UKRAINE

JSC UKRTRANSGAZ

PROJECT "RECONSTRUCTION, CAPITAL REPAIRS AND TECHNICAL RE-EQUIPPING OF THE MAIN GAS PIPELINE "URENGOY – POMARY – UZHGOROD"

LOAN NO: 42608

ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

October 2018

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ABSTRACT:

This Plan defines environmental and social management and control mechanisms that shall be followed by the UTG, Consultants, and Contractors to ensure that the proposed RECONSTRUCTION, CAPITAL REPAIRS AND TECHNICAL RE-EQUIPPING OF THE MAIN GAS PIPELINE URENGOY-POMARY-UZHGOROD (UPU)" Project is developed environmentally and socially sound by complying with national legislation and international lender requirements as well as sectorial best practices.

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REVISION DESCRIPTION SHEET

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0	All	UTG's review and approval
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Hold No.	Para.	Description of Hold

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APPENDICES

ABBREVIATIONS

AMP : Aggregate Management Plan
BAP/BMP : Biodiversity Action Plan / Biodiversity Management Plan
BOD : Biological Oxygen Demand
CEMP : Construction Environmental Management Plan
COD : Chemical Oxygen Demand
CRM : Community Relation Management
CS : Compressor Station
CSMP : Community Safety Management Plan
DBN : Ukrainian Standards
GOST : Russian Standards
EIA : Environmental Impact Assessment
E&S : Environmental and Social
ESMMP : Environmental and Social Management and Monitoring Plan
EMS : Environmental Management System
EU : European Union
ERP : Emergency Response Plan
ESS : Environmental and Social Safeguards
ESAP : Environmental and Social Action Plan
ESA : Environmental and Social Assessment
ETMP : Employment Training Management Plan
EBRD : European Bank for Reconstruction and Development
HAZID : Hazard Identification
HAZOP : Hazard and Operability
HR : Human Resources
HSE : Health, Safety and Environment
HSMP : Health and Safety Management Plan
IFC : International Finance Corporation
IGE : Institute of Gas Engineering of UK
ILO : International Labor Organization
IMS : Integrated Management System
ISO : International Standards Organization
KPI : Key Performance Indicators
LACF : Land Acquisition and Compensation Framework
LPSM : Local Procurement and Supply Management
m/w : Motorway
OHSMS : Occupational Health and Safety Management System
PIU : Project Implementation Unit
PM_{10} : Particulate Matters with size less then 10 micrometer

PPE : Personal Protective Equipment
PR : Public Relations
PS : Performance Standards
r/w : Railway
RoW : Right of Way
RVX1 : River Crossings type 1
RVX2 : River Crossings type 2
SEP : Stakeholder Engagement Plan
SRP : Site-Specific Reinstatement Plan
SS : Suspended Solids
QMS : Quality Management System
TMP : Traffic Management Plan
UPU : Urengoy-Pomary-Uzgorod
UTG : Ukrtransgaz
WBG : World Bank Group
WMP : Waste Management Plan
WWTP : Wastewater Treatment Plan

1 INTRODUCTION

1.1. Purpose

This Environmental and Social Management and Monitoring Plan (ESMMP) is written to define environmental and social management and control mechanisms that shall be followed by the JSC "Ukrtransgaz" (UTG), Consultants and Contractors to ensure that the proposed Reconstruction, Capital Repairs and Technical Re-Equipping of the Main Gas Pipeline UPU" Project is developed environmentally and socially sound by complying with national legislation and international lender requirements as well as sectorial best practices. In this respect, it will cover all works in the construction, operation and decommissioning phases.

1.2. Scope

The scope of this ESMMP covers the followings:

- Roles and responsibilities for implementation and maintenance of the environmental, health and safety and labor management system through the construction and operation phases;
- A clear framework for implementing the environmental and social requirements for this Project as identified and committed in the national EIA Reports for all four sections of the UPU Pipeline, additional impact assessment studies (i.e., Rapid Biodiversity Impact Assessment, Rapid Water Resources Impact Assessment and Rapid Social Impact Assessment) required in the Environmental and Social Action Plan (ESAP), which was prepared in 2015 and includes International Financial Institutions' (IFIs) requirements such as Performance Requirements (PRs) of European Bank for Reconstruction and Development (EBRD) and Performance Standards (PSs) of International Financial Corporation (IFC), and Good International Industry Practices (GIIP).
- A plan for strengthening existing conditions of the corporate management systems on environmental and social aspects as well as OHS in line with lender guidelines to support the Project's overall E&S and HS performance;
- Planning for environmental and social monitoring program for the E&S performance check of the Project via implementation of monitoring by the Contractors and audits of Supervision Engineering Consultant and the PIU Consultant whenever needed; and
- Stakeholder engagement planning (reference to the SEP which is a stand alone document prepared by the PIU Consultant in support to the UTG management system).

It is a general practice that ESMMP documents are dynamic documents, which need to be reviewed and revised during the project execution. In this respect, this ESMMP will be reviewed in accordance with the lessons learned and general site implementation practices throughout the progress of the project. The contractors will produce their own ESMMP and supporting plans in detail in order to cover all aspects of the environmental and social management as well as OHS. Contractor's ESMMP document will be titled as Construction Environmental Management Plan (CEMP) as it will focus on the management of their construction activities whereas the ESMMP of the Project covers all phases of the Project not only construction but also operation phase. Structure of the CEMP will be outlined in this ESMMP for the use of contractors while they are preparing their specific CEMP's. In the following sections of the ESMMP, mitigation measures and monitoring activities proposed for the construction and operational phases of the Project are presented in detail but decommissioning phase of the project after completion of the operational phase is not detailed due to the fact that the decommissioning activities are not planned and hence not the part of this ESMMP.

Nevertheless, the following aspects will be considered for the preparation of the measures to be taken in the decommissioning phase in accordance with the Environmental, Health, and Safety Guidelines of IFC on “Onshore Oil And Gas Development” (April, 2007):

- Decommissioning of onshore facilities usually includes the complete removal of permanent facilities and well abandonment, including associated equipment, material, and waste disposal or recycling. General guidance on the prevention and control of common environmental impacts during decommissioning activities is provided in the General EHS Guidelines. Specific additional requirements to consider for oil and gas facilities include well abandonment and pipeline decommissioning options.
- Decommissioning options for pipelines include leaving them in place, or removing them for reuse, recycling or disposal, especially if they are above ground and interfere with human activities. Pipelines left in place should be disconnected and isolated from all potential sources of hydrocarbons; cleaned and purged of hydrocarbons; and sealed at its ends.

The followings are the outline of the general structure of this ESMMP document:

- Introduction
- Institutional (including Information Management System) and Legislative Framework
- E&S and OHS Management at Corporate Level
- Project’s E&S Management and Monitoring
- Supporting Management Plans

2 PROJECT DESCRIPTION

2.1. Purpose

The UPU main gas pipeline is heavily used in the technological process of gas transportation from Russia to European countries. Design parameters of gas pipeline is as follows:

- Diameter is 1,420 mm;
- Operating pressure is PN75; and
- The length of the section along the territory of Ukraine is 1,138 km (9 CS's).

Along the whole length, this section of "UPU" main gas pipeline runs parallel to "Progress" main gas pipeline DN1400 PN75 in Ukraine. Together they form a system of gas pipelines operated in a single hydraulic control.

During the whole operating period of the UTG gas pipeline, it was performed and still being performed to carry out all procedures and inspections stipulated by regulatory documents in force to minimize all risks related to gas pipeline. However, irrespective of this, during the last decade, three accidents (pipeline breaking) occurred on the pipeline. According to the UTG, these accidents occurred owing to low quality of construction and mounting works during gas pipeline construction, inadequate quality of pipes and strenuous conditions of exploitation. In the course of accidents investigation, it was determined that the accidents occurred due to the development of pipeline steal stress-corrosive fractures under the influence of tensioning.

The analysis done by UTG showed that the most dangerous sections of gas pipeline were so-called "hot" sections, i.e. 25-35 km after compressor stations where:

- Gas pressure reaches peak value of 75 kg/cm^2; and
- Gas and pipeline temperature reaches 40^{o}C (i.e., early loss of corrosion-proof coating).

The UPU gas pipeline runs in the corridor with other main gas pipelines therefore there could be negative inter-mutual impact of pipelines in case of failure of general protection or failure of insulation coating.

The availability of factors mentioned above significantly reduces gas pipeline maintainability at sections mentioned and contributes to the development of corrosion and stress-corrosive failures, increases risk of accidents.

In light of the above discussion, UTG decided to perform overhaul repair of "hot" sections and replacement of the two old turbines in Romny Compressor Station (CS) with the new ones considering the best available techniques (for this purpose an official letter was written to the project consultant awarded for the Feasibility Study of the Romny CS modernization).

2.2. Reconstruction Sections

As can be seen in Figure 2-1, four sections with the heaviest conditions (cross-country, availability of flooded ravines with water saturated soils, and etc.) had been chosen among 9 hot sections, namely:

- Section 1: km 3,364 - km 3,391 (after Romny CS) (See Figure 2-2);
- Section 2: km 3,488 - km 3,519 (after Grebenkivska CS) (See Figure 2-3);
- Section 3: km 3,974 - km 4,008 (after Bar CS) (See Figure 2-3); and
- Section 4: km 4,101 - km 4,128 (after Gusiatyn CS) (See Figure 2-4).

Overhaul repair design was committed to 4 different design organizations located in Kyiv having corresponding experience in performing design of such objects as well as corresponding permits, licenses and certificates, namely:

- Section 1: km 3,364 - km 3,391 to IK “Masheksport LLC”;
- Section 2: km 3,488 - km 3,519 to PJSC IVP “VNIPItransgaz”;
- Section 3: km 3,974 - km 4,008 to PJSC “Ukrgazproekt”; and
- Section 4: km 4,101 - km 4,128 to “DIPROGAZ LLC”.

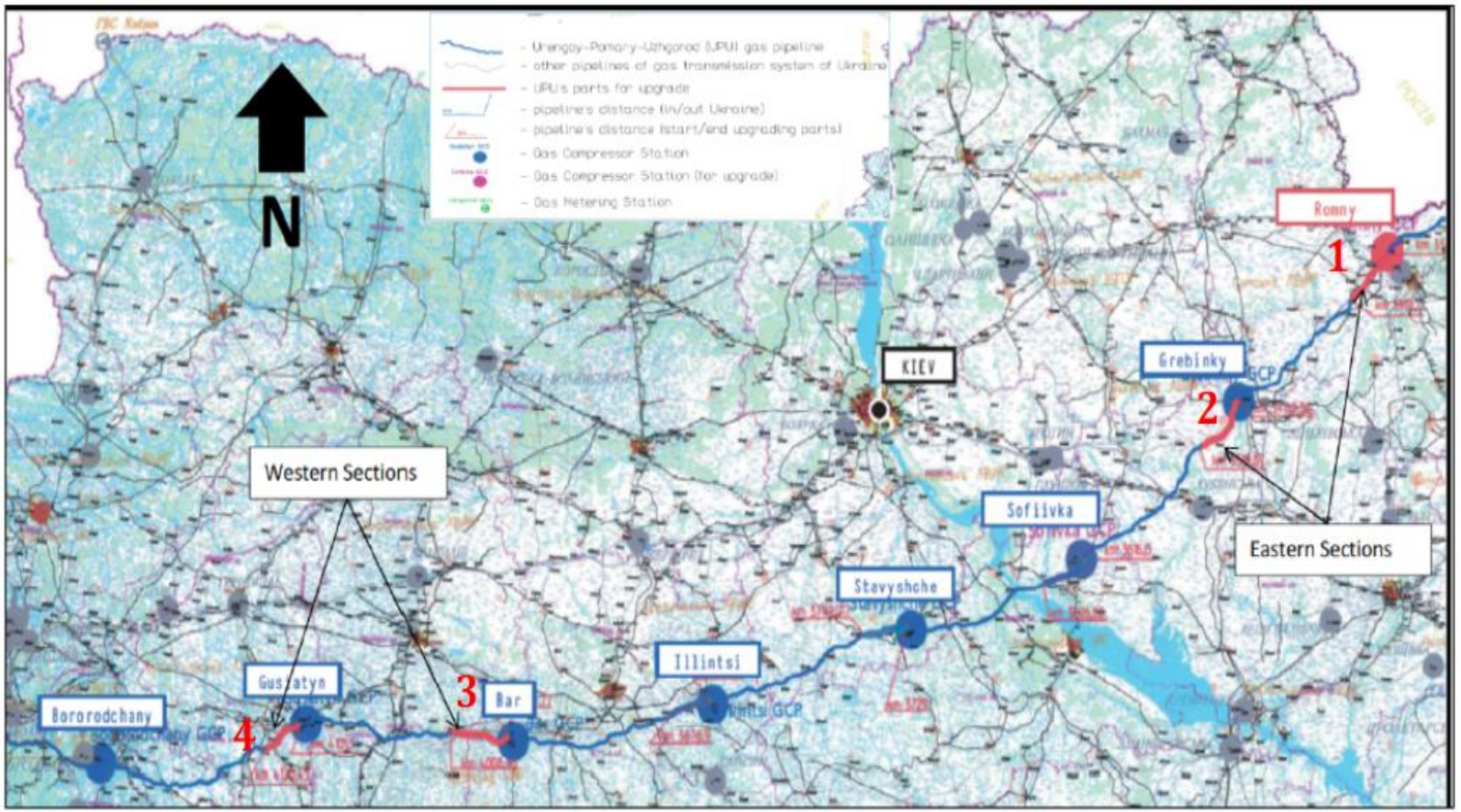

Figure 2-1. Pipeline Sections (Western and Easter Sections)

