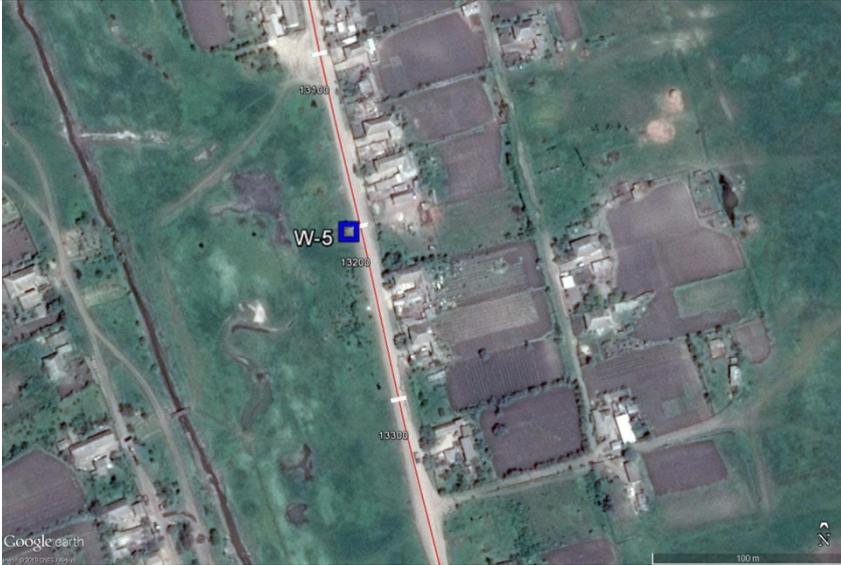
## WATER WELLS INVENTORY W-04

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 1+079,18</p> <p>X= 204066,99</p> <p>Y= 131743,39</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">0.7</div>	

## PICTURES



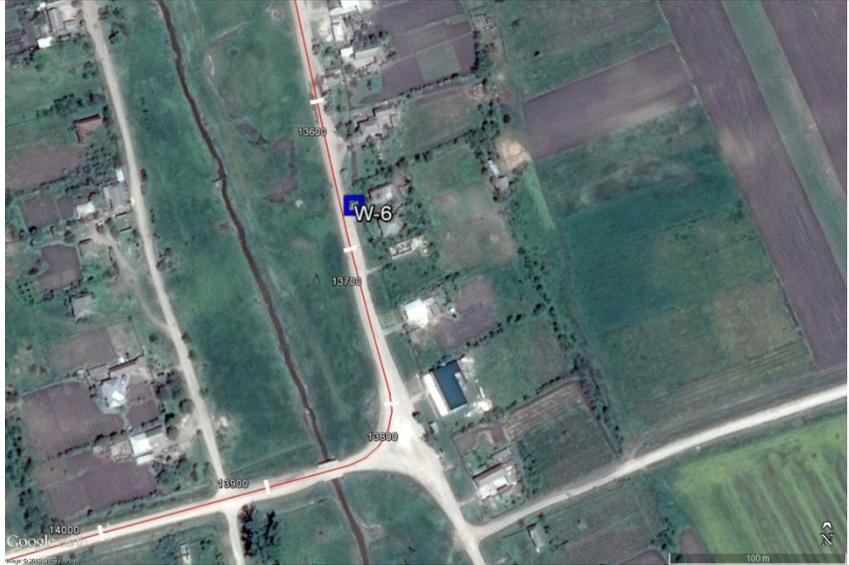
## WATER WELLS INVENTORY W-05

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 13+203,71</p> <p>X= 204439,08</p> <p>Y= 121352,78</p> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 10px auto; text-align: center; vertical-align: middle;">4.4</div>	

### PICTURES



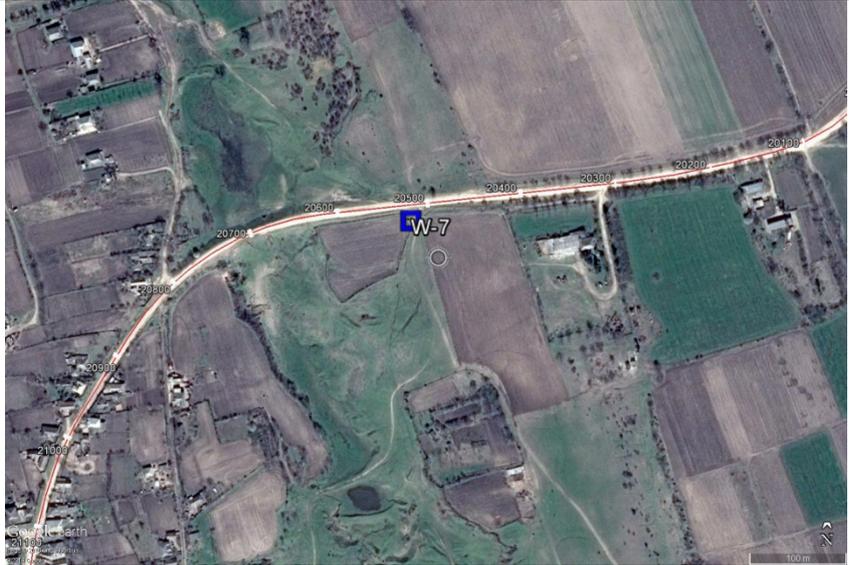
## WATER WELLS INVENTORY W-06

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 13+676,52</p> <p style="margin-left: 40px;">X= 204560,06</p> <p style="margin-left: 40px;">Y= 120895,60</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">2.9</div>	

### PICTURES



## WATER WELLS INVENTORY W-07

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 20+521,17</p> <p>X= 199872,80</p> <p>Y= 117359,26</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 0 auto; text-align: center; line-height: 50px;">7.5</div>	

### PICTURES



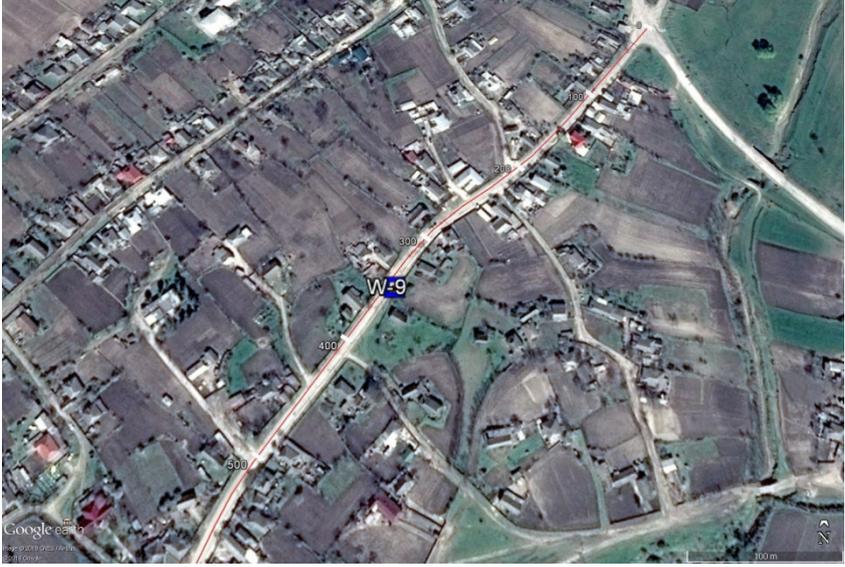
## WATER WELLS INVENTORY W-08

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 22+102,96</p> <p>X= 194037,74</p> <p>Y= 118788,65</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 0 auto; text-align: center; line-height: 50px;">4.1</div>	

### PICTURES



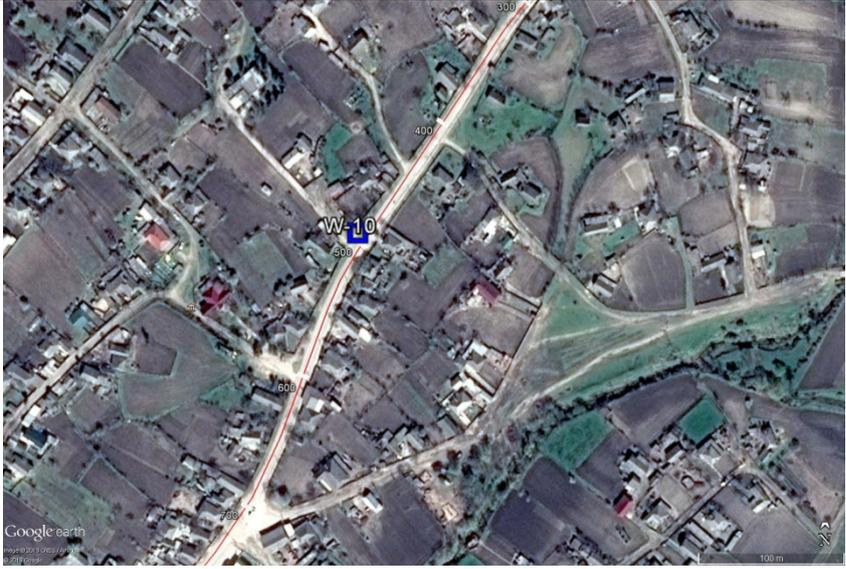
## WATER WELLS INVENTORY W-09

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+355,41</p> <p>X= 193835,55</p> <p>Y= 118543,76</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">9.5</div>	

### PICTURES



## WATER WELLS INVENTORY W-10

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+498,35</p> <p>X= 193743,60</p> <p>Y= 118433,26</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">9.7</div>	