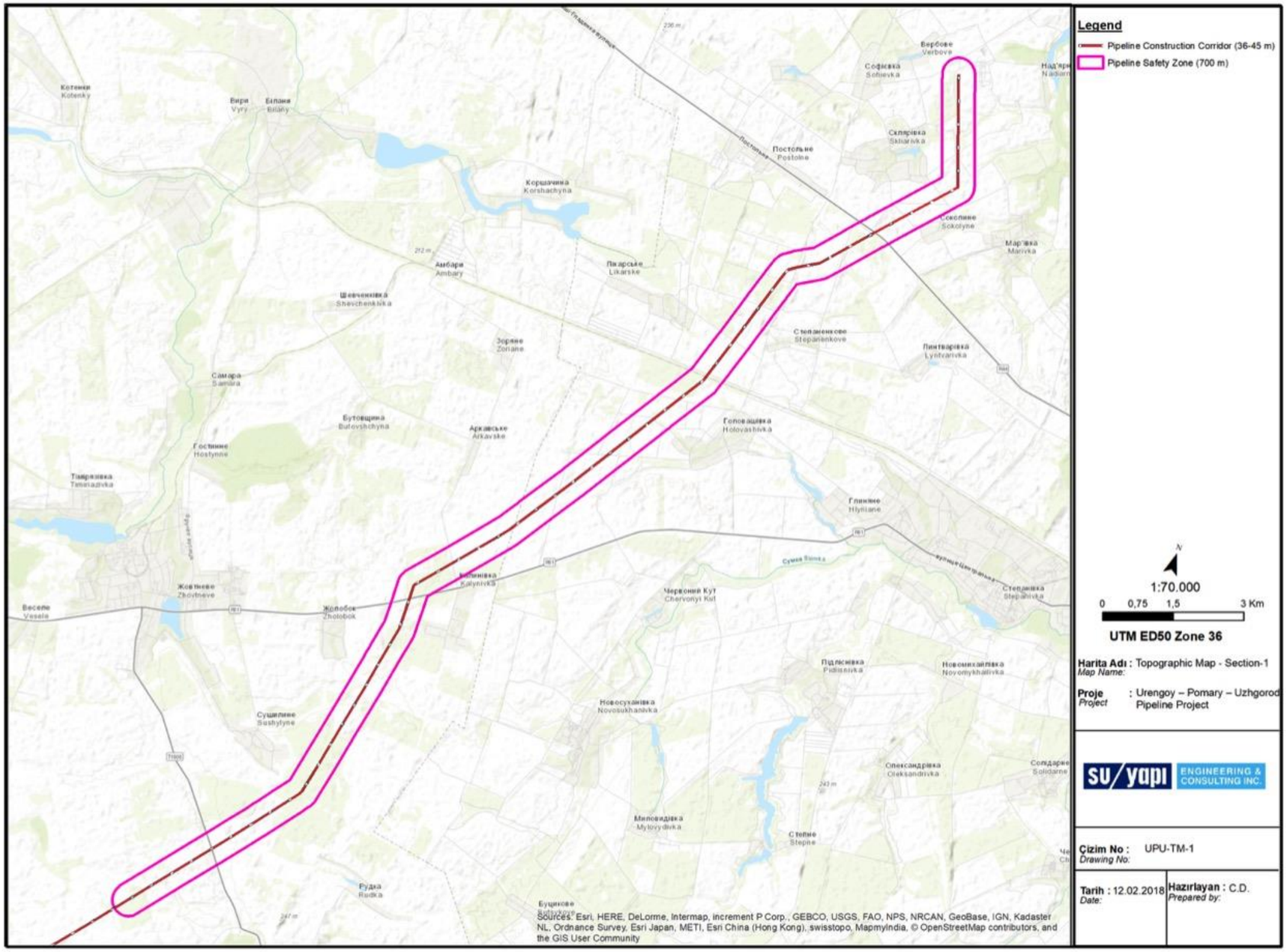

Figure 2-2. Topographical Map of the Route of Section 1

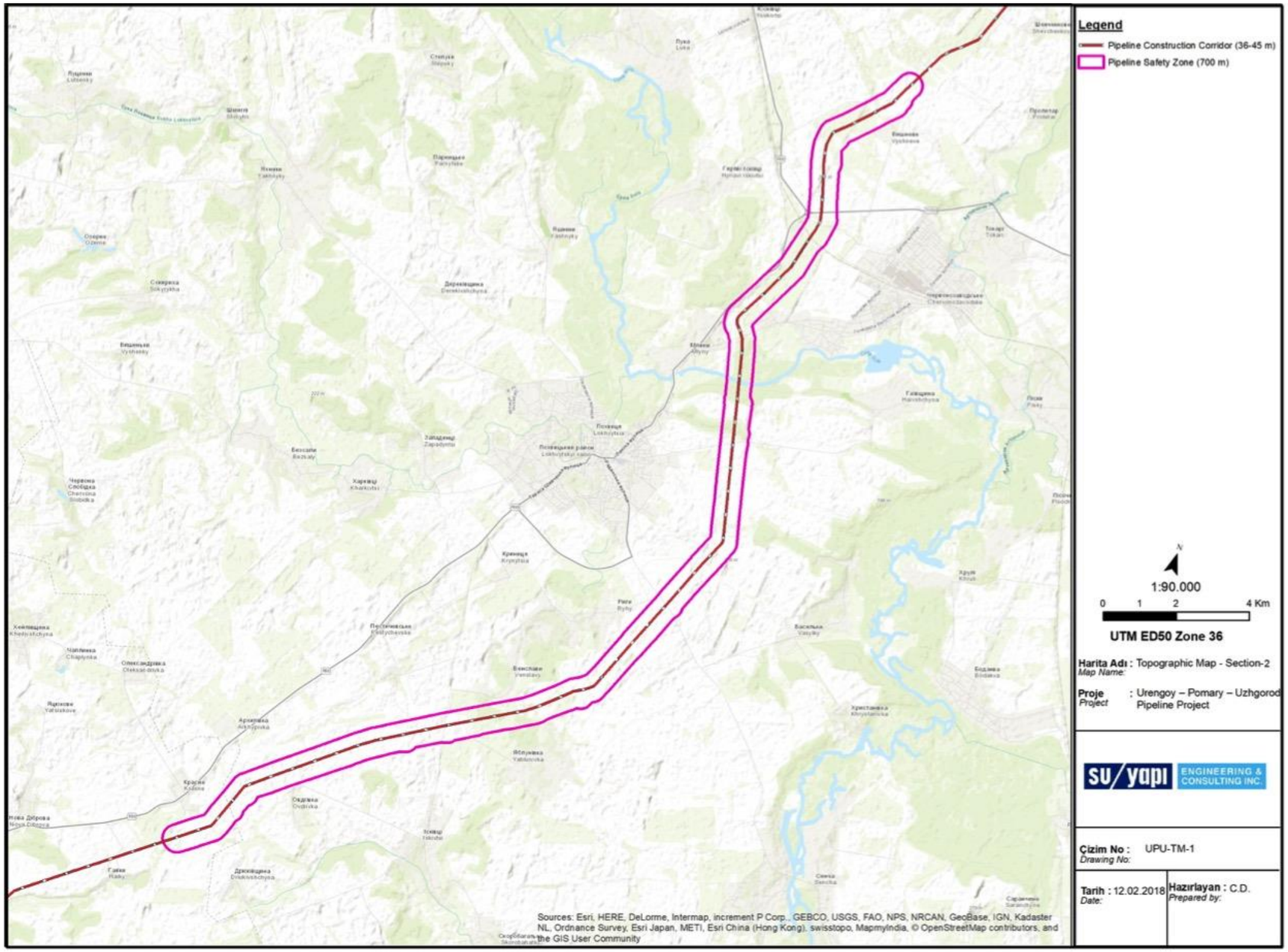

Figure 2-3. Topographical Map of the Route of Section 2

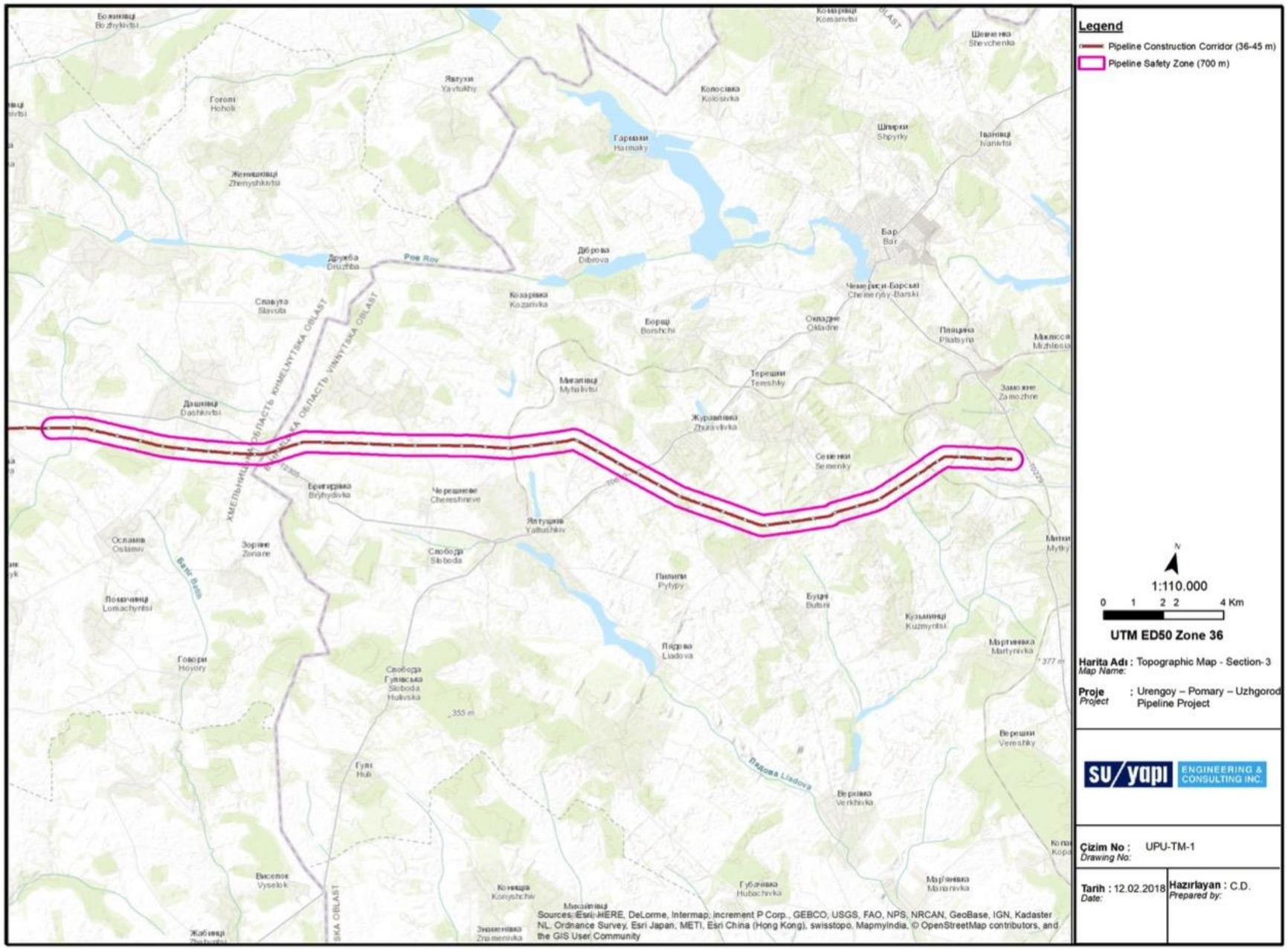

Figure 2-4. Topographical Map of the Route of Section 3.

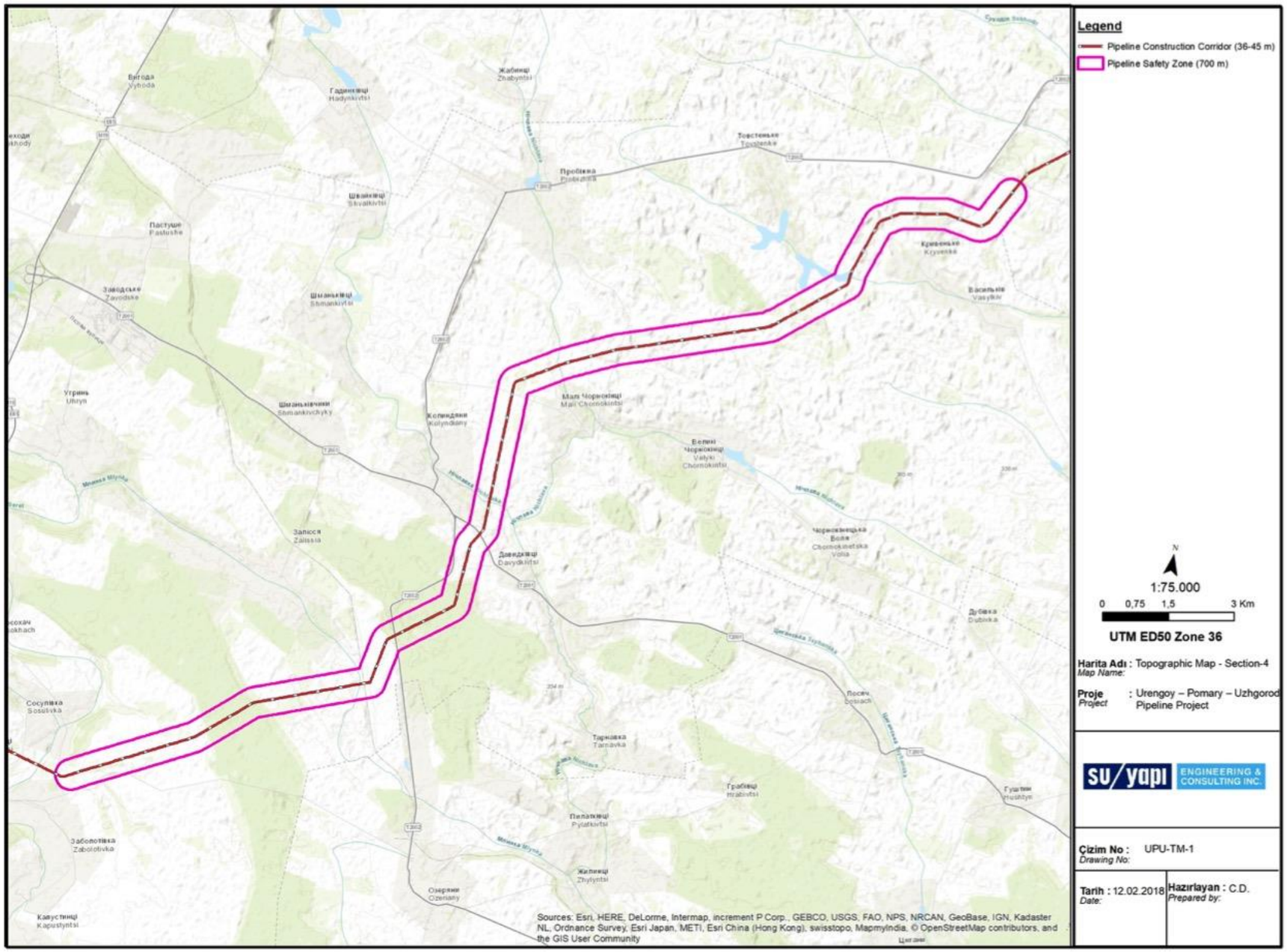

Figure 2-5. **Topographical Map of the Route of Section 4.**

According to Ukrainian legislation there are 5 categories of complexity in construction (I - is the lowest, V - is the highest), which differ in the order of development and approval of documentation for construction and additionally in design staging.

UPU Main gas pipeline overhaul repair refers to the “Category – V” of complexity as the main gas pipeline is an object of heightened danger according to Law of Ukraine “About the objects of heightened danger” which refer to the Category – V of complexity.

Design works conducted within 2011-2015. Engineering survey for 4 sections was done in 2011-2012. Only Section 2 (km 3,488 - km 3,519) was revised in 2015. Revision of other sections has not been done. Necessary engineering surveys, a number of detailed design versions with different technical solutions and construction cost had been done within this period. All final versions of the project have passed departmental (Ukrtransgaz) and state expertise and are ready for implementation.

Various versions for possible methods to perform overhaul repair of UPU main gas pipeline have been considered:

i) Replacement of pipes and reinsulating of the existing pipeline,

ii) Repair works inside existing trench and construction of a parallel gas pipeline.

Thus, in 2011 a version of complete reinsulating with partial replacement of pipe at especially dangerous sections (by constructing parallel gas pipeline) was under consideration. Therefore, the final versions of detailed design for all four sections considered to perform UPU gas pipeline overhaul repair by complete replacement of existing pipe with factory-insulated pipe at the section between the connecting unit of the corresponding compressor station and the first line shut off valve on gas pipeline. Only in Section 2 (km 3,488 – km 3,519), there is a decision to construct a new gas pipeline in a new trench about 32 m away from the existing line, but parallel to it without stopping gas pipeline for a long time with further connection to the operating gas pipeline and dismantling the existing one. As to the other three projects pipe replacement is to be done in the same trench, i.e. with complete shutdown of gas pipeline for the whole period of dismantling and mounting works.

It is expected that the Project implementation will provide continuous and reliable transportation (including gas transit to European countries via Ukrainian territory) as well as provide the possibility of using design capacity of UPU gas pipeline (up to 28 billion m^3 per year).

2.3. Project Logistics, Crossings and Land Takes

The following information presented in Table 2-1 were gathered from the national EIA reports of those four sections of the pipeline to be reconstructed and interviews with the officials of the UTG during the PIU consultancy works.

Table 2-1. Selected Data on Logistics and Crossings of the Project

Section-1	
Camp Area	Selection of camp location will be made by the Contractor. On the other hand, area of the sugar factory in the village of Stepanivka is foreseen as the camp location for Section 1 in the national EIA Report. It occupies an area of 3.0 ha. The maximum number of employees that can be resident of the camp is 430 staff. (KP 3379+160)
Stock yards	 For pipes: Sumy district, Ukrtransgaz Warehouse, Ukraine ➢ 51°03'96.85" N ➢ 34°63'39.91" E (KP 3369+875) For valves and fittings: ➢ 51°02'33.7" N ➢ 34°37'54.2" E
Access roads	7 roads: 1 - unilateral right of –m/w Sofiyivka-Mykolaivka. 6 – of the bilateral with: m/w Sumy – Glukhiv, m/w v. Golovashivka- Postolne, m/w v. Golovashivka - v. Likarske, m/w Kalynivka – Arkavske, m/w Sumy – Konotop, m/w Zhovtneve – Markivka.
River crossing	No permanent watercourses
Road crossing	7 road crossings : m/w Sumy – Glukhiv, (KP 3374+274-KP 3374+288) m/w v. Golovashivka- Postolne, (KP 3376+153-KP 3376+162) m/w v. Golovashivka - v. Likarske, (KP 3378+201-KP 3378+215) m/w Kalynivka – Arkavske, (KP 3385+903-KP 3385+3385+915) m/w Sumy – Konotop, (KP 3387+086- KP 3387+102) m/w Vylky – Zhovtneve, m/w Zhovtneve – Markivka.(KP 3394+098- KP 3394+114)
Railway crossing	(1): Sumy-Vorozhba (KP 3379+154- KP 3379+175)

Section-2	
Camp Area	Selection of camp location will be made by the Contractor. On the other hand, housing camp with Pipe Welding base covering an area of 2.65 ha located on public lands of Hyryavoyiskovetskoyi Village Council is assessed as camp area in the national EIA Report. The maximum number of employees in this camp is estimated to be 380 persons. (KP 3492+000)
Stock yards	 *Stockyard-1 for pipes*  *Stockyard-2 for pipes* For pipes: Stockyard No.1 - Lokhvitsky district, Ukrtransgaz Warehouse, Ukraine ➢ 50°44'69.96" ➢ 33°40'07.87" (KP 3513+000) Stockyard No.2 - Pestychevskoe district, Ukrtransgaz Warehouse, Ukraine ➢ 50°30'42.54" ➢ 33°19'86.10" (KP 3488+085) For valves and fittings: ➢ 51°02'33.7" N ➢ 34°37'54.2" E
Access roads	4 temporary rallies: m/w Lokhvytsia-Gadyach; m/w Lokhvytsia-Lubny; m/w Yablunivka-Rygy; m/w Lokhvytsia-Drukivschyna
River crossing	1 – stream, width – 0.5 m (KP 3499+695)
Road crossing	8 road crossings : m/w Iskivtsi-Shevchenkove – CS-3 «Hrebinkivska»; (KP 3488+316-KP 3488+333)

	m/w Hayivschyna-Lokhvytsia; (KP 3499+000-KP 3499+005) m/w Lokhvytsia-Gadyach; ; (KP 3492+799-KP 3492+818) m/w Lokhvytsia-Lubny; (KP 3512+165-KP 3512+178) m/w Yablunivka-Rygy; (KP 3508+238- KP3508+249) m/w Lokhvytsia-Drukivschyna; (KP 3520+243- KP 3520+248) m/w Krasne-Iskivtsi (gravel); (KP3518+110- KP 3518+116) m/w v.Krasne-drilled well (concrete slabs) (KP 3518+669 –KP 3518+671)
Railway crossing	1 – r/w: Iskivtsi – Sula (KP 3493+524-KP 3493+532)
Section-3	
Camp area	Campsite selection will be made by the contractor. On the other hand, accommodation of workers during is expected to be at the hotel in Bar town according to the statement in the national EIA Report. This can be also searched by the contractor whether it is feasible or not. The maximum number of employees in the camp is estimated as 458 persons in the national EIA Report. (KP 3978+500)
Storage yards	 For pipes: Bar district, Ukrtransgaz Warehouse, Ukraine ➢ 48°98'88.25"N ➢ 27°74'47.42"E (KP 3974+531) For valves and fittings: ➢ 49°00'16.4"N ➢ 27°43'49.7"E
Access roads	3 temporary rallies: m/w from CS «Bar»; m/w Verhivka-Hodaky; and m/w Chereshneve-Hodaky.
River crossing	7 streams, width from 2 to 8 m. • KP 3981+643 • KP 3992+338 • KP 3995+017 • KP 3996+563 • KP 3999+188 • KP 3999+945 • KP 4002+218
Road crossing	9 road crossings: m/w from CS «Bar»; (KP 3974+678 – KP 3974+686) m/w Martynivka-Tereshky; (KP 3980+741- KP 3980+745) m/w Bar-Seferivka; (KP 3982+704-KP 3982+713) m/w Snitkiv -Lugove; (KP 3993+822- KP 3993+830) m/w Lyubar-H. Ushytsya; (KP 3988+131-KP 3988+142) m/w Verhivka-Hodaky; (KP 3986+170-KP 3986+204) m/w Chereshneve-Hodaky; (KP 3995+735-KP 3995+745) m/w Yaltushivka-Khmelnitsky; (KP 4000+901-KP 4000+917) and m/w Selehovo-Govory. (KP 4003+950-KP 4003+958) Plus 14 times field road crossings.

Railway crossing	2 railways: r/w Bar - Mogyliv Podilsky (KP3977+411-KP 3977+439); r/w Bar – Yaltushivka(KP 3992+549-KP 3992+554)
Section 4	
Camp area	Selection of the camp location will be made by the contractor. However, it should be noted that housing area of 0.5 ha for camps is located near the CS "Gusiatyn" (the previously allotted land) is recommended in the national EIA Report. The Village of Sydoriv is also used for house renting. The maximum number of employees in the camp is estimated to be around 390 persons.(KP 4100+830)
Storage yards	 For pipes: Gusiatyn district, Ukrtransgaz Warehouse, Ukraine ➢ 49°01'90.73" N ➢ 26°14'23.15" E (KP 4100+833) For valves and fittings: ➢ 49°01'04.9" N ➢ 26°08'31.2" E
Access roads	6 temporary rallies. 1 - unilateral right of – m/w Sosulivka-Ulashkivtsi. 5 – of the bilateral with: m/w Ternopil – Sokyryntsi; m/w Chornokintsi-Probizhne; m/w Chornokintsi-Kolyndyany; m/w Davydkivtsi-Kolyndyany; and m/w Chortkiv-Borschiv.
River crossing	River crossed 3 times: River Nichlava (width – 7.1 m), (KP 4112+533) River Nichlavka (width – 9.4 m), (KP 4116+383) and River Mlynka (width – 3 m). (KP 4122+000) 4 streams, width from 0.3 to 3 m. 1 - dual-purpose ditch (width – 8.6 m) • KP 4104+148 • KP 4106+711 • KP 4110+743 • KP 4111+730
Road crossing	6 (5 asphalt + 1 gravel) road crossing: m/w Ternopil – Sokyryntsi; (KP 4102+570-KP 4102+582) m/w Chornokintsi-Probizhne; (KP 4111+070-KP 4111+078) m/w Chornokintsi-Kolyndyany; (KP 4113+835-KP 4113+845) m/w Davydkivtsi-Kolyndyany; (KP 4117+134-KP 4117+142) m/w Chortkiv-Borschiv; (KP 4120+813-KP 4120+817) and m/w Rosokhach-Ozeryany (gravel). (KP 4124+986-KP 4124+993) 31 times cross-field roads.
Railway crossing	1 rail way - Ivane Puste-Vyhnanka (KP 4121+785-KP 4121+797)

Table 2-2. Permenant and Temporary Landtakes along the Sections of the UPU Pipeline

Section -1	Section -2	Section -3	Section -4

Existing RoW:	According to CMU dated 16.11.2002 and №1747, width of the safety zone on both sides of the axis of the pipeline to pipeline DN 1400 is 350 m (700 m corridor).			
Construction RoW:	The width of the right-of-way, according to SN 452-73, shall be 45 m – for the agricultural lands and 32 m – for non-agricultural lands.			
Permanent LA	The total area of 0.0965 ha (0.0657 – tillage and 0.0308 – Greenland).	The total area of 0.0076 ha (tillage).	The total area of 0.0448 ha.	The total area of 0.0156 ha.
Temporary LA	The total area of 139.844 ha: tillage – 116.3796; greenland – 3.2008; shrubbery – 0.4797; forest – 1.696; other – 18.0879	The total area of 306.922 ha: tillage – 253.194; greenland – 43.316; shrubbery – 2.407; forest – 8.005	The total area of 170.45 ha: tillage – 133.981; greenland – 29.411; shrubbery – 0.352; forest – 0.682; waterlogged – 4.473; other – 1.551	The total area of 120.514 ha: tillage – 91.981; greenland – 9.243; shrubbery – 0.402; forest – 10.160; waterlogged – 0.667; other – 8.061.
Valve stations:	4 pcs. VS 1 DN 1400 (No 3-21) - 0.0308 ha; VS 2 DN 1000 (No 2-04) – 0.0274 ha; VS 3 DN 1000 (No 3384,7)–0.0272 ha; VS 4 DN 150 (near P/L "Progres") – 0.01112	1 pcs. VS 1 DN 1400 (No 3489) - 0.0040 ha.	1 pcs. VS 1 DN 1400 (No 3489) - 0.0344 ha.	3 pcs. VS 1 DN 1400 – 0.0308 ha; VS 2 DN 100 – 0.0274 ha; VS 3 DN 200 – 0.0272 ha.