### PICTURES



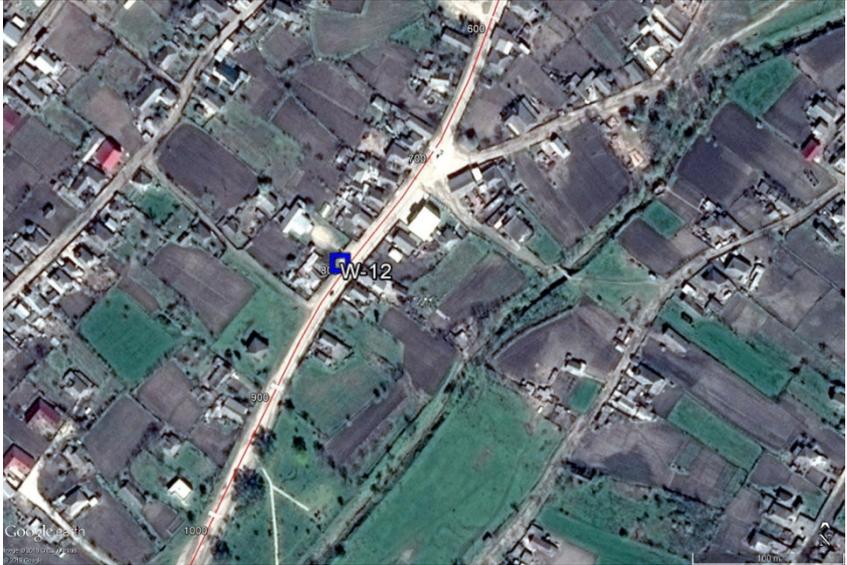
## WATER WELLS INVENTORY W-11

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+573,11</p> <p>X= 193724,92</p> <p>Y= 118359,37</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 0 auto; text-align: center; line-height: 50px;">8.7</div>	

## PICTURES



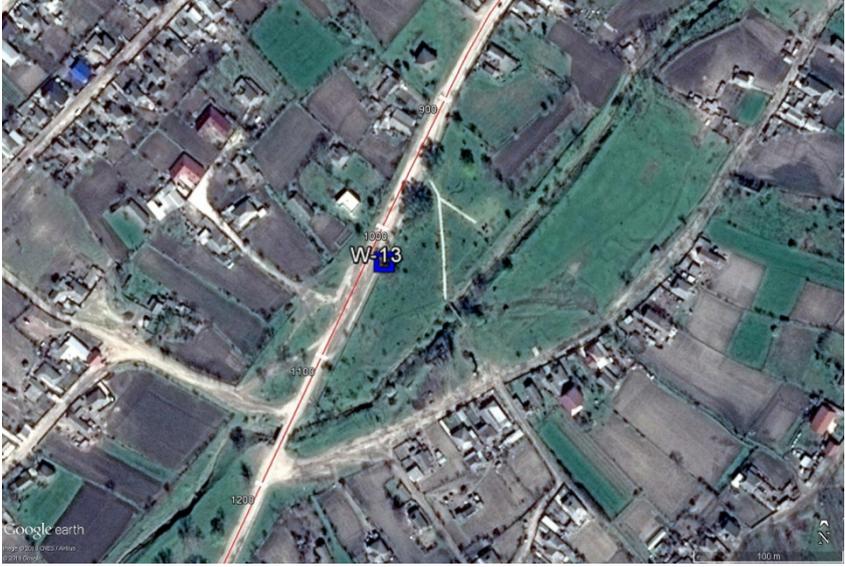
## WATER WELLS INVENTORY W-12

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 0+806,53</p> <p>X= 193599,70</p> <p>Y= 118163,76</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">5.0</div>	

### PICTURES



## WATER WELLS INVENTORY W-13

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 1+024,88</p> <p>X= 193512,81</p> <p>Y= 117962,68</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 0 auto; text-align: center; line-height: 50px;">4.2</div>	

### PICTURES



## WATER WELLS INVENTORY W-14

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 1+385,53</p> <p style="margin-left: 40px;">X= 193334,50</p> <p style="margin-left: 40px;">Y= 117650,65</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">4.5</div>	

### PICTURES



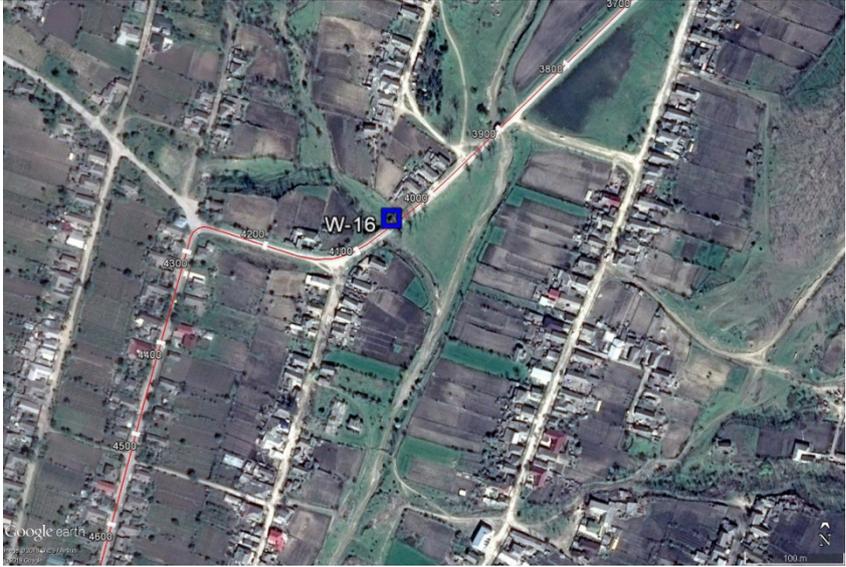
## WATER WELLS INVENTORY W-15

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 1+601,43</p> <p style="margin-left: 40px;">X= 193234,02</p> <p style="margin-left: 40px;">Y= 117459,25</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto; text-align: center; line-height: 50px;">4.7</div>	

## PICTURES



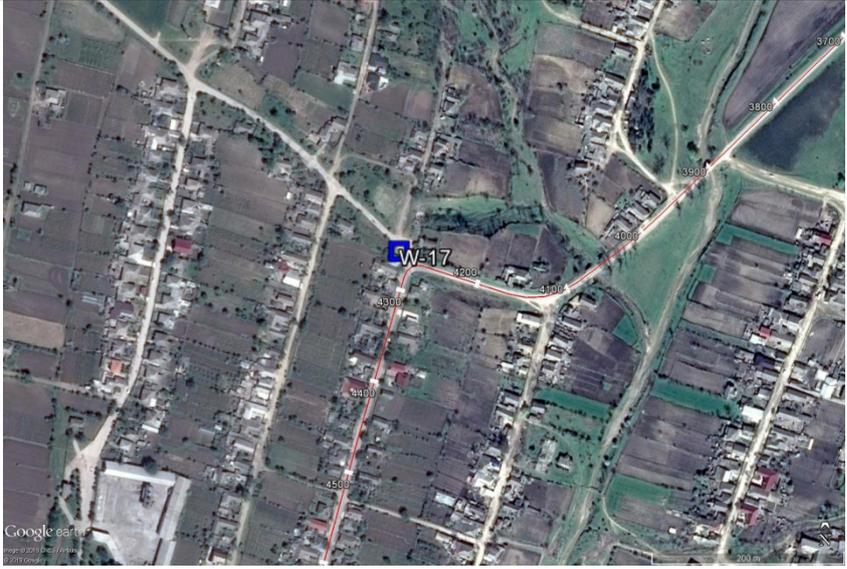
## WATER WELLS INVENTORY W-16

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 4+054,04</p> <p>X= 191472,70</p> <p>Y= 115788,33</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">5.6</div>	

### PICTURES



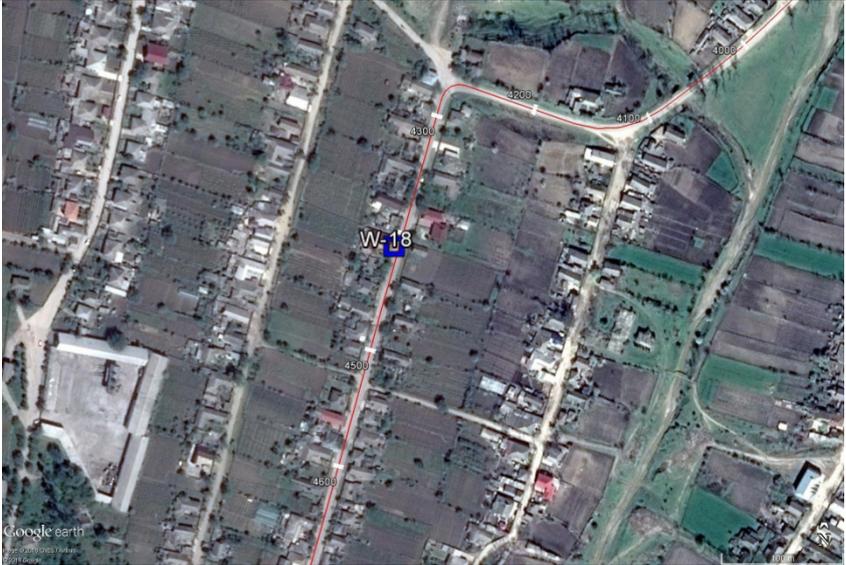
## WATER WELLS INVENTORY W-17

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 4+275,77</p> <p style="margin-left: 40px;">X= 191257,69</p> <p style="margin-left: 40px;">Y= 115793,30</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">14.5</div>	