2.4. Project Duration

The duration for the realization of the project is foreseen as 18 months according to the planning and design studies.

To our opinion, the construction is performed mainly in late spring, summer and fall (May/June-October) with putting constructed capacities into operation in wintertime when gas flows are maximum and at the same time it maintains throughput capacity of gas pipelines. However, seasonal restrictions for construction and crossing of water bodies shall apply at all four sections, as outlined in Rapid Biodiversity Impact Assessment Report and Rapid Water Resources Impact Assessment Report; and in Appendix-K of this ESMMP.

Contractors will prepare their Construction Environmental Management Plan (CEMP), where a detailed time schedule of construction activities will be presented, according to the final ESMMP requirements. As a tentative schedule to be considered, the following timetable for the construction works is presented.

Table 2-3. Tentative Time Schedule for Re-construction of Four Sections of the UPU Pipeline

Task Name	Duration	Start	Finish
Contract Signing	1 day	Fri 04.01.19	Fri 04.01.19
Construction Period of Sections (each of them)	540 days	Tue 08.01.19	Tue 30.06.20
• Preparation and approval of the contractual documents	60 days	-	-
• Mobilization.	60 days	-	-
• Preparation of the RoW, excavation of the trench, pipe lay-in, hydrotest and backfilling, reinstatement. + Taking Over	450 days	Mon 08.04.19	Tue 30.06.20
Defects Liability Period	365 days	Wed 01.07.20	Wed 30.06.21

3 INSTITUTIONAL STRENGTHENING AND LEGISLATIVE FRAMEWORK

3.1. Roles and Responsibilities

Roles and responsibilities of the parties, which will take part in the Project realization, are given in the following paragraphs:

Ukrtransgaz (UTG): UTG will have the ultimate responsibility for ensuring environmental and social compliance and performance of the reconstruction works in the four sections of the UPU main gas pipeline. UTG will oversee the compliance of the Project and contractors, involved in the implementation of the Project, with relevant national legislation, their company policy and principles for environmental, social and health and safety management and the requirements of the Lenders (EBRD and EIB). UTG's regional divisions will have also responsibility for the environmental and social compliance of the construction works. UTG with all its subsidiaries and subdivisions will implement mitigation measures in the ESMMP. UTG has established a Project Implementation Unit (PIU) for the Project and this unit will be the main part of the UTG to be directly involved in the Project Management.

PIU Consultant: Consultant assigned by the UTG for the Project Management in coordination with the PIU of the UTG will be responsible for ensuring the proper implementation of the environmental and social management measures and monitoring activities in assistance to the UTG and in coordination with the Supervision Engineering Consultant.

Supervision Engineering Consultant (SEC): This body will be responsible for supervision of the construction works not only in terms of construction techniques but also environmental and social as well as OHS measures, which are committed to be implemented.

Contractor: Under the control of the UTG and its regional divisions and the SEC will be responsible for ensuring the implementation of the Contractor's site-specific ESMMP which can be titled as Construction Environmental Management Plan (CEMP) to be prepared in line with the ESMMP of the Project. The implementation will take place through the environmental management system of the Contractor. In order to protect environment, Contractors must comply with the mitigation measures proposed in this ESMMP and its supportive management plans. This requirement is stated in "General Specification for Pipeline Construction".

Contractor will define roles and responsibilities for its team within the institutional structure section of its CEMP. However, the following paragraphs are recommendations to the contractors to shape up their team accordingly.

- CONTRACTOR and Subcontractors are responsible for implementation of mitigation measures outlined in this ESMMP and national EIA reports as well as all supporting management plans and other reports referred in the ESMMP. CONTRACTOR and all sub-contractors will comply with all relevant national and international project standards, legal requirements, permit and license conditions and secure all applicable permits and licenses in coordination with UTG. Roles and responsibilities of the CONTRACTORS' team are outlined in the following table:

Commented [AB1]: So, is this a tender requirement that contractors should have environmental management systems in place?

Commented [CCΦ2]: On prequalification of the contractor were requested management system certificates from contractors. These certificates were submitted. In the Tender documentation one of requirements is - current certificates of management systems.

Commented [GÖ3]: It is expected in the tender specs that the contractors should have environmental management certificate of ISO 14001. Thus, we used this statement as appropriate.

Table 3-1 Roles and Responsibilities of the CONTRACTOR's Project and E&S Team

Roles	Responsibilities
Project Manager	Responsible for overall management of the construction impacts and compliance with the national and international requirements and mitigation measures of the Project.
Construction Manager	Responsible for ensuring that all staff including Sub-Contractors and activities complies with the Construction Environmental Management Plan (CEMP) of CONTRACTOR which is in line with the Project's ESMMP, and ensuring that CEMP will be complied with during project pre

	construction survey, construction activities and post construction activities (e.g., reinstatement and its monitoring).
Environmental Manager:	• Responsible for the overall management of all activities related with environment, • Responsible for monitoring construction activities and their compliance with environmental plans, procedures and instructions, • Responsible for preparing environmental procedures, method statements and work instructions as required and implementing amendments to the system identified by audits, • Responsible for weekly and monthly reporting to the Construction Manager, • Responsible for supervising CONTRACTOR's environmental inspectors and biologists/ecologists, soil experts, archeologist during activities, • Responsible for determining appropriate corrective action for non-compliance,
Environmental Inspector(s)	• Responsible for inspecting and ensuring maintenance and repair of drainage and erosion control devices, • Responsible for ensuring that all remedial action identified by inspections are closed out, • Responsible for conducting all environmental monitoring about the project ensuring that all requirements are fully completed correctly, • Responsible for inspection, maintenance and repair of reinstatement works with special care at arable fields, watercourses, steep slopes and ecologically important areas such as Dacha Galilei. • Responsible for ensuring that the Environmental Manager is fully informed about any environmental matter, • Responsible for implementing the environmental management system on site and provide as necessary toolbox talks on impact mitigations, • Responsible for training of all CONTRACTOR and its Subcontractor's personnel regarding with environmental issues.
Biologist / Ecologist	• Responsible for ecological monitoring during pre-construction and construction period, • Responsible for seed and bulb collection prior to the construction works, • Responsible for ecological training of all construction workers, • Responsible for monitoring the construction activities in terms of compliance with the requirements of the various biodiversity impact assessment reports of the project (i.e., Biodiversity Action Plan, Rapid BIA, Dacha Galilei Report, Condenses Report for Section 2, ESMMP, national EIA's)
Soil Expert	• Responsible for defining the depth of top soil to be stripped, • Responsible for monitoring of topsoil stripping and storage • Responsible for trainings regarding with soil management • Responsible for inspection, and ensuring maintenance and repair of drainage and erosion control devices • Responsible for ensuring RoW reinstatement aftercare and maintenance
Social Manager	• Responsible for identification and management of all social issues, • Responsible for establishing a social team to implement social requirements on site, • Responsible for liaison with land owners to facilitate maintenance of fencing to restrict access to seeded and planted areas • Responsible of administering all activities pertaining to the implementation of social plans, • Responsible for evaluating the compliance with national legislation

	and international requirements for labor forces issues and all social related aspects of the project, • Responsible for ensuring that all requirements of management plans and related social incidents are reported regularly to the Construction Manager who will share all with Project Manager, • Responsible for searching the causes of the social incidents that cause; injuries, delays or stoppage in the work and disputes among Project and communities, • Responsible for governing the social induction process for all project staff of the CONTRACTOR and its subcontractor, and ensuring that they are fully aware and briefed on the requirements of management plans, • Responsible for all grievances and ensuring that all grievances are resolved and closed, and for reporting the status of grievances to Construction Manager through regular weekly and monthly reports, • Responsible for functioning of the complaint mechanism,
Community Liaison Officer (CLO)	• Responsible for on-going communication with affected settlements, • Responsible for introduction of Grievance Mechanism to the affected communities and the Project workers through regular meetings; • Responsible for recording all grievances including reached by e-mail, verbal, phone or letter; • Responsible for the registration of verbal or written complaints received by other personnel; • Responsible for informing the complainant about the situation of the complaint and recording progress; • Responsible for recording complaints in appropriate way; • Responsible for the process of the grievance from beginning till the end of the closure by considering the time schedule • Responsible for informing the complainant in the manner specified in the Grievance Mechanism, • Responsible for supervision of the complaints management process by guiding the public relations team on the resolution of complaints; • Responsible for corrective actions if necessary, to discuss with third parties where this is not the case; • Responsible for ensuring that third parties perform all necessary actions to resolve the complaint; • Responsible for ensuring that all parties have agreed on corrective action in the solution process; and • Responsible for the management of the complaints of the sub-contractors. • Responsible for reporting Social Manager on weekly and monthly basis in written form of all the grievances to Social Manager, which are received or observed verbally.

3.1.1. UTG Organizational Structure

UTG carries out the entire scope of operations relating to natural gas transportation and storage within Ukraine (except for the Autonomous Republic of Crimea), gas deliveries to customers, transit of Russian gas to Europe and Turkey, as well as the gas transport infrastructure operating maintenance and construction. This subsidiary company consists of 18 main operating and maintenance enterprises, with 6 of them operating high-pressure gas pipelines (Regional Gas Pipeline Operators). Operating

within UTG is the Environmental and Natural Resources Division which overseas environmental management at the divisional and sub- divisional level. UTG core businesses operation is well structured with key roles and responsibilities defined in the Integrated Management System (IMS). Responsibilities and powers are defined by job descriptions and related to the key areas of environment, health & safety and labor management.

For the rehabilitation and modernization works UTG started to identify in-house personnel with specific responsibility for overseeing the works across the whole project. For these four sections' reconstruction works, UTG issued Order (dated 16.08.2016 and numbered 491) of the Project Implementation Unit (PIU). There are 27 personnel assigned for different positions ranging from the director of the PIU to secretary. There are positions for environmental management, social management, and occupational health and safety management. In general, it is considered that environmental arrangements are sufficient and provided throughout the divisional levels of UTG. Organizational structure of the PIU is presented in Figure 3-1 and Roles and Responsibilities of PIU team is summarized in Table 3-2

Commented [AB4]: Cold you include an organisational chart specifying relevant positions. Competencies and accountability and reporting lines?

Commented [AB5]: Could we obtain an organigram specifying the distribution of E&S responsibilities at the UTG HQ and regional departments?

Commented [GÖ6]: Added

Table 3-2 Roles and Responsibilities

Roles	Responsibilities
Construction level	
Head of PIU Team	General management and coordination of project implementation
E&S Advisors	Coordination of activities on social issues, issues of environmental protection, rational use of natural resources, development and implementation of measures in the field of natural resources use, taking into account national and international norms.
Health and Safety	Provision, organization and coordination of safe work on occupational safety, industrial and fire safety issues
Technical and Design Issues	Organization and provision of gas transportation, automation and communication, operation and reconstruction of compressor stations, capital construction
Project Management and Procurement	Organization and provision of project preparation and analytical reporting of the management of the implementation of investment projects
Customs	Organization and provision of work with the customs
Finance and Accounting	Financial and economic management, consolidated financial statements, settlement and cash operations
Legal Support	Provision of general legal work, work on legal support
Environment	Management of ecology, use of fuel and energy resources, energy saving
Social HR and Media	Provision and management of HR accounting, documentation, organizational and social development, communication with the public
Corporate Management	Organization of scientific and technical management, standardization and management systems
Security	Organization and provision of security
Land Acquisition	Works execution control of Land Acquisition
Operation level	
Chief Engineer	Implementation of complex operational and methodical management of the activities of the branch offices in particular - project implementation,

	construction management and reconstruction
Environment	Implementation of complex operational and methodical management of the activities of the branch offices in the field of ecology, energy saving, efficient and rational use of energy resources, coordination of the branch units

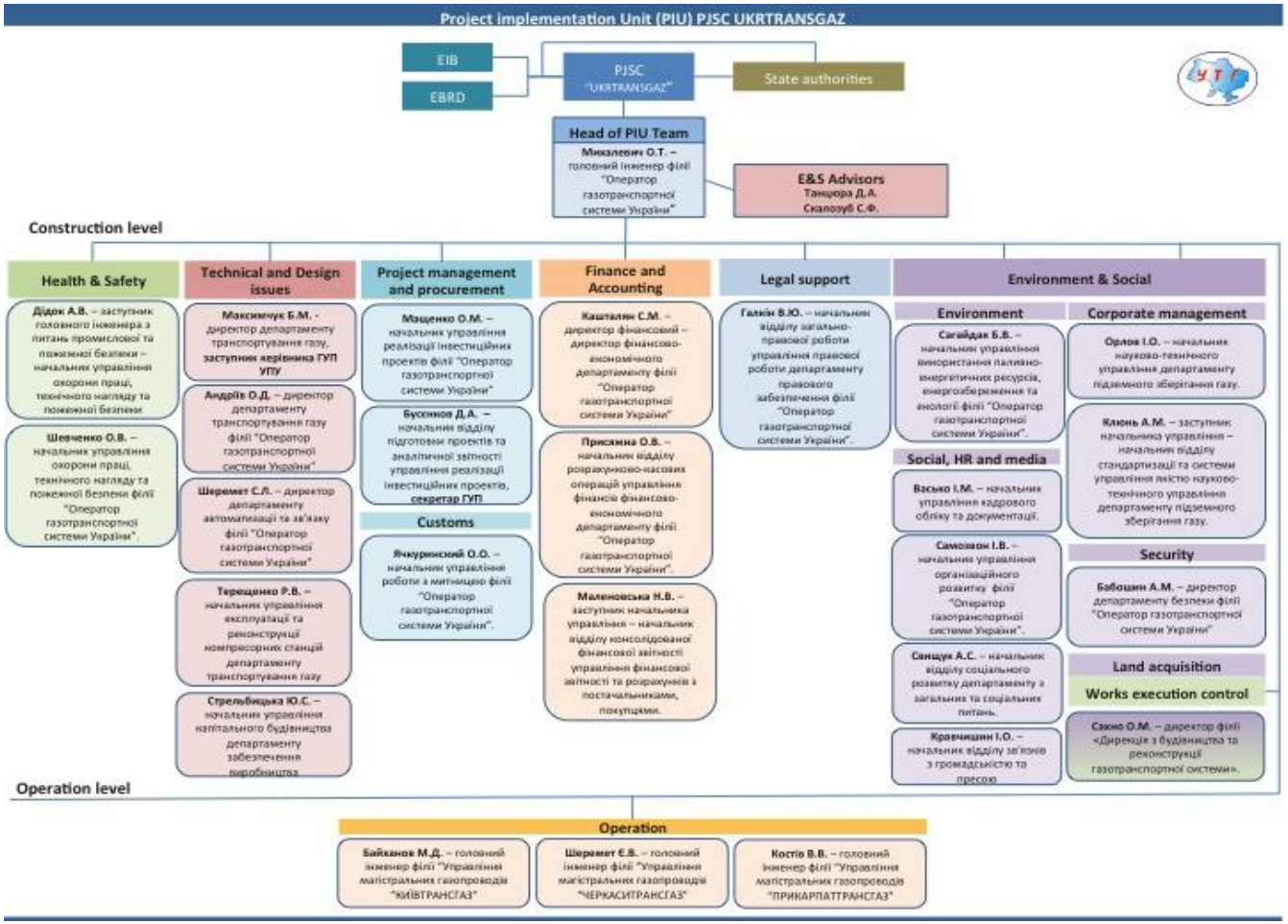

Figure 3-1 Organization Chart of the Project Implementation Unit

3.1.2. Tentative Reporting Structure during the Project Execution

The following table includes the timing and names of the reports to be prepared in the scope of the Project's construction phase and the responsible parties for the preparation and approval.

#	Name of the Report	Content	Frequency	Who in charge \ Position of responsible person	Approved by
1	Daily Site Report (DSR)	It will be max two pages of a form, which can be easily filled out in the site during the daily observations of the inspectors. Template to be determined by PIU Consultant of UTG	Daily	DSRs will be prepared by each party taking part in the construction works: - Contractors - Supervision Engineer - UTG/PIU	All the DSR's will be approved by UTG/PIU. Supervision Engineer can also get DSR from contractor to review and approve.
2	Weekly Progress Report (WPR)	The content of the report will be inclusive of the weekly progress and next week's planning. Template to be determined by PIU Consultant of UTG	Weekly	WPRs will be also prepared by each party taking part in the construction works: - Contractors - Supervision Engineer - UTG/PIU	All the MPR's will be approved by UTG/PIU. Supervision Engineer can also get WPR from contractor to review and approve.
3	Monthly Progress Report (MPR)	The content of the report will be inclusive of the monthly progress and next month's planning. It will be collection of the all weekly reports of the month of concern. Template to be determined by PIU Consultant of UTG	Monthly	MPRs will be also prepared by each party taking part in the construction works: - Contractors - Supervision Engineer - UTG/PIU	All the MPR's will be approved by UTG/PIU. Supervision Engineer can also get MPR from contractor to review and approve.
4	Annual Environmental and Social Monitoring Report (AESMR)	It is the annual assessment of the Project's E&S performance based on the monthly reports. Template to be determined by PIU Consultant of UTG	Annual	UTG/PIU will prepare AESMR to submit to the lenders for the overall reporting of the E&S matters of the project (to show how the KPI's were achieved and where were the limitation factors if there is a gap).	Lenders will approve the AESMR

3.1. UTG HSE Management System

UTG implements an Integrated Management System (IMS) that includes:

- ISO 9001 Quality Management System (QMS);

- ISO 14001 Environmental Management System (EMS); and
- OHSAS 18001 Occupational Health and Safety Management System (OHSMS).

The QMS and EMS were developed and implemented in 2003-2004. Since that then, both systems have been maintained and certified periodically by an accredited third-party organization in accordance with the international standards. Development of an integrated OHS Management System commenced in 2010 at various levels within the organization. This system has also been accredited.

All three systems cover activities at the operating division level and the sub-divisional level acting as an 'umbrella' system that combines UTG corporate policies, targets and several unified procedures within a tailor-made management approach. All systems are based on the requirements of the national standards which entirely reflect the requirements of International Standards Organization (ISO) as set out in Table 3.3. In addition, UTG also holds ISO 50001 Energy Management System Certificate.

Commented [AB7]: So that means that the Lenders E&S Performance Requirements and relevant EU standards have not been included as benchmark standards in spite of the formal ESAP commitment for UTG to do so

Commented [EK8]: This is the explanation of the current system.

Commented [GÖ9]: Dear Bossan, it does not have any relation to what we as PIU consultant did for the project's E&S assessment in the scope of our assignment. AS Elcin mentioned it is totally related to the evaluation of the existing management system of UTG as it should be understood from the title of the subsection 3.2. Thus, your interpretation is wrong. There is no such situation in the international consultancy services that SU-YAPI provided!

Table 3-3 Summary of management system standards implemented in the UTG

Area	International Standard	National Standard
Environmental Management System	ISO 14001:2015 Environmental management systems.	DSTU* ISO 14001:2015. Environmental with guidance for use
Quality Management System	ISO 9001:2015. Quality management systems	DSTU ISO 9001:2015. Quality management systems.
Health and Safety Management System	OHSAS 18001:2007 Occupational health and safety management systems	DSTU OHSAS 18001:2010 Occupational hygiene and safety management systems.

**DSTU is a Ukrainian national standard (DSTU) and has been accepted in Ukraine as identical to the ISO standards.*

In compliance with the Lenders Environmental and Social Requirements, including the applicable EU standards, ESAP requirements, BAT and GIIP, UTG approved the tender documents and technical specifications for the construction works of four sections of Urengoy-Pomary-Uzgorod main gas pipeline, including appropriate Environmental and Social procedures and Management Plans, as referenced and described in this ESMMP and relevant annexes, through the decision of the UTG`s tender committee on [put the approval date]. The implementation of the ESMMP and relevant management plans is mandatory for all contractors and shall ensure the overall compliance of the Project with the environmental and social requirements of the Lenders.

Commented [DT10]: Вставить дату после утверждения тендерным комитетом

The requirement of the UTG IMS is defined in UTG Guidelines on Environmental, Quality and Occupational Safety Management Systems (SOU 49.5-30019801-093:2017) and the following organizational standard and procedures.

- SOU 49.5-30019801-110:2013 Organization and Conduction of Internal Audits in JSC Ukrtransgas (standard);
- MUTG 01:2010 Documentation Management; and
- MUTG 02:2010 Records Management.

The IMS is applied at the three management levels within the organization: UTG itself, Regional Gas Pipeline Divisions (RPGD) (e.g. Cherkasytransgaz) and sub-divisions (e.g. Bogorodchany Main Gas Pipeline Sub-division). Typical procedures (named 'methodic' within UTG) and guidelines form the basis of bespoke local procedures and guidelines developed at the divisional and sub-divisional level. Each division and sub-division also has its own policy and targets reflecting the corporate policies and targets.

The management systems are developed by the UTG Science and Technical Progress Department with the support of dedicated specialists from relevant departments e.g., environmental management, health and safety, and labor management departments.

The representatives of the UTG top management are responsible for the systems functioning as follows:

- Chief Engineer is responsible for OHSMS;
- Deputy Director on Scientific and Technical Activities is responsible for the QMS;
- First Deputy Director is responsible for the EMS.

All three management systems require as a minimum compliance with applicable) national, legal, normative and organizational requirements. The compliance of the UTG operations with the applicable requirements of ISO9001, ISO14001 and OHSAS 18001 is checked by regular internal and external audits (see Section 3.3. for details). Statistical data relating to environmental, health and safety and quality performance is provided to UTG to enable annual statistical analysis of data reported to the UTG management team.

Commented [AB11]: Please elaborate which international standards are included as mandatory compliance/benchmarks standards

Commented [GÖ12]: Added

Commented [AB13]: These are Management System standards, not specific EU/:enders environmental or HS performance/compliance standards

Divisional performance on site is also audited by UTG at least once a year. This helps to set the targets for the future and improve the integration of the management systems at the divisional and sub-divisional levels. In addition to monitoring by UTG, each operating division also implements its own monitoring and auditing procedures supporting by regular checks and inspections at the site level. Findings from monitoring activities are documented in an action list at each operational site. The focus of UTG action plan is to bring current operations up to international standards.

■ *Environmental Management System*

Environmental management system was developed in 2003-2004. The latest external certification audit was conducted by Technical Management Services (TMS) LLC, cooperation partner of TÜV SÜD in between December 4 and 8, 2017. The gained certificate is valid until March 21, 2021.

The environmental policy of Ukrtransgas complies with ISO 14001 requirements and reflects the best management practices such as risk-oriented thinking, assessment and management of environmental aspects, stakeholder expectations, life cycle processes, continuous improvement etc. The environmental policies of the operating divisions and sub-divisions are typically more specific to the actual issues that are relevant to their works. There are special procedures required by ISO 14001, including the requirement to have in place a procedure to identify all the environmental aspects and impacts that arise from the activities of the organisation at all divisional and sub divisional levels.

As part of the UTG integrated management system, compliance with national legislative requirements for environmental protection, as well as international regulations ratified by Ukraine, is part of the compliance obligations. External communication with government authorities, supervisory bodies is carried out through responsible persons appointed by UTG for environmental protection in matters of environmental control, obtaining permits, licenses, declarations, and fixing of inconsistencies. Representatives of different companies noted that during last 15 years there have been no complaints. Within the framework of application of the best international practices, the Corporate Policy was developed for the implementation of projects which funds of international financial organizations. Also, part of the compliance obligations is the acceptance of additional obligations, such as:

Commented [AB14]: Please clarify as to where such obligation is recorded if you say that compliance with such standards will be added into the ESMMP prior to construction?

Interaction with stakeholders and satisfaction of their needs and expectations. UTG works to identify stakeholders and determine their needs and expectations, develop an "Order of interaction with stakeholders", "List of stakeholders and procedures for interaction with them." A plan for interaction with stakeholders was developed within the framework of the Project Management System of UPU Project

■ *Health and Safety Management*

UTG manage health and safety issues though their “Occupational Health and Safety Management System (OHSMS)”, which is currently being implemented in line with the international standard OHSAS18001 with the aim of encompassing both international approach and national requirements to occupational health and safety management.

For this purpose, UTG has developed a procedure SOU 60.3-30019801-071:2009 “Labor Protection Management System in Ukrtransgas” to integrate the national legal requirements on labor protection and the requirements of OHSAS 18001:2007 and ILO-OSH 2001 Guidelines on Occupational Safety and Health Management Systems.

The followings are the main items of this system:

- Training: Tool-box talks and H&S trainings are undertaken quarterly so that all workers are aware of the health and safety issues related to their role. More than 100 specialized health and safety procedures/instructions have been prepared until now. Related personnel are being tested on the jobs and proficiency. Each member of staff is subject to an annual exam on general health and safety matters. Engineers with specific disciplines and requirements are re-assessed every three years.
- Permit to Work System: The nature of the works has high risk of accidents that may result in combustion/explosion when undertaking hot works (for example pipeline welding) on operational gas pipelines. A special ‘Permit Order’ (PO) 44 shall be sought to undertake such works. These orders contain clear procedures on use of PPE etc. The Chief Engineer shall sign the permits prior to being issued.
- Auditing and monitoring: There are different types of external audit undertaken yearly by the labor protection and other government agencies. The certification bodies come from overseas to make Internal monitoring and auditing validating the certificates. After the audits, all findings and related corrective actions forms are prepared to follow up the results.

This procedure also identifies the main risks and dangerous factors, OHS policy, main goals, functions and roles and responsibilities across the divisions and sub-divisions and various standards and requirements, training and awareness control, emergency preparedness and control, requirements for operations including risk assessment procedure. It describes insurance provisions that are in place to support the worker in the event of an accident or occupational diseases.

UTG also has a procedure that sets out the health and safety requirements for contractors and external parties. This Standard sets out UTG approach to ensuring good working conditions, internal medical screening, staff welfare, minimum age requirement, women in the workplace and disabled persons.

Accident and Incident Reporting

UTG in Kiev is informed for the accidents and incidents occurred on site and offices by reports regularly. Progress in Health and Safety targets defined by top management of UTG are reported quarterly. Corrective and Preventive Actions Reports (CARs) are implemented to close out of the actions and the results are systematically monitored. Necessary preventive actions have been taken into consideration including travel to and from work.

In addition to internal reporting, this information is reported to state bodies responsible for occupational health and safety oversight. The safety information is reported to and inspections are conducted by the following authorities:

- State Service for Mountain Oversight and Industrial Safety;
- Ministry of Energy and Coal Industry;
- State Service for Fire Oversight; and
- Ministry for Emergency Situations (reporting and participation in investigation of fatalities or serious injuries).