### PICTURES



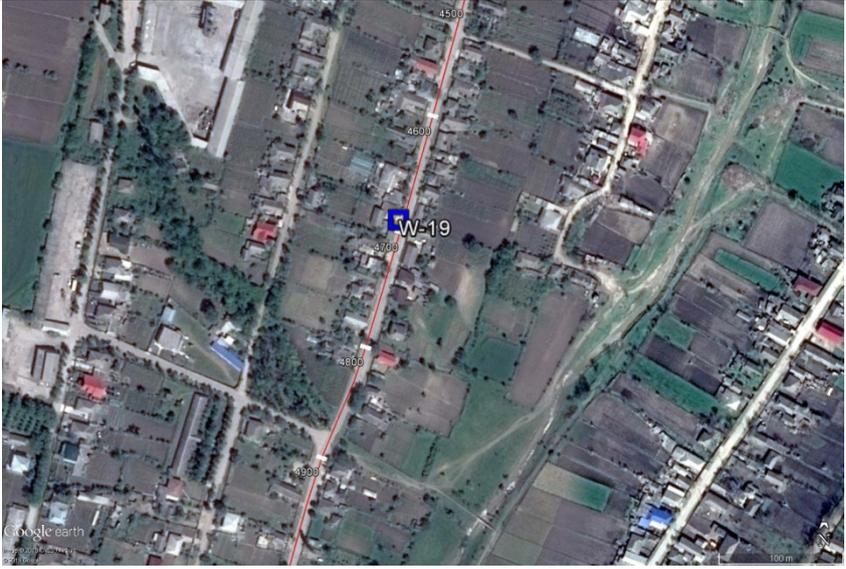
## WATER WELLS INVENTORY W-18

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 4+416,56</p> <p style="margin-left: 40px;">X= 191223,97</p> <p style="margin-left: 40px;">Y= 115645,75</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 10px auto; text-align: center; line-height: 40px;">13.9</div>	

### PICTURES



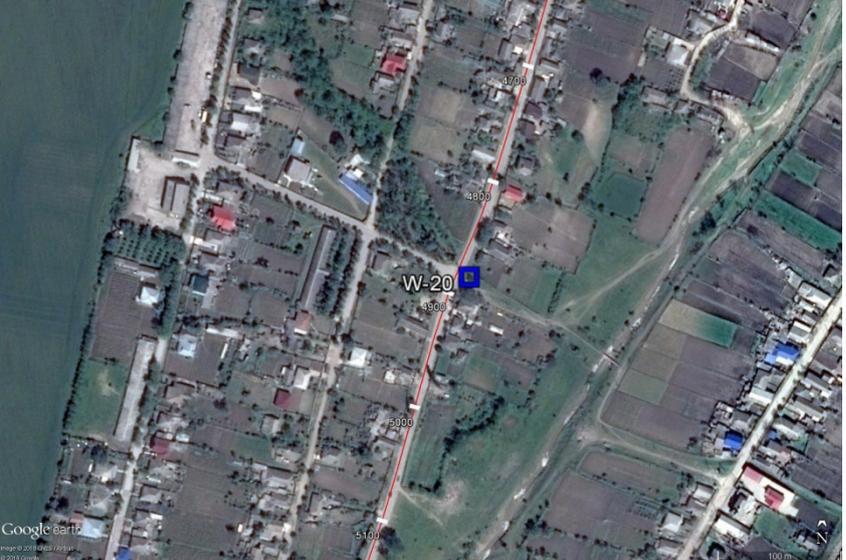
## WATER WELLS INVENTORY W-19

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 4+694,82</p> <p>X= 191149,23</p> <p>Y= 115377,76</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; margin: 0 auto; text-align: center; padding: 2px;">6.8</div>	
REMARKS	

### PICTURES



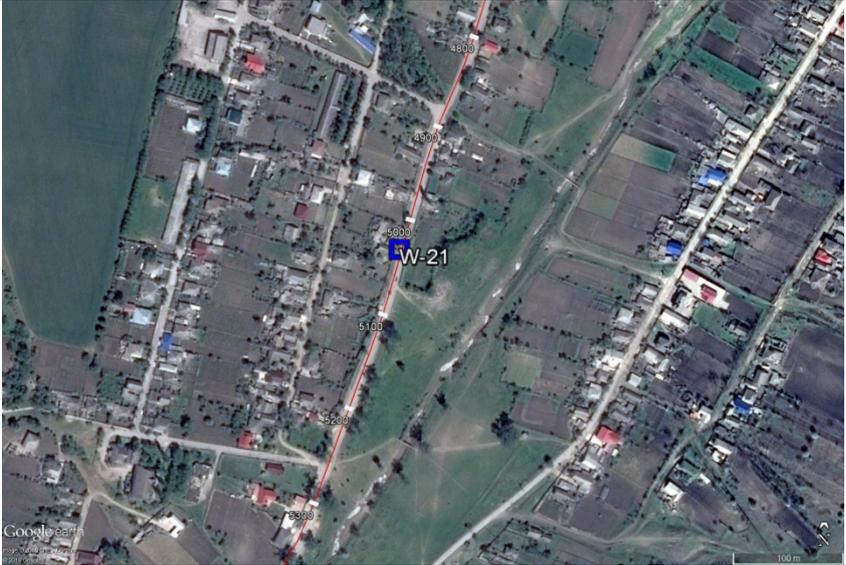
## WATER WELLS INVENTORY W-20

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 4+885,70</p> <p>X= 191101,86</p> <p>Y= 115192,21</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; margin: 0 auto; text-align: center; padding: 2px;">4.2</div>	
REMARKS	

### PICTURES



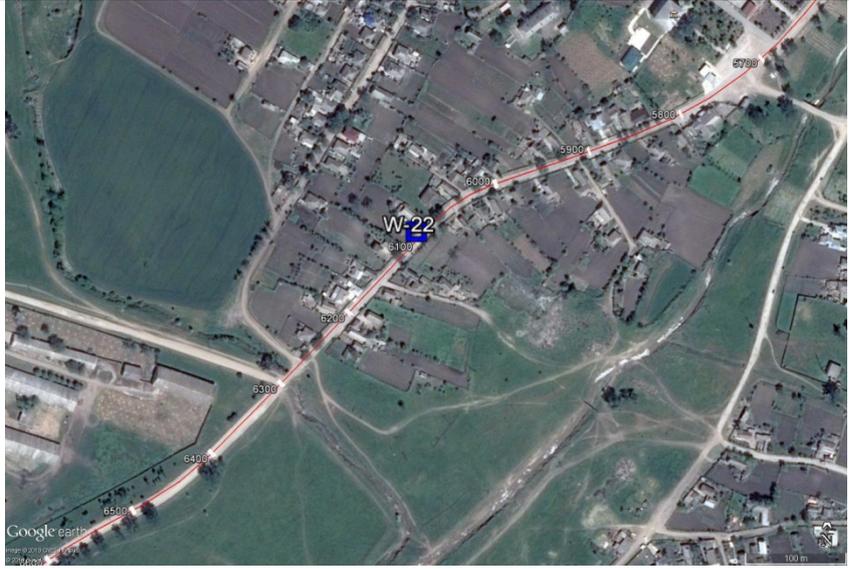
## WATER WELLS INVENTORY W-21

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 5+037,29</p> <p>X= 191045,44</p> <p>Y= 115051,81</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">3.2</div>	

### PICTURES



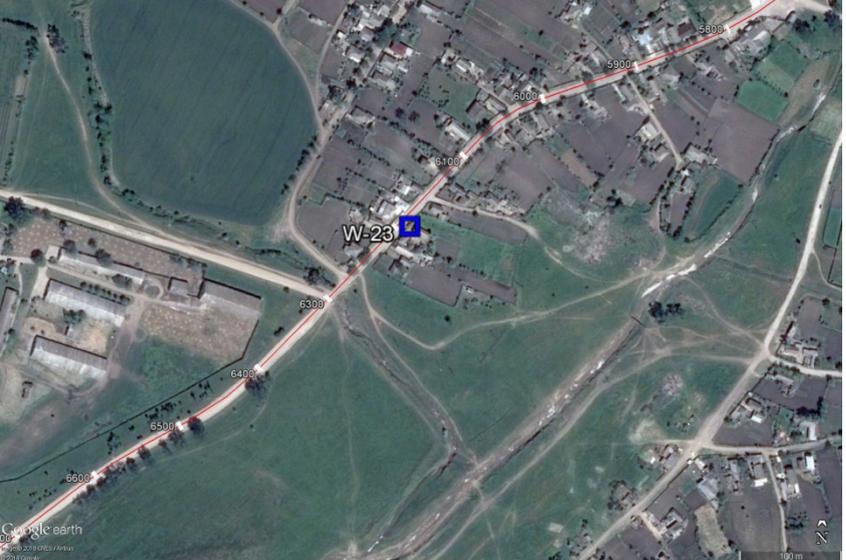
## WATER WELLS INVENTORY W-22

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 6+097,77</p> <p>X= 190372,95</p> <p>Y= 114305,35</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">4.5</div>	

### PICTURES



## WATER WELLS INVENTORY W-23

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 6+194,30</p> <p>X= 190318,30</p> <p>Y= 114224,19</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; margin: 0 auto; text-align: center; padding: 2px;">4.5</div>	
REMARKS	

### PICTURES



## WATER WELLS INVENTORY W-24

INFO	MAP
<p>TYPE: Well</p> <p>LOCATION: 7+450,22</p> <p>X= 189429,23</p> <p>Y= 113400,83</p> <p style="text-align: center;"><b>WATER LEVEL MEASUREMENT FROM NATURAL GROUND (m)</b></p> <div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; text-align: center; line-height: 40px;">3.3</div>	

### PICTURES



## WATER WELLS INVENTORY S-1

INFO	MAP
<p>TYPE: Spring</p> <p>LOCATION: 7+215.25</p> <p>X= 189498,98</p>   <p>Y= 113625,00</p>	

## PICTURES



During construction works, there is a risk of negative impacts (e.g. dust or other air pollution when these wells do not have a cover, or unorganized surface water leakage or leakage of harmful substances in the event of accidents). The risk of pollution remains in effect during operation due to the location of wells in the vicinity of the road. In order to know the initial quality of water from decentralized sources, it is

recommended to provide a water quality test plan in all the wells located at a distance of about 5 m from the edge of the road, which corresponds approximately to the width of the road. These tests will be done before starting the construction works in order to examine the current situation based on current national standards and the World Health Organization's guiding principles on drinking water quality. Water testing will be the responsibility of the Contractor, who will conclude a works contract with an accredited laboratory for these services.

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  $\leq 30$  cm or 3:1 rate in case of some trees taller than DBH.

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

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

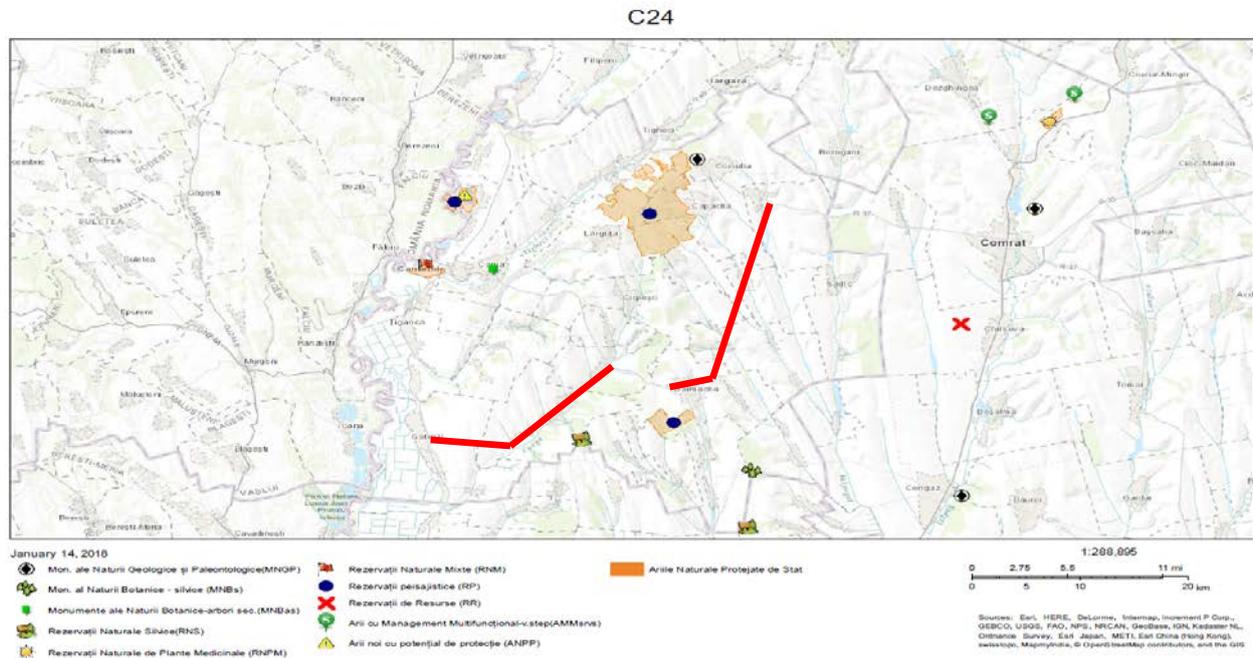
## 6.6. Protected Areas

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

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

- Destruction or pollution of water sources.

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

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

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

be taken into account due to insufficient reserves and duly consideration will be given to the needs of local population in this respect (see below).

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

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

Elevated noise levels cannot be entirely avoided during construction, but they can be controlled at source, e.g. by fitting and maintaining appropriate mufflers on earth-moving and other vehicles on the site; by enclosing noisy equipment; by providing noise attenuation screens, where appropriate. Workers shall be sensitized about minimizing noise while working inside of or near to settlements (e.g. avoid idling of vehicles, minimizing the use of horns etc.). Local communities shall receive timely information on construction taking place in the villages. During construction, the operation of heavy machinery can generate high noise and vibration levels. In order to minimize the level of nuisance for the local population, work will be restricted to between 21:00 to 06:00 hours within 500m of the settlement of Ciobalaccia, Tartaul, Baimaclia and Enichioi

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

### **6.9. Construction waste**

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

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

To properly manage waste issues the Contractor shall prepare a comprehensive Waste Management Plan as part of his ESMP (see Section 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 labour 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 (eg 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. On going 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 on going 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 behaviour 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. Contractor's work camps**

The establishment of contractor's work camps may cause adverse impacts if various aspects such as liquid and solid waste management, equipment maintenance, materials' storage, and provision of safe drinking water are not addressed properly. The site for the work yard will be selected by the contractor.

To ensure that potentially resulting impacts are kept at a minimum the contractor will be required to prepare the following plans or method statements:

- Layout plan of the work camp including a description of all precautionary measures proposed to avoid potential adverse impacts on the receiving environment (surface and ground water, soils, ambient air, human settlement);
- Sewage management plan for provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses or groundwater;
- Waste management plan covering the provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with applicable national regulations; and
- Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination.

These plans will be approved by the Engineer prior to beginning of construction.

Prior to establishment of the work camp(s) the contractor shall conduct consultations with local authorities to identify sources of construction water and potable water for the workforce that will not compete with the needs of the local population. Potable water for the workforce shall comply with the national quality standards.

## 6.16. 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 24						
Municipiul/Raionul Oraşul/Comuna <i>Municipality/County City/Commune</i>	Total	Sexul <i>Sex</i>		Grupa de vârstă, ani <i>Age group, years</i>		
		masculin <i>male</i>	feminin <i>female</i>	0-17	18-64	65+
Goteşti	4.088	2.024	2.064	839	2.829	420
Ciobalaccia	3.017	1.510	1.507	662	2.070	285
Tartaul	1.836	960	876	459	1.241	136
Baimaclia	2.649	1.332	1.317	715	1.662	272
Enichioi	1.776	882	894	432	1.218	126
Vişniovca	1.324	649	675	316	878	130
Şamalia	765	389	376	169	507	89

\* data retrieved from statistica.md

In the localities Goteşti, Ciobalaccia, Tartaul, Baimaclia, Enichioi, Vişniovca, activate 7 educational institutions:

Corridor 24		
Locality	Educational Institution	No. of pupils
Gotești	V.Pîrvan Gotești Lyceum	516
Ciobalaccia	Ciobalaccia Lyceum	366
Tartaul	Tartaul Gymnasium	331
Baimaclia	„Mihai Eminescu,, Baimaclia Lyceum	355
Enichioi	Enichioi Gymnasium	147
Vișniovea	Vișniovea Gymnasium	155
Șamalia	Șamalia Gymnasium	96

According to the data provided by the National Patrol Inspectorate over the last 3 years there have been 4 accidents on this road sector, all of them have been classified as serious. Two serious accidents occurred in 2015 resulted in one deceased and one severely injured child, in the first case a cyclist was hit by a truck, the hit old man died immediately, and in the second case, a child was hit when crossing against regulations. In 2016, a serious accident occurred in the village of Ciobalaccia, where an adult was injured as a result of hitting the pedestrians that were walking on the right side of the road, but the driver remained unidentified due to the fact that he left the scene of the accident. The accident in the village of Gotesti took place in 2017, a cyclist was severely injured after he was hit by a car that wanted to overtake without checking.

Year	2015	2016	2017
No. total accidents	2	1	0
Serious accidents	2	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 task<sup>4</sup>. The SRA's local environmental specialist will support the PMC team by monitoring the implementation of contractual provisions with respect to environment, Health & safety management and reporting and by reviewing any materials produced by the Contractor.

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

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

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 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 and Social Management Plan* (CESMP) which must be developed by the Contractor and submitted within 30 days of the contract award. Pre-construction and construction cannot commence until the CESMP is approved by the Client and his Supervision Consultant.

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

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

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

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

- Develop and continuously review and update the CESMP;
- Environmental inductions and training of personnel including sub-contractors and visitors;
- Liaison with local officials and regional and other regulatory authorities;
- Timely report any incidents in accordance with Client's specifications;
- As required prepare site-specific environmental management plans and construction method statements, work instructions and other special procedures;
- Design and manage the details of the environmental monitoring program, including noise, vibration and dust and review of routine reports;

- Review and improve method statements for environmental aspects prior to work starting;
- Identify environmental competence requirements for all staff on the Project and ensure delivery of environmental training to personnel within the Project team;
- Monitor construction activities performance to ensure that identified and appropriate control measures are effective and ensure compliance with the approved CESMP;
- Monitoring of the program for environmental works, and preparation of status reports as necessary;
- Responding in case of incidents and providing feedback to interested or affected parties;
- Act as the main contact between the regulatory Authorities and the members of the Project on environmental issues;
- Provide advice and liaison with the construction teams to ensure that environmental risks are identified, and appropriate controls are developed and addressed in the method statements;
- Offer assistance in the development and delivery of environmental training for site personnel and sub-contractors;
- Environmental audit of subcontractors and suppliers;
- Ensure that Project environmental requirements are implemented by all subcontractors so that the requirements are cascaded down to all personnel working on the project;

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

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

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

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

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

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

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

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

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

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

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

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

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

**Construction materials:** As per the provisions of the According to the Environmental and Social Management Framework only existing licensed borrow pits (APPENDIX 6) 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 CESMP which is submitted to the SRA and the Engineer-Supervisor for their review and approval prior to the start of any activities on site.