Emergency Preparedness and Response

Site-specific emergency preparedness and response plan is a legal requirement including procedures to raise the alarm to the local communities and emergency services if the community can be affected by emergency situation. Observations during the site visit indicated that most sites do have a site-specific emergency preparedness and response plan.

The plan is approved by the local authorities, and is reviewed and updated periodically in case there is a change of legislation; change of the operational parameters; or in case of the accidents and mandatory updating - at least once every 5 years (according to Instruction on the development of plans for the localization and liquidation of emergencies and accidents on the objects of main gas pipelines "Ukrtransgas", No. 449, dated December 14, 2006). A firefighting system and plan are also in place. Firefighting drills are carried out on a quarterly basis.

Staff Welfare and Personal Protective Equipment (PPE)

The facilities like changing rooms, showers, toilets, washing rooms, drying rooms, hygiene rooms for women are provided for the worker. The necessary and proper PPEs are supplied to all employees.

Health and Safety Training

Health and safety training is provided for all staff by a specialist school with training tailored to specific work activities. The school has developed a training plan that assesses workers training needs on an ongoing basis and provides refresher sessions where necessary. The following training is currently provided:

- Tool-box talks and training are provided at three levels: introductory, initial and regular; and
- Regular quarterly specialist trainings are provided for all people to make them aware of the health and safety issues related to their role.
- Inductions and training subject includes following topics:
- Rules for storage, handling and transportation of chemicals;
- Medical screening procedure;
- Rules for fire safety; transportation;
- Trainings;
- Safety controls;
- Instruction on fire works; and
- Awareness system and investigation of accidents factors.

Health and Safety Auditing and Monitoring

In addition to the external audits and assessments, internal inspections are undertaken every month. Fire fighting inspection and environmental audit are progressed annually. The findings and corrective actions from the technical oversight inspections relate to the status of equipment and the need for the replacement or repair.

Health and Safety Action Plan

To improve Labor Protection and Industrial Safety on the works, UTG have developed an OHS Action Plan in the form of Organizational and Technical Measures. The plan includes the following measures:

- Development of action plans for branches;
- Planning and provision of internal inspection;
- Review of accidents, investigation of reasons and provision of corrective measures;
- Investigation of reasons for injuries and fatalities of non-working character;
- Training planning and provision;
- Inspection planning and provision;

- Planning of vehicles and machinery transportation;
- Control of regular medical screening. Informing trade union representatives on the results of medical screening;
- Enhanced control of health condition of workers affected by increased harmful factors;
- Improve measures of medical screening of drivers before long transportation who are in the 'increased risk' group by health by means of own medical staff;
- Provision of all dangerous operations in the presence of the leader; and
- Supply the staff working on pipelines and distanced objects with potable water, communication means and first aid kits.

■ *Quality Management Systems*

UTG has a Quality Management System, which has been certified in 2003. The policy complies with the requirements of ISO 9001:2008 which reflects the organizational priorities for ensuring work is undertaken to a high standard and in accordance with company requirements. Processes and operations required by the standard are identified and described at the divisional level. On the other hand, the system requirements shall be updated and certified according to the 2015 version of ISO 9001 standard.

Procedures for Communication / stakeholder communication are described in the quality manual however they relate to communication with other parts of the gas transmission network for example the gas dispatchers. In addition to that, a workers grievance mechanism is described in the 'Quality manual'

■ *Human Resources Management*

Referring to the HR policies and procedures and collective agreement of UTG, it is described that terms and conditions of employment (for example working hours) are communicated to staff verbally and in writing on appointment. According to the procedure, both the staff member and the UTG representative sign the collective agreement at the appointment meeting.

The collective agreement covers all benefits and entitlements. One of the items of the agreement describes that the female retirement age is 55 and for men it is 60. UTG also provides their private pension plan to match workers pension contributions. For the improvement, it may be reformed by the national government in accordance with IMF macroeconomic structural adjustment conditions. Therefore, new legislation shall be drafted on this purpose. One of the current applications is for those who have the status of 'veterans' of the oil and gas sector (defined as 25-years service for men and 15-years for women) to receive bonuses to their pensions. In the case of the workers retire; they receive a bonus equivalent to their annual salary (negotiated and protected in collective agreement). Other bonuses are financial supports for those getting married and if a worker dies, the company pays its funeral.

A staff may receive 24 calendar days of leave per year and more for senior, long standing staff and those with dangerous jobs or health problems. However, more negotiations should be held through the collective agreement for the overtime payment. It is observed that staff is also provided with free milk at work.

The HR policy for the UTG has been prepared in the PIU consultancy services to cover the non-use of child labor, forced labor and non-discrimination because these issues are covered comprehensively in the national labor codes.

The trade unions, which have a committee in every division of the UTG, negotiate the collective agreement, which is amended every three years. As a recommendation, these meetings shall be held more frequently to discuss the concerns and grievance of the workers.

3.1.1. Conclusive Remarks for Improvement of HSE System

■ Environmental Management

Regarding to the Environmental Management System (EMS), it is recommended that:

- Implemented international guidance measures shall be documented in the EMS;
- Staff shall be made aware of the requirements of international environmental best practice guidance documentation such as WBG General EHS Guidelines and sector specific guidance and guidance on developing environmental action plans at operating sites and improving environmental training; and
- Measures to manage activities with respect to energy efficiency, climate change and waste management shall be further documented in the EMS with reference to the applicable EU Directives.

■ Health and Safety Management

Management System of UTG and its contractors shall:

- Demonstrate a good awareness of the issues that are required their health and safety management system;
- Include measures for promoting continuous improvement of its health and safety management;
- Have an implementation of effective OHS management at the divisional and sub-divisional level.

UTG and its contractors shall monitor, audit and report performance requirements with refer to the Integrated Management System. The result performance information should be routinely reported to top management. All staff shall be provided to assess the project with regard to the KPIs, which are provided in Chapter 5 as specific to the UPU reconstruction project. A monthly reporting system should be established for the Project by both parties (UTG and the Contractor).

■ Document and Record Control

UTG, together with the contractor must have a document management system. UTG has the existing procedures MUTG 01: 2013 "Document Management" and MUTG 02: 2013 "Protocol Management", which regulate the rules of document circulation. The contractor can take UTG document circulation procedures or develop its own internal documents. In any case, at the stage of development and approval of the procedures and plans of the project management contractor with UTG, it is necessary:

1. Ensure the harmonization of the rules of document circulation of the contractor and UTG;
2. Take into account the specifics of the Project;
3. Ensure document circulation and communication between the contractor and UTG (given, but not limited to, the following):
   - Current environmental permits and consents;
   - All relevant national and International regulations, international guidelines and codes of practice;
   - Current calibration certificates for all the equipment that requires calibration by an external organization;
   - The latest version of the ıntegrated management system manual;
   - Records for quality, health and safety and environmental monitoring (inspection forms) and audits;
   - Record of the construction program;

Commented [AB15]: So is it documented? If so, what are the international measures?

Commented [GÖ16]: see above, Section 3.2

Commented [GÖ17]: These are our recommendations to improve the system…

Commented [AB18]: So are there concrete plans to do so? If so, when such measures will ne documented?

Commented [GÖ19]: These recommendations have to be monitored by lenders and should be questioned from UTG and asked to be included in the annual monitoring reports to be delivered to the lenders in the scope of the project execution.

Commented [GÖ20]: is performed within the framework of ISO 50001 and is constantly improving (in particular, as an example - the Romenskaya station)

Commented [AB21]: It is the first time KPIs are mentioned. Could you elaborate what are the specific KPIs?

- Manufacturers' operating manuals for all the environmental monitoring equipment;
- Equipment maintenance / repair records;
- Correspondences in relation to quality, health and safety and environmental matters / permits including internal and external;
- Minutes of relevant meetings; and
- Quality, health and safety and environmental training records.

■ Supervising, Inspection and Monitoring

Supervising, inspection and monitoring of the gas transmission pipeline shall be in accordance with a defined procedure that requires monitoring, measuring and reporting to be considered and implemented.

Routine supervising, inspection and monitoring of the gas transmission pipeline shall be conducted to ensure performance standards put in place are met. Monitoring undertaken by operational personnel and specialist survey providers shall be progressed in accordance with specific plans.

According internal procedures of UTG (not limited):

- Methodical recommendations of Naftogaz of Ukraine NJSC No. 360, dated 2017.09.14, "Technical supervision and audit of construction, reconstruction, repair, modernization, operation and industrial safety of the National Joint-Stock Company Naftogaz of Ukraine, subsidiaries (companies) and business partnerships, the shareholder (participant) of which it is. Guidelines".
- "Instruction on compliance with the requirements for patrolling the linear part of the main gas pipelines of JSC "UKRTRANSGAZ", No. 213, dated April 18, 2016
- DSTU 7136: 2009, from 07.01.2010, "Emergency Safety. Monitoring of potentially dangerous objects. The order of conducting".
- SOU 60.3-20077720-037: 2009 "Main pipelines. Welded joints of pipes. Technical diagnostics".

■ Training

In line with the existing management structure requirements of UTG, training is a part of the management system; all staff of the UTG and its contractors who take part in the implementation of the Project shall receive the required training in both general and job-specific terms. This training should form an integral part of on-going training program. UTG and its contractors shall make program as part of its management system to provide training for all new employees and continual refresher courses for existed staff. This training program shall include training on the requirements of the IFI's for environmental, social, health and safety as well as labor management and implementation them on their works/operations.

UTG and its contractors shall analyze training needs relating to the works to be carried out during the construction works prior to the construction. An outline approach for training needs complying with the requirements of integrated management system includes followings:

- Ascertain the general quality, health and safety and environmental awareness level of the staff, including examinations of actual working practices;
- A general understanding of the environmental risk associated with the construction activities proposed;
- Local, national and international actions which are required to mitigate these risks;

Commented [AB22]: Is such a procedure already in place? If so, please reference it accordingly

Commented [GÖ23]: UTG has quality management system certification. They need/have to do the necessary arrangement and structuring for document control. We as PIU Consultant wrote to remind what needs to be done as specific to the project document control.

Commented [CCΦ24]: Also UTG have ISO 14001, OHSAS 18001, ISO 50001 Management Systems which are covered rquirements of Performance of Supervising, Inspection and Monitoring of the gas transmission pipeline

Commented [AB25]: Which plans? Could you reference them in case such plans are in place?

Commented [AB26]: Training normally constitutes an integral part of the management system. So, how does this work that UTG has certified management systems in place, but they do not contain any training component?

Commented [GÖ27]: Dear Bossan, we do not say that UTG does not have a training program in line with its applicable certification of management system. What we remind here is about the project specific training including HSE, QA/QA, job specific issues etc. We do not claim that UTG does not have a training program in general.

Commented [GÖ28]: Fixed

Commented [AB29]: Specify when. Prior to construction; during the construction, etc..

Commented [CCΦ30]: fixed

- Clarification of the UTG Integrated Management Policy and its practical implementation, stressing that it carries implications for the working methods and responsibilities for all employees.
- Identify the most significant impacts of the management system that require awareness training; and
- Prioritize training requirements in terms of mandatory training and / or potential consequences of any incorrect practices e.g. generally poor practice on the site during construction or operation will have more significant consequences than shortcomings in office based activities.

Training Register shall be prepared for training needs of all staff over a two years of period of time after analyze process. These matrices shall be revised and updated to comply with any identified changes in legal requirements. This is need also to enable programming of any identified refresher training. The Training Register shall consist the construction and operation phase of the Project.

All training records of attendees shall be controlled in line with the requirements of the integrated management system. The attendees shall be required to complete and sign an attendance sheet for all courses, including the staff awareness training. All records shall be kept in a document control central.

3.2. Legislative Framework and International Standards

Legislative framework is presented under two separate titles; i) national legislation covering law and regulations as well as international agreements and conventions that Ukraine ratified and ii) international lender requirements including lender Environmental and Social Safeguards and pertinent EU Directives as well as international best practices.

3.2.1. National Legislation

Commented [GÖ31]: Actually it is relevant in terms of giving a brief information to the contractors in terms of administrative divisions in the country. But upon your comment, we decided to take it out not to put more info than musts.

Environmental Legislation

Ukrainian legislation provides that all entities and individuals must comply with ecological rules, in particular in water use, air protection, waste management, impact on environment during construction and other commercial activity, etc.

Entities and individuals are subjected to civil and administrative liability for violations of environmental laws which may result in penalties, obligation to compensate damages, order to remedy the violation and, in the worst case scenario, order to suspend the business (until the violation is remedied). In addition, individuals may also be subject to criminal liability.

Ukrainian legislation does not provide any distinction between national and foreign entities or individuals. Thus, foreign entities and individuals must comply with relevant Ukrainian regulations in the same manner as the Ukrainian entities and individuals do.

The “main” environmental legislative acts are as follows:

(i) Law of Ukraine “On Environment Protection” No. 1264-XII, dated 25 June 1991;

(ii) Law of Ukraine “On Air Protection” No. 2707-XII, dated 16 October 1992;

(iii) Law of Ukraine “On Waste” No. 187/98-BP, dated 5 March 1998;

(iv) Land Code of Ukraine No. 2768-III, dated 21 October 2001;

(v) Water Code of Ukraine No. 213/95-BP, dated 6 June 1995; and

(vi) Law of Ukraine " About the assessment of the environmental impact" No. (ВВР), 2017, № 29, ст.315), 23.05.2017.