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

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

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

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

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

Construction activities will inevitably entail a variety of activities which have potential to result in complaints and grievance. Typical issues that may be of concern to local communities, affected individuals or even to workers could relate to safety, to general disturbance from noise or dust, to inconveniences caused by the transport of materials, disturbance of access to property or land or even damage to property etc.

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

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

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:

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

At the preparatory stage of the Project, the SRA has provided the preliminary version of the Environmental and Social Management Framework (ESMF) in the form of a summary to the MTRI, the Ministry of 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, and then revised on the basis of comments received. The final version of the ESMF was posted on the ASD website, the information being displayed on the World Bank Infoshop.

### 10.3. *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 for three corridors. As part of the current detailed design process and formal requirements, a further public consultation will be organized to provide information on the Project, the mechanism and the proposed environmental management measures.

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

**APPENDIX 1: ENVIRONMENTAL MANAGEMENT PLAN**

Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost US \$		Institutional responsibility	
SP	C	O	D							install	operate	Install	Operate
				<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"> <li>1. Contractor’s Environmental Management System;</li> <li>2. Pre-construction planning (topsoil removal and temporary storage; temporary protection of roadside trees);</li> <li>3. Health &amp; Safety Management Plan; (including incident management, trainings, performance reporting, medical treatments, hazardous operations, emergency etc.);</li> <li>4. Site and Camp establishment - if any – and operation (siting, topsoil clearing; camp establishment, effluent; waste management; fires; demobilisation);</li> <li>5. Waste / hazardous waste management (general waste</li> </ol>			<p>CESMP is complete and approved</p>	<p>During Project Preparation / mobilisation</p>	<p>22 000</p>	<p>n.a.</p>	<p>SRA</p>	<p>n.a.</p>



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				as appropriate.									
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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
				<p><b>Road safety during construction</b></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><b>Prepare a Road Traffic &amp; Safety Management Plan.</b></p> <ul style="list-style-type: none"> <li>Identify the various types of risk for road users / users of public space in villages that may occur during the various stages of construction. The Plan shall specify temporary measures to address any of these risks as appropriate at any stage of road rehabilitation;</li> <li>Plan to include measures both inside and outside settlements; measures for securing construction sites during and out of working hours; specific measures during the winter as appropriate;</li> <li>Obtain approval of the Plan from Rayonal Road Police (Politia de Patrulare) prior to the start of construction</li> <li>Timely inform the public on construction schedules and actively communicate with the local authorities.</li> <li>Inform all construction workers on the provisions of the plan;</li> <li>Deliver toolbox talks as ‘continued training’ for the workers and following any significant incident; strictly enforce its provisions;</li> </ul>	Site checks	Throughout construction site	<p>Road Traffic &amp; 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
				<p><b>Temporary construction activities and material transport have potential to cause nuisance and</b></p>	<ul style="list-style-type: none"> <li>Share timely and comprehensive information on the relevant practical aspects of the agreed Grievance</li> </ul>	Stakeholder consultation	Throughout construction site	All stakeholders are aware of the Project Grievance Mechanism and	Prior to start of construction	Work specs	n.a.	CC	CC

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

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

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Phase				Issue / Receptor / Impact	Mitigation Measure	Supervision requirement	Monitoring location	Performance indicators	Starting from	Cost		Institutional responsibility	
SP	C	O	D							install	operate	Install	Operate
					<ul style="list-style-type: none"> <li>nuisance;</li> <li>Limit size of to the absolute minimum to minimize need to clear vegetation;</li> <li>Provide appropriate drainage;</li> <li>Paved areas, incl. vehicle parking areas, workshop and fuel storage areas are to drain to an oil and water separator;</li> <li>Fuel storage areas are not located within 20m of a water course;</li> <li>Contractor facilities are to be contained within an adequate security fence.</li> </ul>								
					<ul style="list-style-type: none"> <li>Ensure full compliance of all proposed site arrangements, procedures and activities with the provisions of GD No 80 of 09.02.2012.</li> </ul>								
					<ul style="list-style-type: none"> <li>Restore and clean-up site upon completion of construction in line with the provisions of the approved CESMP</li> </ul>	Monitor implementation	Contractor's yard	Site cleaned up in accordance with approved CESMP	Completion of construction works	Work specs	n.a.	CC	CC
				<p><b>Worker's Health &amp; Safety</b> Creation of health risk for staff handling hazardous materials</p>	<ul style="list-style-type: none"> <li>Provide such training as appropriate to ensure that the staff handling potentially hazardous substances at the site is aware of potential risks associated to their activities and knows how to practically protect themselves</li> </ul>	Site inspection; interviews	Contractor's yard / construction sites	All staff handling hazardous materials is has been trained on potential risks	Throughout construction	Work specs	n.a.	CC	CC
				General health and safety risks at the construction site	<ul style="list-style-type: none"> <li>Equip all workers with appropriate personal protective equipment (PPE) in accordance</li> </ul>	Monitor compliance	Throughout construction site	All workers wear the required PPE in accordance	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
					<ul style="list-style-type: none"> <li>with the applicable standards / legal requirements / best practice and ensure that PPE will be appropriate to the risks of the individual work place (e.g. high-visibility safety apparel; boots; gloves; hard hats; ear plugs; goggles etc.);</li> <li>Ensure that PPE will be worn by workers at all times.</li> </ul>			<ul style="list-style-type: none"> <li>with the risk of their work place at all times;</li> <li>Stock of PPE available on site.</li> </ul>	Prior to the start of works;				
					<ul style="list-style-type: none"> <li>Prepare an Emergency Response Plan. The distance to the nearest hospital is to be taken into consideration when setting up this plan;</li> </ul>	Monitor compliance	Contractor's office	A comprehensive, approved emergency response plan is in place and known to the responsible staff	Prior to the start of works;	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Keep basic first aid equipment at the construction camp;</li> </ul>	Monitor compliance	Construction camp	Basic aid equipment available at the contractor's yard or camp	Throughout construction	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Provide basic safety training on the risks of the individual workplace to all members of the construction crew;</li> <li>Brief workers on arrangements for first aid and cases of emergency;</li> <li>Repeat at such intervals as appropriate</li> </ul>	Interviews with workers	Construction site; Contractor's yard; mobile asphalt plant	All workers are aware of the risks associated to their respective work place and are familiar with available first aid arrangements	Prior to the start of works and throughout construction	Work specs	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>Provide mobile toilets at appropriate locations along the route and ensure proper service intervals. Service contract to be signed with an approved service</li> </ul>	Site inspection	Construction site	Mobile toilets are available on site; Service agreement with licensed sub-contractor is in	Throughout construction	Work specs	n.a.	CC	CC

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SP	C	O	D							install	operate	Install	Operate
					agent;			place; Regular servicing takes place as per agreement					
					<ul style="list-style-type: none"> <li>Generally, ensure timely proper implementation of all necessary arrangements and activities in compliance with any other issues specified in the applicable national legislation (e.g. Government Decision No 80 of 09. February 2012 on health and safety management)</li> </ul>		Construction site and all temporary and or mobile facilities	Compliance with provisions of the legislation	Prior to the start of construction; during construction	Work specs	n.a.	CC	CC
				<b>Construction materials</b> Sourcing of materials	<ul style="list-style-type: none"> <li>Construction materials will be exclusively sourced from quarries and borrow sites that hold appropriate license under Moldavian legislation;</li> </ul>	Check permits / licenses; monitor compliance	Borrow sites and quarries	Contractor holds all required permits / licenses	Prior to the start of works / during construction works	Work specs	n.a.	CC	CC
				Transportation of construction materials by heavy trucks has potential to cause nuisance through noise and dust pollution and also to create road safety hazard;	<ul style="list-style-type: none"> <li>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</li> </ul>	Check approved method statements on material transport, monitor compliance	Haul routes	Selected haul routes avoid sensitive areas					
				Transportation of construction materials such as soil, bitumen, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc. has potential to cause nuisance and soil and water contamination through accidental spillage	<ul style="list-style-type: none"> <li>Carefully plan construction works to minimize pollution risk through accidental spillage or accidents;</li> <li>Ensure proper condition of transport vehicles at all times;</li> <li>Train workforce on proper management practices and safe</li> </ul>	Monitor compliance		All haul trucks are in proper technical condition and properly loaded and / or covered; No major spillage of construction					

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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
					handling and transport of materials; <ul style="list-style-type: none"> <li>• Avoid overloading and / or effectively cover haul trucks;</li> <li>• Ensure prompt clean-up of any spills of construction materials.</li> </ul>			materials					
				<p><b>Construction water</b></p> The need for construction water and water for dust management may cause ecological damage or create conflicts through competing interests with the needs of the local communities	<ul style="list-style-type: none"> <li>• Identify the most appropriate source of construction water and obtain approval from local authorities on location and quantities for abstraction prior to the start of operations</li> </ul>	Check permit; monitor compliance	Construction site; approved water abstraction point	Water abstraction permit available; compliance with permit provisions	Prior to the start of works	n.a.	n.a.	CC	CC
				<p><b>Air quality impact through construction emissions and side activities</b></p> 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"> <li>• CC to ensure that all construction equipment and vehicles will be in proper technical condition at all times;</li> <li>• Ensure regular maintenance and servicing of all construction machinery and haulage trucks throughout construction;</li> <li>• Strictly implement speed controls - especially within villages;</li> <li>• Strictly require workers to shut down engines that are not directly needed.</li> </ul>	Monitor implementation	Throughout construction site	No vehicles / machinery emitting excessive visible smoke; speed limits are observed; rules for minimizing public nuisance are observed by CC's staff		n.a.	n.a.	CC	CC