Table 3-4 presents the list of environmental and social legislative components together with the principle laws of Ukraine where reference to the E&S related issues exists in order to regulate the works in Ukraine in terms of environmental and social requirements at the national level.

Table 3-4 Principal Ukrainian Environment and Social Legislation

Legal Act	Date of Approval
The Constitution of Ukraine	28.06.1996 (No. 254к/96-ВР)
The Law of Ukraine "On Environmental Protection"	25.06.1991 (No. 1264-XII)
The Law of Ukraine "About the assessment of the environmental impact"	23.05.2017 (ВВР), 2017, №29, ст.315)
The Law of Ukraine "On Regulation of Town Building Activity"	17.02.2011 (No.3038 VI)
The Law of Ukraine "On Legal Regime of the Trunk Pipeline Facility Protective Zone Lands"	17.02.2011 (No.3041-VI)
The Law of Ukraine "On Pipeline Transport"	15.05.1996 (No. 192/96-ВР)
Environmental Legislation	
The Law of Ukraine "On Fauna"	13.12.2001 (No2894-III)
The Law of Ukraine "On Flora"	09.04.1999 (No.591-XIV)
The Law of Ukraine "Plant Protection"	14.10.1998 (No. 180-XIV)
The Law of Ukraine "On Air Protection"	16.10.1992 (No.2707-XII)
The Law of Ukraine "On Nature Reserve Fund of Ukraine"	16.10.1992 (N0.2456-XII)
The Law of Ukraine"On Wastes"	05.03.1998 (No 187/98-ВР)
The Law of Ukraine "On Land Protection"	19.06.2003(No. 962-IV)
The Water Code of Ukraine	06.06.1995 (No. 213/95-ВР)
The Subsoil Code of Ukraine	27.07.1994 (No. 132/94-ВР)
The Forestry Code of Ukraine	21.01.1994 (No. 3852-XII)
The Land Code of Ukraine	25.10.2001 (No. 2768-III)
The Air Code of Ukraine	19.05.2011 (No. 3393-VI)
The Law of Ukraine "On State Control over Use and Protection of Lands'	19.06.2003 (No. 963-IV)
The Law of Ukraine "On the Red Book of Ukraine"	07.02.2002 (No. 3055-III)
The Law of Ukraine "On Hunting Economy and Shooting"	22.02.2000 (No. 1478-III)
The Law of Ukraine "On Extremely Dangerous Objects"	18.01.2001 (No. 2245-III)
The Law of Ukraine "On National Program for the Treatment with Toxic Waste"	14.09.2000 (No. 1947-III)
The Law of Ukraine "On pesticides and agrochemicals"	02.03.1995 (No. 86/95-ВР)
The Law of Ukraine "On Ensuring Sanitary and Epidemic Safety of the Population"	24.02. 1994 (No. 4004-XII)
The Law of Ukraine "On Amendments to the Law of Ukraine "On Pipeline Transport"	06.02.2007 (No. 605-V)
The Law of Ukraine "On Ecological Audit"	24.06.1966 (No. 1862-IV)
The Law of Ukraine "On Energy Saving"	01.07.1994 (No. 74/94-ВР)
The Law of Ukraine "On Amendments to the Law of Ukraine" On energy saving ""	22.12.2005 (No. 3260-IV)
Cabinet Ministers of Ukraine. Resolution "On confirming the National action plan for implementation of the provisions of Kyoto Protocol to the United Nations Framework Convention on Climate Change"	18.08.2005 (No. 346-р)
Decree of the Cabinet of Ministers "On the Procedure for Appraising, Approving and Implementing Projects Aimed at Reducing the Volumes of Anthropogenic Emissions or Increasing the Absorption of Greenhouse Gases in accordance with the Kyoto Protocol to the UN Framework Convention on Climate Change."	21.04.2006 (No. 554)
On Approval of Norms of Permits for Pollutants from Stationary Sources	27.06.2006 (No. 309)
Social Legislation	
The Law of Ukraine "On planning and land development"	17.02.2011 (No. 3038-VI)
The Law of Ukraine "On Labour Protection"	14.10.1992 (No. 2694-XII)
The Law of Ukraine "On Amendments to the Law of Ukraine "On Labour Protection"	21.11.2002 (No. 229-IV)

Commented [ССФ32]: added

Legal Act	Date of Approval
The Law of Ukraine "On Amendments to Articles 21 and 33 of the Law of Ukraine" On Labour Protection "	04.06.2009 (No. 1454-VI)
The Law of Ukraine "On Securing of the Population's Sanitary and Epidemic Safety".	24.02.1994 (No. 4004)
The Laws of Ukraine: "The Fundamentals of Legislation on Health Protection"	November 1992 (No. 2801)
Order of the Ministry of Heafth 'On Approval of the State Sanitary Rules concerning Planning and Construction of Populated Communities"	19.06.1996(No. 173)
The State Sanitary Rules of Air Protection in Populated Localities against Pollution by Chemical and Biological Substances"	09.07.1997(No. 201)*
The Law of Ukraine On Mandatory State Social Insurance against Industrial Accidents and Occupational Disease Causing Disability'	23.09.1999 (No. 1105-XIV)
The Law of Ukraine 'On Facilities with high danger levels'"	18.01. 2001 (No. 2245-III)
The Law of Ukraine 'On legal status of the lands allocated for main pipelines and their facilities*	17.02. 2011 (No. 3041-VI)
The Law of Ukraine 'On Alienation of Land Plots and Other Objects of Immovable Property loocated on them in Private Ownership for the Social Needs and on the Grounds of Social Necessity"	17.11.2009 (N0.1559-VI)
The Law of Ukraine *On Citizens' Appeals"	02.10.1996 (No. 393/96-BP)
The Law of Ukraine 'On Local Self-Government in Ukraine"	21.05.1997 (No. 280/97-BP)
The Law of Ukraine 'On Information"	02.10.1992 (No. 2657-XII)
The Law of Ukraine "On Ownership"	*Expired*
The Law of Ukraine "On Fire Safety"	(No. 3745-XII)
The Law of Ukraine "On local self-government in Ukraine"	21.05.1997 (No 280/97-BP)
The Law of Ukraine on "Culture"	14.12.2010 (No. 2778-VI)
The Law of Ukraine "On Protection of the Archaeological Heritage"	18.03.2004 (No. 1626-IV)
The Law of Ukraine "On Protection of Cultural Heritage"	08.06.2000 (No. 1805-III)
Other important and applicable codes of Ukraine	
The Labour Code of Ukraine (hereafter 'the Labour Code')	10.12.1971 (No. 322-VIII)
The Civil Code of Ukraine	16.01.2003 (No. 435-IV)
The Tax Code of Ukraine	02.12.2010 (No. 2755-VI)
Code Civil Protection	02.10.2012 (No.5403-VI)

** These rules do not apply on 30/05/2014. The new document has not been adopted from EU yet.*
Contractors are responsible to use the up to date environmental and social legislation of Ukraine in relation to the Project and in this respect, the link "http://zakon.rada.gov.ua" can be used to reach Actual Ukrainian Legislation (Laws, Orders, Codes, Resolutions, etc.)
Source: Mott MacDonald, "Environmental and Social Analysis Report of Ukraine Gas Transit System", 2015 (table updated by PIU Consultant).

National Standard Values (Limits)

Article 96 of the ***Water Code*** prohibits the implementation of projects/business activities without assessment of their impact on relevant water resources. According to Article 49 of the ***Water Code***, the enterprise (user) should apply for special water use permits in the event the enterprise will make use of water resources (which includes water intake from water bodies using technical devices or equipment, other aspects of water usage, and wastewater discharge into water bodies). Special water use permits are issued by the regional administrations and by Kyiv and Sevastopol City state administrations in cases of water use from water bodies of national importance. Details on permitting issue can be found in the Rapid Water Resources Impact Assessment Report, which will be provided to the contractors after contract award.

ДБН В.2.5-20-2001 'Gas supply' item 13.9 contains the prohibition of water discharge from the gas pipeline after the hydrotests without preliminary treatment.

Article 17 of the ***Law on fish farming*** prohibits the use of water intake structures, other objects and technologies without fish protection devices. The water level in fish-water facilities should be sufficient to ensure the natural habitat of hydrobionts. The increase or decrease of the water level in water bodies should be agreed with the State Agency of Fisheries of Ukraine. However, this statement is applicable only for manual discharge into ponds used for fisheries with the aim to catch fish. The water intake in the current project will be in accordance with the special water use permit which will be

Commented [AB33]: Please specify who and when should obtain the permit?

Commented [GÖ34]: Added

obtained by the contractors prior to the start of the works and UTG will assist the contractors in terms of communication with the pertinent authorities and official correspondences with them for permitting.

Quality of hydrotest water before disposal is regulated by the following regulations: GN 2.1.5.1315-03 San 2.1.5.980-00 PIN, CMU from 25.03.1999 number 465, DSANPIN 2.2.4-171-10 and must be analyses in terms of the following parameters:

- Suspended Substances;
- No odor and color;
- BOD (biological oxygen demand);
- Fe; and
- No toxic substances

Discharge standards depend on where the wastewater will be discharged. In other words, limit values with the parameters for wastewater discharge do not exist. Limit values are given to the applicant for water use permit when the permit is issued. In any way, standards are different from case to case as follows:

- In case, the discharge is organized to a municipal sewerage network, the standards are given by the pertinent administration of the sewerage system, i.e., locally known as *Vodokanal*.
- In case the discharge is organized to a surface water body (after pretreatment) - standards are specified in the special water use permit.

Table 3-5 shows the allowable concentration of different parameters for surface water quality after discharge.

Table 3-5. Water Quality Parameters to comply with after discharge of treated wastewater

Parameter	Specification
Surface substances	Oil-products films, oils, fats and built-up contaminants shall not be present on the water surface.
Dye	Shall not be discovered in the column of 20 cm
Odor	Water shall not gather any odor with higher intensity, than 2 categories that are discovered immediate, during following chlorine treatment, or during other treatment methods.
Temperature	Summer water temperature, in the result of wastewater discharge, should not rise to more than 3°C in comparison with the mean monthly water temperature of the hottest month of the year for the last 10 years.
pH	Shall not exceed 6,5-8,5
Salinity	No greater, than 1000 mg/L, including chlorides – 350; sulfates – 500 mg/L
Suspended Solids	20 mg/L (720 g/hr) allowable discharge concentration
Dissolved Oxygen	Should not be less than 4 mg/L at any season, in a sample, taken before 12:00 p.m.
Biochemical Oxygen Demand (BOD)	Should not exceed 2 mg O_2/L, at a temperature of 20°C
Chemical Oxygen Demand (COD)	Should not exceed 15 mg O_2/L
Intestinal infection agents	Water should not contain intestinal infection agents
Revivable helminthes eggs (acaridas, whipworms, toxocaras, liver flukes eggs), hexacanth embryos of vers solitaires and revivable protozoan pathogen intestinal cysts	Should not be contained in 25 L of water
Thermo tolerant coliform bacteria	Not more, than 100 CFU (colony-forming unit)/100 ml**
Total coliforms**	Not more, than 1000 CFU (colony-forming unit)/100 ml**
Coli phages**	Not more, than 10 PFU (plaque-forming unit)/100 ml**

Total volumetric activity of radionuclides during comparison***	Sum (Ai/YBi) <=1, Ai – mass activity of radionuclide in water; YBi – appropriate intervention level for radionuclide

* It is not permitted for unnatural suspended substances (flocculants of iron hydroxide, that are formed during the wastewater treatment, particles of asbestos, glass fiber, basalt, nylon, mylar) to be presented in water.
** Water is subject to decontamination in case of non-centralized water supply system; for public drinking water supply.
*** In case of exceeding specified radioactive-contamination levels of controlled water, additional control of radionuclide contamination is conducted, in accordance with existing standards of radiation safety.

Table 3-6 includes the selected parameters of the water quality for bathing, sport, recreation, as well as the water bodies within the residential area.

Table 3-6. Summary of Available Ukraine National Standards for Protection of Human Health (µg/m^3)

Parameter	Value
Suspended solids, mg/l	Not more than background+0.75 in the control check point
BOD_{20}, mg/l O_2	6
Iron, mg/l	0.33
Chlorides, mg/l	350
Sulphates, mg/l	500
Nitrites, mg/l	3.3

Sources: SanPiN 4630-88, approved by the Ministry of Health of the USSR, 4.07.1988, revised 21.10.1991

Table 3-6 and Table 3-7 show the air quality limit values for the ambient air. Table 3-8 shows limit values for noise levels.

Table 3-7. Summary of Available Ukraine National Standards for Protection of Human Health (µg/m^3)

Pollutant	Limiting concentration in µg/m^3		
	MAC	Average Daily	Hazard Class
Methane	50 (ELSE)		-
Nitrogen dioxide	0.085 (85)	0.04 (40)	2
Nitrogen oxide	0.4 (400)	0.06 (60)	3

Note; ELSE = estimated safe level of exposure.
*Where * indicates concentration is in mg/m^3 in µg/m^3 to allow comparison with International Standards*

Table 3-8. Ukraine Ambient Air Quality Standards (µg/m^3)

Parameters	Limit Values (µg/m3)
Nitrogen Dioxide	40 (Daily); 200 (Short term)
Corbon Monoxide	3000 (Daily)
Suphur Dioxide	50 (Daily); 500 (Short Term)
Dust	150 (Daily); 500 (Short Term)

Source: WSP - Parsons Brinckerhoff "Vinnytsia Poultry Farm SIR ESIA", December 2016.