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SP	C	O	D							install	operate	Install	Operate
				Temporary generation of elevated levels of suspended dust through material transport and storage	<ul style="list-style-type: none"> <li>Cover all trucks carrying fine materials with tarpaulin to minimize dust generation;</li> </ul>	Monitor implementation	Throughout construction site	All haul trucks transporting fine materials are covered			CC	CC	
					<ul style="list-style-type: none"> <li>Sprinkle construction site and haul routes as appropriate / as directed by the Engineer during dry periods or in case of complaints;</li> <li>Ensure that only approved sources of water will be used for dust management;</li> </ul>	Monitor implementation		No dust nuisance / roads are sprinkled on time and at appropriate intervals		n.a.	n.a.	CC	CC
				Burning of construction waste	<ul style="list-style-type: none"> <li>Cover all fine material stockpiles materials or take other precautionary measures as appropriate or directed by the SE to minimize dust pollution effects;</li> <li>Ensure no burning of waste is undertaken without the consent of the Engineer</li> </ul>	Monitor implementation	Throughout construction site	Material stockpiles are covered / no obvious dust pollution originating from material stockpiles at any time		n.a.	n.a.	CC	CC
					<ul style="list-style-type: none"> <li>CESMP to cover all phases of the operation, i.e. site preparation, operation and decommissioning of the asphalt plant. The CESMP shall detail the site proposed for the temporary accommodation, site preparation and operation of the asphalt plant and describe the initial site conditions and environmental management arrangements proposed to minimize pollution risks and to control health and safety risks in</li> </ul>	Check SSEMP and monitor implementation	-,-	Approved CESMP & permit are available and agreed management measures duly implemented				CC	CC

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SP	C	O	D							install	operate	Install	Operate
					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"> <li>Site for mobile asphalt plant to be located at a minimum distance of 500m downwind of potential sensitive receptors (dwellings);</li> </ul>	Site check	Proposed site for asphalt plant / nearest settlements	Mobile asphalt plant is located at a minimum distance of 500m downwind of potential sensitive receptors	Prior to the start of construction works	n.a.	n.a.		
					<ul style="list-style-type: none"> <li>Obtain approval for selected site from responsible authority prior to start operations</li> </ul>	Check availability of permit;	Proposed plant site	Site works compliant with permit	Prior to the start of construction works	n.a.	n.a.	CC	CC
				Generation of solid and liquid waste	CESMP to address management and proper handling of solid and liquid waste from asphalt plant operations. This aspect will need proper control and 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
				<p><b>Damage to land / soils due to:</b></p> <ul style="list-style-type: none"> <li>- Land reclamation for siting of the mobile asphalt plant, if needed / reduced land use options;</li> <li>- Site preparation works / earthworks;</li> <li>- Construction of temporary access roads.</li> </ul> <p>Impact on soil structure due to</p>	<ul style="list-style-type: none"> <li>Removal and storage of top soil for subsequent site rehabilitation as required;</li> <li>Implementation of other site management measures in compliance with provisions of the approved CESMP</li> </ul>	Site check	Proposed plant site	<p>Topsoil has been removed and properly stored in line with provisions of the CESMP</p> <p>Site permit is available and the proposed management</p>	At the start of site preparation works	n.a.	n.a.	CC	CC

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SP	C	O	D							install	operate	Install	Operate
				<p>vehicle traffic and temporary storage of construction materials (cement-concrete slabs, gravel, etc.) in the immediate vicinity of road rehabilitation works;</p> <p>Accidental soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the vicinity of the mobile asphalt plant;</p> <p>Land damage / soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transport and laying.</p>				measures duly implemented in compliance with CESMP provisions					
				Increased risk of fire	<ul style="list-style-type: none"> <li>CESMP to address increased fire risk by appropriate safety provisions</li> <li>Waste is not allowed to burn on site.</li> </ul>	Site checks; CESMP compliance	Plant site	Firefighting equipment is in place and in proper condition in compliance with CESMP provisions	Start of construction	n.a.	n.a.	CC	CC
				<p><b>Construction noise impact</b></p> <p>Temporarily elevated noise levels through the operation of heavy equipment; potential noise impact on specifically sensitive receptors</p> <p>Disturbance of local residents in village sections along the project route</p>	<ul style="list-style-type: none"> <li>In case that noisy construction activities are unavoidable and likely to affect communities or other sensitive receptors CC to provide timely information on the location and schedule to the local authorities.</li> <li>Within settlements restrict noisy construction activities and material transport to the period Monday to Friday 8.m. - 5a.m.; on Saturdays 8 a.m. to 3 p.m. Where schools may be affected shift work to</li> </ul>	Monitor implementation; Interviews with officials or local residents	Village sections of Project route	<p>Local communities have received timely information about the construction schedule</p> <p>No construction taking place on evenings / weekends / holidays</p>	Construction inside villages	n.a.	n.a.	CC	CC

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SP	C	O	D							install	operate	Install	Operate
					<p>the afternoon when lessons are finished (probably after 3p.m.).</p> <ul style="list-style-type: none"> <li>• Suspend construction activities during public holidays</li> <li>• Should unavoidable out-of-hours work occur local residents shall be given timely notice.</li> </ul>								
				Operation of noisy construction equipment	<p>Control construction noise at source, especially when working in in villages, e.g.</p> <ul style="list-style-type: none"> <li>• Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site;</li> <li>• Enclose noisy equipment / use silenced construction equipment for specifically noisy operations while working inside settlements / near to sensitive receptors (e.g. vicinity to hospital, schools, kindergarten);</li> <li>• Avoid idling of vehicles and minimize use of horns.</li> </ul>	Monitor implementation	Village sections of Project route						
				<i>Impairment of access; public nuisance resulting from earth works and drainage construction; disruption of access to land and properties</i>	<ul style="list-style-type: none"> <li>• Take appropriate provisions for alternative access and provide such local facilities as to ensure all time accessibility of relevant assets including agricultural land;</li> <li>• Within village sections clean-up muddy road sections at such intervals as to minimize nuisance and as directed by the SE.</li> </ul>	Visual inspections	Village sections	All properties / facilities are properly accessible throughout construction; no muddy road sections; no complaints		n.a.	n.a.		

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SP	C	O	D							install	operate	Install	Operate
				<p><b>Impact on local water resources</b> Pollution risk through contaminated runoff / erosion / accidental spillage / inadequate storage of construction materials or unmanaged construction waste disposal</p>	<ul style="list-style-type: none"> <li>Provision of appropriate drainage of all work sites throughout the construction period;</li> <li>Cover storage areas for construction materials;</li> <li>Ensure proper management of any solid or liquid construction waste throughout the construction period in accordance with the approved CESMP on construction waste management and applicable national legislation;</li> <li>Consult with local officials to identify possible areas for the temporary storage of waste</li> </ul>	Monitor implementation	Throughout construction site			n.a.	n.a.	CC	CC
				<p><b>Demolition of drainage structures; construction of new culverts may cause pollution of local streams / rivers</b></p>	<ul style="list-style-type: none"> <li>As much as possible construction should be undertaken during the low flow season to minimize the threat of water contamination;</li> <li>Excavation should be done such as to minimize stockpiling of materials near flowing water;</li> <li>Appropriate protection should be provided to prevent soil materials to be washed away.</li> <li>Cutting riparian vegetation shall be reduced to the minimum required to implement the works.</li> <li>The discharge of sediment laden construction water directly into surface watercourses or ponds will be forbidden.</li> </ul>	Monitor implementation	Construction sites of new drainage structures	Protective / precautionary measures are implemented at the site		n.a.	n.a.	CC	CC

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SP	C	O	D							install	operate	Install	Operate
					<ul style="list-style-type: none"> <li>Sediment laden water will be discharged into settling lagoons and tanks prior to final discharge.</li> <li>Where construction takes place close to surface streams mobile toilets shall be provided at the work site on stable ground and at appropriate distance from the river / stream in line with the applicable legislation and regular servicing ensured.</li> </ul>								
				<p><b>Pollution risk for local groundwater wells</b></p> <p>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</p>	<ul style="list-style-type: none"> <li>Provision of appropriate cover for all local groundwater wells in the potential area of influence that are yet unprotected;</li> <li>Provision of appropriate storm water drainage arrangements.</li> </ul>	Inspection	Local wells along the Project route or any haul route	All wells are safely covered and appropriate drainage provided at site	Prior to the start of construction			CC	CC
				<p><b>Soil erosion</b></p> <p>Earth works and the utilization of heavy construction equipment entail the risk to cause soil erosion and indirectly destabilize adjacent areas</p>	<p>The CC is responsible to ensure that erosion is contained by soil conservation and protection methods.</p> <p>The CC will:</p> <ul style="list-style-type: none"> <li>Reduce the extent of excavations to minimize erosion risk;</li> <li>Apply soil conservation and soil protection methodologies in sensitive areas to prevent / minimize storm water runoff carrying eroded materials offsite;</li> <li>Avoid excavations and operating machinery in wet</li> </ul>	Site checks	Construction site		Site preparation			CC	CC

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SP	C	O	D							install	operate	Install	Operate
					conditions.								
				<p><b>Construction waste</b></p> <p>Demolition and construction and works will generate different types of waste incl. but not limited to:</p> <ul style="list-style-type: none"> <li>- <b>Solid inert waste</b> such as demolition material, concrete, bricks, plastic, metals, bitumen and (shredded tyres) etc.</li> </ul>	<p>As part of his CESMP the Contractor will prepare a comprehensive <b>Waste Management Plan</b>. 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:</p> <ol style="list-style-type: none"> <li>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</li> <li>2. Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities.</li> <li>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.</li> </ol>	Monitor compliance					CC	CC	

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SP	C	O	D							install	operate	Install	Operate
				- Waste oil	4. Construction waste will be collected and disposed properly in an approved registered landfill by licensed collectors 5. Waste oils must not be mixed with other kinds of waste but be separately collected and stored for either recycling/reuse in an environmentally sound manner or disposed of by a licensed contractor in line with the applicable legislation. 6. Records of waste disposal will be maintained as proof for proper management. 7. No temporary storage of waste in flood-prone areas. 8. Regular transportation of construction materials will be carried out without stockpiling of large batches of materials at construction sites.								
				<i>Vegetation clearance (trees; shrubs)</i> 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	Site checks	Construction site	All cutting materials are appropriately					

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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
					re-use requirements;			stored					
				<p><b>Impact on existing roadside trees</b> Unavoidable tree losses:</p> <p>311 trees, Ø 0-60cm</p>	<p><b>Records of unavoidable losses of roadside trees</b></p> <p>Do not apply</p>	Site checks	Construction site	No tree felling occurs			CC	CC	
				<p><b>Based on design information the total unavoidable tree losses will be</b></p> <p>311 trees, Ø 10-60cm</p>	<p><b>Compensation of tree losses: Upon completion of construction compensate all tree losses (planned and unintended) through new plantations within the RoW;</b></p> <ul style="list-style-type: none"> <li>Unintended / accidental tree losses will be replaced at a ratio of 3:1 at the CC's own expense.</li> </ul>	<p>Appropriate clause to be included in the contract documents;</p> <p>Check new plantations completed upon finalization of works</p>	Work corridor alongside Project roads	All tree losses were successfully replaced at the defined ratio					
				<p><b>Unintended damage of roadside trees</b></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"> <li>Temporary fencing of trees / groups of trees, for preservation</li> </ul> <p>Within a radius of 1.5m around the dripline of existing roadside trees</p>	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
					<p>CC to avoid or at least effectively minimize the following activities:</p> <ul style="list-style-type: none"> <li>• Relocation of utilities;</li> <li>• Driving;</li> <li>• Soil compaction;</li> <li>• Excavations;</li> <li>• Temporary storage of               <ul style="list-style-type: none"> <li>- fuels</li> <li>- chemicals</li> </ul> </li> <li>• Construction materials / waste.</li> </ul> <p>During the application of bitumen trees and any other woody vegetation will be effectively protected from physical damage.</p> <p><b>Timely protection of tree crowns:</b></p> <ul style="list-style-type: none"> <li>• Trimming of branches where required between late autumn or early spring / outside the breeding period;</li> <li>• Duly consider pivoting range of large construction equipment that may need to be used in the vicinity of existing roadside trees and take appropriate protective measures (e.g. in the context of relocating utilities).</li> </ul>								
				<i>Site clean-up / stabilization</i>	<ul style="list-style-type: none"> <li>• Site clean-up in accordance with the approved CESMP / site-rehabilitation plan. As a minimum the following shall be undertaken:</li> <li>• Rehabilitate all areas disturbed</li> </ul>	Site checks	All completed work areas / permanent fill	All sites properly re-instated / recovered with top soil				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
					by the work. Provide long-term surface stability by progressively re-vegetating discrete areas of each work site as they are completed. <ul style="list-style-type: none"> <li>The sites shall be revegetated by                             <ul style="list-style-type: none"> <li>- Raking or loosening any compacted ground surface areas identified for vegetation cover;</li> <li>- Re-spreading stockpiled top soil evenly across completed disturbed sites (including over any permanent fill stockpiles) immediately following construction works.</li> </ul> </li> <li>Sites shall be cleaned up by removing all disabled machinery and construction debris from the works areas.</li> </ul>		stockpiles						

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

**APPENDIX 2: ENVIRONMENTAL MONITORING PLAN**

The following Environmental Monitoring Plan (EMoP) distinguishes:

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

Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility / Cost
<b>LAB ANALYSES / SITE MONITORING</b>						
Soil contamination	Hydrocarbons contaminations	Areas most vulnerable to the discharge of hydrocarbons	Appoint accredited lab to test soil conditions (total hydrocarbons from oil products)	1 x prior to start of works; 1 x upon completion of construction – same sites	<ul style="list-style-type: none"> <li>• To establish a reference for the assessment of construction impacts;</li> <li>• To encourage the minimization of pollution and resulting nuisance;</li> </ul>	Contractor costs. CS to approve sampling points and reports
Ambient air pollution	Ambient air quality during peak construction activities	Potentially most affected residential areas, closest receptors - probably school, hospital or	Appoint accredited lab to test NOx, CO, SO <sub>2</sub> , VOC, PM10 content in ambient air	1 x prior to start of works 1 x at the peak of construction inside		Contractor costs. CS to approve sampling points and reports

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility / Cost
		kindergarten, houses on roadside; pedestrian areas		each village affected by construction	<ul style="list-style-type: none"> <li>to enforce legislation</li> </ul>	
Ambient noise pollution	Ambient noise levels during peak construction activities – compliance with maximum exposure limit of 70 dBA	Most affected residential areas along the Project route or along any haul route where residents may be affected by noise from transport trucks - probably school, hospital or kindergarten	Noise levels (dBA); Handheld equipment (analyzer) with application software	During noisy construction operations inside settlements / close to sensitive receptor		Contractor costs.  CS to approve sampling points and reports
Drinking water quality:  Permanent risk of impact on local water resources due to proximity of wells to the road edge	Water quality from selected wells located close to the road edge. Quality: NO <sup>3</sup> , NO <sup>2</sup> , NH <sup>4</sup> , CL <sup>-</sup> , hardness: CaCO <sup>3</sup> , SO <sup>4</sup> , pH, E. coli, total coliforms	Wells close to the road edge along C24:  (as highlighted in the list in Appendix 3).	Appoint accredited lab to take probes, test water quality (NO <sup>3</sup> , NO <sup>2</sup> , NH <sup>4</sup> , CL <sup>-</sup> , hardness: CaCO <sup>3</sup> , SO <sup>4</sup> , pH, E. coli, total coliforms) and to assess against national and WHO standards	1 x prior to start of works  1 x upon completion of construction (only at those wells where water was initially found to be suitable for drinking purposes)	<ul style="list-style-type: none"> <li>To assess current water quality;</li> <li>To identify wells that are unsuitable for potable water supply;</li> <li>Depending on results: to close individual wells and provide alternative sources of</li> </ul>	Contractor costs.  CS to approve sampling points and reports

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility / Cost
					water supply	
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 will be used	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

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
<b>CONSTRUCTION</b>	<b>MATERIAL SUPPLY</b>					
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

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate
<b>CONSTRUCTION</b>	<b>MATERIAL SUPPLY</b>					
Stone quarry	Possession of official permit / valid license  Compliance with provision of 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
<b>CONSTRUCTION</b>	<b>MATERIAL TRANSPORT</b>					
Asphalt	Truck load covered	Job site	Supervision	Unannounced inspections at least once weekly	Ensure compliance of performance with environment, health and safety requirements to minimize disruption of road traffic	CC <sup>7</sup> /SE
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		CC/SE

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

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate
<b>CONSTRUCTION</b>	<b>MATERIAL SUPPLY</b>					
				once weekly		
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
<b>CONSTRUCTION</b>	<b>CONSTRUCTION SITE</b>					
Noise impact (neighboring population; workers)	Noise levels (dB(A))	Most affected residential areas workplace	Handheld equipment (analyzer) with application software	Maximum noise impact period during construction in settlements;	Ensure compliance of performance with environment, health and safety	CC/SE

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate
				in case of complaint. If the results are unsatisfactory undertake weekly measurements	requirements to minimize noise nuisance	
Vibration	Effects of vibration on properties	Properties as indicated by owners	Visual inspection	Upon complaint	Avoid any claims of owners for physical damage caused by vibrations	CC/SE
Dust impact	Air pollution (suspended particles)	At job site and in particular in residential areas;  at potentially affected schools	Inspection / visual observation	Unannounced inspections during delivery of materials and during construction; upon complaint	Ensure compliance of performance with environment,  health and safety requirements;  minimize nuisance & health impact for workers	CC/SE
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	Problems	Job site	Supervision	Random checks minimum weekly	Requirement to minimize nuisance	CC/SE

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate
facilities				during construction activities	and disturbance	
Vehicle and pedestrian safety when there is no construction activity	Visibility; safety	At and near job site	Observation	Random checks at least once weekly in the evening	Requirement to ensure safe conditions at all times	CC/SE
Water and soil pollution from inappropriate material storage, management and use	Problems; compliance with approved site management plan	Job site; contractor's yard	Inspection; observation	Unannounced inspections	Ensure compliance of performance with approved CESMP; minimize nuisance & health impact for workers	CC/SE

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Issue / Construction Phase	What is to be monitored?	Where should the parameter be monitored?	How should the parameter be monitored?	When should the parameter be monitored?	Why should the parameter be monitored?	Institutional responsibility
						Operate
Worker's health & safety	Appropriate PPE is worn by all workers; organization of bypassing traffic / 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
<b>OPERATION</b>	<b>MAINTENANCE</b>					
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.						
<b>OPERATION</b>	<b>ROAD SAFETY</b>					
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: INVENTORY DATA FOR ENVIRONMENTAL AND SOCIAL OBJECTIVES, CORIDOR 24**

December 2, 2017

<b>Km.</b>	<b>Name/type of identified object</b>	<b>Roadside, distance from centerline (m)</b>	<b>Road side</b>	<b>Note</b>
0,0	Village Gotești			
4,5	Stand of poplars			50 trees, marked
6,9	Stream, bridge			
7,0	Well			
7,5	Well			
8,7	Stream, pond, crucifixion			
8,8	Well			
8,9	Well			
	Village Ciobolaccia			
9,1	Well			
9,2	Market, gas station			
10,0	Well			
10,1	Well			
10,3	Well			
10,6	Well			
10,9	Stream, well			
11,2	Wetland, village Larga		Right	
11,9	Halt			
13,7	Well			

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<b>Km.</b>	<b>Name/type of identified object</b>	<b>Roadside, distance from centerline (m)</b>	<b>Road side</b>	<b>Note</b>
13,8	Ravine			
14,1	Well			
14,2	Well			
14,4	Well			
14,6	Well			
14,7	Well			
14,8	Well			
	Village. Baimaclia			
0,0	School, bus station, well, crucifixion			
0,3	Bus station			
0,5	Gas station			
1,2	Well			
1,7	Ravine, bridge, landfill		Right	
1,9	Well, crucifixion		Right	
5,4	Well, crucifixion			
5,5	Well			
5,7	Well			
6,0	Deep valley, lowland			
8,7	Bus station, crucifixion			
8,8	Well			
9,0	Well			
9,1	Well			

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<b>Km.</b>	<b>Name/type of identified object</b>	<b>Roadside, distance from centerline (m)</b>	<b>Road side</b>	<b>Note</b>
18,0-20,0	Pond		Left	
	Village Vişniovca			
21,6	Well			
21,8	Well			
21,9	Well			
22,0	Well			
22,1	Well			

**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.
<b><i>Legislation on Labor, Occupational Health &amp; Safety</i></b>		
Labor Code	2003	Governs all individual and collective labor relations, enforcement of regulations in the field of employment, labor jurisdiction, and other relations directly related to labor relations.
Law on Safety and Health at Work	2008	Establishes general principles on the prevention of occupational risks, the protection of workers at the workplace, the elimination of risk factors, consultation, participation and training of workers and their representatives, as well as general guidelines for applying the mentioned principles.

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

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

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

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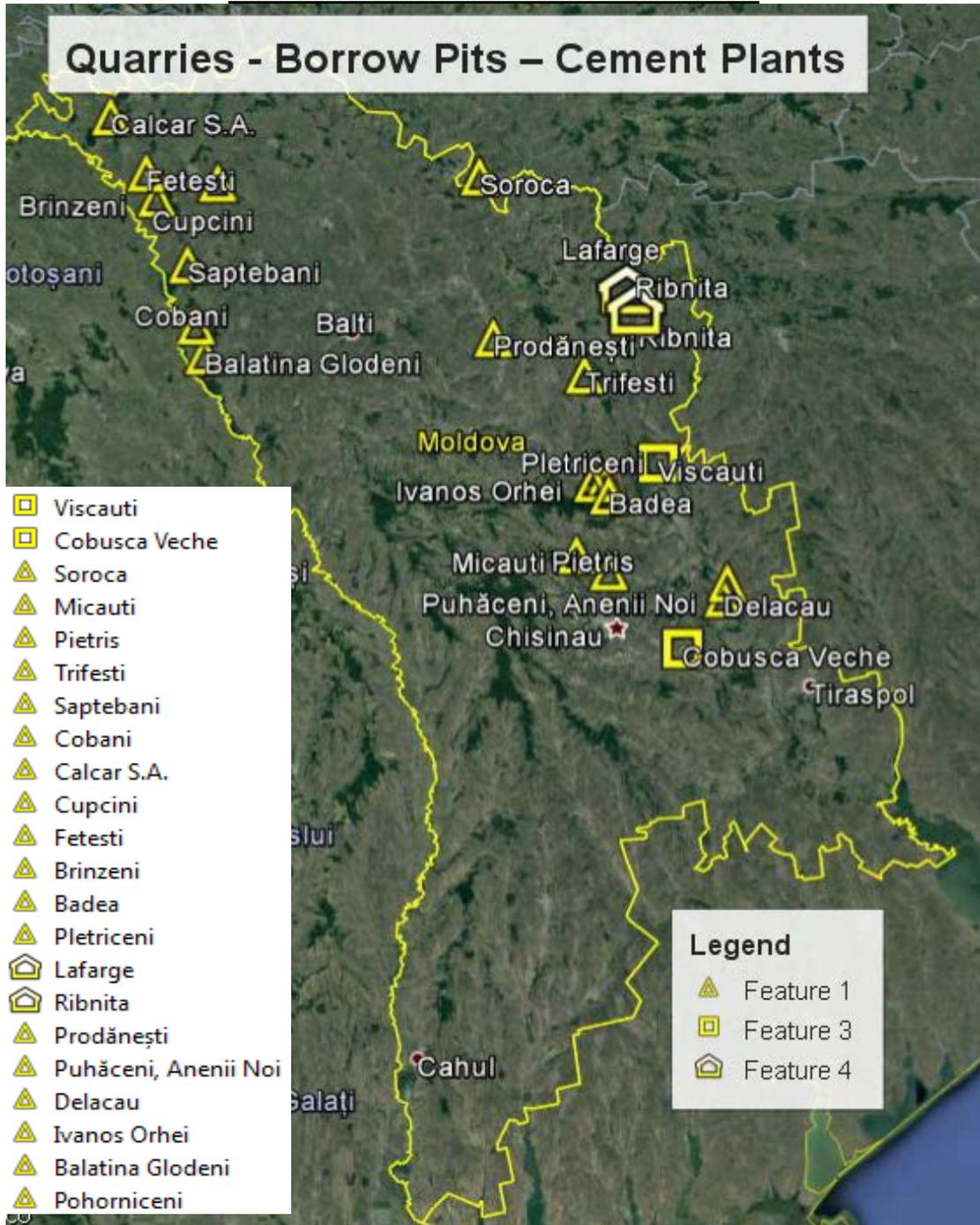
<sup>9</sup> This GN is based based on the transcription of EU Directive 92/57/CEE of 24.06. 1992 and Directive 89/391/CEE

**APPENDIX 5: PUBLIC CONSULTATION**

Public consultations on LRIP corridor C24 that will be held in October 2018.

**ANEXA 6: SOURCES OF MATERIALS**

**LOCATION MAP MATERIAL SOURCES**



The only granite quarry in the Republic of Moldova is located at the northern border near the township of Soroca. The location is shown on the attached material sources location map. The quarry produces various fractions of crushed material including sand and fines which can be used as filler for asphalt. A list with the actual type of materials produced according Russian specification including actual prices is attached. Available test results of material samples from the quarry assumed to be representative for the quarry material show the following main material characteristics:

- Crushing resistance 8.5 to 12.9% (similar ACV)
- Abrasion resistance 15.2 to 16.9% (Similar LAA)

Elongation/Flakiness 11 to 18% (*Testing according Russian Standard and Specification*)

The test results show that the material is in general suitable for the production of asphalt and cement concrete. However comprehensive testing has to be done to show compliance with the project specifications and requirements prior to use in the permanent works. The total usable material deposit is estimated at more than 4.0Mill. m<sup>3</sup>

Acquisition of material from the Soroca quarry for the use in the project has to be negotiated and agreed with the operating enterprise and/or relevant authorities.

**Limestone quarry Micauti**

The limestone quarry Micauti is located near the village of Gornoe about 20km north of Chisinau.

Crushed limestone is widely used for road construction purposes with the addition of cement to increase the strength. The total usable material deposit is estimated at more than 2.0Mill. m<sup>3</sup>

Acquisition of material from the Soroca quarry for the use in the project has to be negotiated and agreed with the operating enterprise and/or relevant authorities.

**Limestone quarry Pietris**

This existing Limestone quarry is located north-west of Chisinau. The location is shown on the attached material sources location map.

The material, a limestone, is in general relatively soft and might only be suitable for incorporation in a road base or subbase course but not for production of asphalt and cement concrete. However comprehensive testing has to be done to show compliance with the project specifications and requirements prior to use in the permanent works. Crushed limestone is widely used for road construction purposes with the addition of cement to increase the strength.

Permission and licences for the use of the borrow area and exploitation of material have to be obtained from the relevant authorities in agreement with the landowner.

**Gravel and sand borrow area Viscauti**

This existing borrow area is located about 60km north of Chisinau. Considering the great distance to the project area only high quality material for asphalt or cement concrete will be used due to the hauling distance and costs. The location is shown on the attached material sources location map. Information about quantity of remaining usable material as well as material test results will be provided within the next phase of the project. Comprehensive testing of the borrow material has to be done to show compliance with the project specifications and requirements prior to use in the permanent works

Permission and licences for the use of the borrow area and exploitation of material have to be obtained from the relevant authorities in agreement with the landowner.

**Sand borrow pit Cobusca Veche**

This borrow area is located about 30km east of Chisinau and is therefore the nearest borrow area to the project road containing granular material. The location is shown on the attached material sources location map.

Information about quantity of remaining usable material as well as material test results will be provided within the next phase of the project. Comprehensive testing of the borrow material has to be done to show compliance with the project specifications and requirements prior to use in the permanent works.

Permission and licences for the use of the borrow area and exploitation of material have to be obtained from the relevant authorities in agreement with the landowner.

## APPENDIX 7: 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.

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

## Sample of Letter of Complaint

To: Representative of SIMC and Engineer

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

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

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

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

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

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

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

**This letter of complaint was received by**

(Full name)

(Position)

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

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

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

### RESOLUTION

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

Summary of the affected person's issue:
Resolution of the issue:

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

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

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

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

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

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

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