As there might be use of generators in the construction campsite etc., which will work on diesel fuel, the followings are the national emission standards applicable:

1) For dust (suspended solids, undifferentiated by the composition) (soot) - if the mass flow rate of the pollutant does *not* exceed 500 g/h (or 0,139 g/sec), a limit value of 150 mg/m^3 will be applied (ref. Table 1 of Order of the Ministry of Environmental Protection).
2) For dust (suspended solids, undifferentiated by composition) (soot) - if the mass flow rate of the pollutant exceeds 500 g/h (or 0,139 g/sec), a limit value of 50 mg/m^3 will be set (ref. Table 1 of Order of the Ministry of Environmental Protection).
(3) For CO, if the mass-flow rate of the pollutant exceeds 5,000 g/h (or 1.39 g/sec), a limit value of 250 mg/m^3 will be applicable (ref. Table 4 of Order of the Ministry of Environmental Protection).
4) For CO, if the mass flow rate of the pollutant does *not* exceed 5,000 g/h (or 1.39 g / sec), it will be set at the actual emission level in g/sec.
5) For NO_x, limit is calculated on the basis of nitrogen dioxide - if the mass flow rate of the pollutant exceeds 5,000 g/h (or 1.39 g/sec), a standard of 500 mg/m^3 will be established (ref. Table 4 of Order of the Ministry of Environmental Protection).
6) For NO_x, in terms of nitrogen dioxide - if the mass-flow rate of the pollutant does *not* exceed 5,000 g/h (or 1.39 g/sec), it will be set at the actual emission in g/sec.

7) For SO_2, if the mass-flow rate of the pollutant exceeds 5,000 g/h (or 1.39 g/sec), the standard is set at 500 mg/m^3 (ref. Table 4 of Order of the Ministry of Environmental Protection).
8) For SO_2, if the mass flow rate of the pollutant does not exceed 5,000 g/h (or 1.39 g/sec) will be set at the actual emission in g/sec.

Table 3-9. Noise limit values

	Equivalent continuous noise level LA_{eq} dB		**Maximum sound pressure level LA_{max} dB**		
Characterisation of the Area	**Daytime 08:00 to 22:00**	**Night time 22:00 to 08:00**	**Daytime**	**Night time**	**Normative documents**
Residential and public development area	55	45	70	60	SN 3077-84, DBN 360-92, DBN 6.2.4-1-94, DSP 173-96
Existing development subject to rehabilitation works. (+5 dBA)	60	50	75	65	SNiP 11-12-77, SN 3077-84
	60	50	70	60	DBN 360-92*
New development area in the zone affected by transportation means (+10 dBA)	65	55	80	70	SN 3077-84, Appendix Ne 16 DSP 173-96
New development area already formed and under reconstruction in the zone affected by transportation means (5+10 dBA)	70	60	85	75	SNiP 11-12-77, SN 3077-84, Appendix Ne 16 DSP 173-96

The following codes and standards are applied for assessing noise in Ukraine. These are based on standards from the former USSR and are required to be adhered to in addition to EU requirements:

- GOST 12.1.003-83 Noise. General Safety Requirements;
- GOST 20444-85 Noise. Traffic. Noise Quality Measurement Methods;
- DSTU GOST 31295.2:2007 Sound Attenuation with Distance. Part 1. Sound Absorption in Atmosphere; and
- DSTU GOST 31295.2:2007 Sound Attenuation with Distance. Part 2. General Calculation Methods.

Allowable concentrations of some of the chemicals that might be found in soil samples to trace potential contamination are provided in Table 3-10.

Table 3-10. Soil contamination limit values

No	**Name of chemical**	**Allowable Concentration Limit mg/kg of soil**
1	Dilor	0,5
2	Pentachloro (or heptachlor it was like “hentachloro”)	0,05
3	Zineb	1,8
4	Propanide	1,5
5	Banvel D	0,25
6	Arsenic	2,0
7	Formaldehyde	7,0
8	Bazudin	0,2
9	Metaphos	0,1
10	Amide chloride	0,05
11	Lead (*)	20,0
12	Chrome +6	0,05
13	Mercury	2,1
14	Dichloro-diphenyl-trichloroethane	1,0
15	Hexachlorane	1,0

Sources: SanPiN 2264-80, approved by the Ministry of Health of the USSR, 30.10.1980.

3.2.2. International Standards

The proposed reconstruction project covering four separate sections of the UPU Main Pipeline together with the rehabilitation of the Romny Compressor Station (i.e., replacement of two old turbines) will be financed by a group of international lenders mainly European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB). Thus, the Environmental and Social Safeguards of these lenders will form the frame of the international standards to be implemented for the Project. These safeguards are Performance Requirements (PRs) of the EBRD and Performance Standards (PSs) of the WBG. WBG revised its safeguards recently (August 4, 2016) and titled it as ESS's. Detailed standards or limit values for the environmental management issues for different aspects such as noise limits, air pollutant emission limits and ambient air quality limit values are stipulated in the EU Directives which are the reference documents for EIB and hence EBRD in addition to their PR's which are the sets of guidelines and requirements forming the main frame of the compliance expectations from the investors for environmentally and socially sound project developments. WBG's "Environmental, Health, And Safety Guidelines Onshore Oil and Gas Development" (April 7, 2007) is comprehensive sector specific guideline document presenting the lender requirements from the investors. This shall be taken into consideration by the Contractors while preparing their management plans and monitoring programs in the scope of the Construction Environmental Management Plan (CEMP). This ESMMP is an important project document that has to be fully considered by the UTG and the Contractor as well as their consultants for preparation of environmental and social documentation and their implementation needed for the Project's E&S management. The following environmental issues should be considered by contractors as part of a comprehensive assessment and management program that addresses project-specific risks and potential impacts. In the above-mentioned guideline of IFC, the potential environmental issues associated with onshore oil and gas development projects include the followings:

- Air emissions;
- Wastewater / effluent discharges;
- Solid and liquid waste management;
- Noise generation;
- Terrestrial impacts and project footprint[1]; and
- Spills.

International Standard Values (Limits)

Regarding the wastewater discharges from hydrotesting, requirements given in Environmental, Health, and Safety Guidelines "Onshore Oil and Gas Development" shall be complied with (see **Table 3-11**).

Table 3-11. Wastewater Discharge Parameters for Hydrotest and other process wastewaters

Parameters	Values
Total hydrocarbon content	10 mg/L
pH	6 - 9
BOD	25 mg/L
COD	125 mg/L
TSS	35 mg/L
Phenols	0.5 mg/L
Sulfides	1 mg/L

[1] *In line with the statement; taken from the relevant Guideline, "project footprints resulting from exploration and construction activities may include seismic tracks, well pads, temporary facilities, such as* ***workforce base camps****,* ***material (pipe) storage yards****,* ***workshops, access roads****, airstrips and helipads,* ***equipment staging areas****, and construction material extraction sites (including borrow pits and quarries)", Contractors will make their impact assessment for the decision to be made for storage sites, accommodation camps, access roads etc. considering the requirements of the Guideline (www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines). See also Section 4.1.*

Heavy metals (total)*	5 mg/L
Chlorides	600 mg/l (average), 1200 mg/L (maximum)

* *Heavy metals include: Arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, vanadium, and zinc.*

For the sanitary wastewater discharges, *Table 1.3.1* of the "Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: Environmental Wastewater and Ambient Water Quality"[2] should be complied with in case of absence of national limits.

Table 3-12 shows the air quality standards and target values of the pertinent EU Directive. Furthermore, ambient air quality and the emission limit values in accordance with the World Bank guidelines can be found in "Environmental, Health, and Safety Guidelines General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality" to be considered in the construction and operation phases.

Table 3-12. Air Quality Standard and Target Values

Pollutant	Averaging Period	Concentration (µg/m^3)	Not to be exceeded more than	Target Date
Nitrogen Dioxide (NO_2)	*1 hour*	200	>18 times pcy (a)	01.01.10
	Annual	40	-	01.01.10
Benzene	*Annual*	5	-	01.01.10
Particulate Matter (PM_{10})	*24 hour*	50	>35 times pcy (a)	31.12.14
	Annual	40	-	
Fine Particulate Matter ($PM_{2.5}$) (b)	*Annual*	25	-	31.12.15

Source : Directive 2008/50/EC of the European Parliament and of the Council of 21.05.2008 on ambient air quality and cleaner air for Europe.
(a) Per calendar year (pcy).
(b) Target value.

Table 3-13. World Bank Group Noise Limit Values

	Noise Level LAeq (dB)	
Specific Environment	**Daytime (07:00-22:00)**	**Night time (22:00-07:00)**
Residential, educational or institutional	55	45
Industrial or commercial	70	70

Source: Environmental, Health, and Safety (EHS) Guidelines "General EHS Guidelines: Environmental Noise Management", April 30, 2007.

Table 3-14. Assessment of Magnitude for Operational Noise Impact from the Project

Magnitude of Impact	
Major	Increase in noise level >5 dB above WHO and WBG guidelines
Moderate	Increase in noise level >3 dB and < 5 dB above WHO and WBG guidelines
Minor	Increase in noise level > 0 dB and < 3 dB above WHO and WBG guidelines
Negligible	Noise level <WHO and WBG guideline

In case of contamination due to a spill or similar incident, the pertinent guideline of the international lenders is "Environmental, Health, and Safety (EHS) Guidelines General EHS Guidelines: Environmental Contaminated Land".

In addition to the World Bank Group's guidelines, EBRD's guideline named as "the Pipeline Sub-sector Environmental & Social Guidelines" (2010)[3] should be also considered by the Contractors as the guideline for the Good International Industry Practices in order to achieve environmentally and socially sound Project development since this guideline covers at minimum the following aspects for different stages of such pipeline development projects:

- Key Environmental, Health And Safety Risk/Liability Issues

[2] http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

[3] http://www.ebrd.com/downloads/policies/environmental/construction/pipelines.pdf

- Key Social, Labour And Community Risks/Liability Issues

This guideline should be used by the contractors while developing their own environmental and social management plan(s) for different aspects. This guideline can be also used by the project owner for the sustainable operation of the project.

3.2.3. Project Standards

Regarding the compilation of the project standard, the approach of "*the most stringent*" among the similar parameters of national and international standards will be chosen as the project standard to be complied with. Contractors will prepare the list of project standards for water discharges, air and noise emissions and present them in their Construction Environmental Management Plan, which needs to be reviewed and approved by the PIU prior to the implementation.

4 ENVIRONMENTAL AND SOCIAL MANAGEMENT

4.1. Environmental Impacts and Mitigation Measures

In this Section of the ESMMP, "environmental impacts" and "mitigation measures" identified in i) the national EIA ("*OVNS*" in Ukrainian abbreviation) reports for all four pipeline sections; ii) the International Environmental and Social Analysis Report for the overall Ukraine Gas Transit System (Mott MacDonald, 2011) and iii) PIU Consultant's Rapid Biodiversity Impact Assessment (BIA) Report (Doc#SYP-GEN-ENV-BIA-001-8), Rapid Water Resources Impact Assessment (WRIA) Report (SYP-GEN-ENV-WIA-001-4) and Rapid Social Impact Assessment (SIA) Report (Doc#SYP-GEN-SOC-SOR-002-4) as well as all other studies or assessment done by the PIU Consultant are presented.

In the following subsections of this ESMMP, impact assessment and mitigation measures are presented based on the receiving media such as water, air and soil etc. Before those assessments, the following paragraphs are the recommended actions to have environmental management integrated into the camps and stockyard design and usage by the contractor:

- Prior to the selection of the exact camp locations and stockyards (in case of any additional need despite those proposed by the UTG), E&S team of the Contractor has to carry out an observational survey to identify if any environmental (past contamination spot, unique ecological component etc.) and social (cultural assets, potential social constraints or conflicts in the area such as possible conflict with nearby communities due to the proposed activity etc.) do exist or not.

A variety of temporary facilities will be required during reconstruction works of the UPU pipeline. These facilities include work areas for storage of materials and equipment, and temporary accommodation facilities (e.g., camps). Construction camps are expected to occupy up to max.15-20 ha, while pipeline laydowns (if required) are estimated to occupy up to 10 ha. Investigations undertaken to date have identified preliminary locations as suggested in Section 2.3 of the ESMMP (taken from the national EIA reports just as an example) for the storage sites and camps. The final locations of these sites are going to be determined by the construction contractor and all necessary permits/licenses will be obtained as required.

Prior to the selection of the exact camp locations and stockyards (in case of any additional need despite those proposed by the UTG), E&S team of the Contractor has to carry out an observational survey to identify if any environmental (past contamination spot, unique ecological component etc.) and social (cultural assets, potential social constraints or conflicts in the area such as possible conflict with nearby communities due to the proposed activity etc.) do exist or not. The site selection of the sites will need to consider the following objectives:

- No clearing of remnant vegetation or protected species to locate campsites and pipe storage areas (stockyards);
- Camp sites and pipe stockyards will not be located within 100 m of any watercourse;
- Camps and stockyard areas will avoid wherever possible important crop fields;
- An assessment of flood risk to be undertaken to ensure camp sites or pipe storage areas are not exposed to any flooding;
- Locating the Package Sewage Treatment Plant (STP) in the camp area is critical in terms of odor and other health and nuisance impact issues and hence, layout of the camp shall be prepared considering such impacts while locating the camp in any area at a close distance to a settlement (i.e., less than 500 m);
- Documented evidence that camp sites and pipe storage areas have received cultural heritage clearance;
- Restoration of site to equivalent surrounding condition will be ensured and hence a restoration plan will be outlined prior to the erection of the camp;
- A rapid environmental and social appraisal or checklist rather than a full impact assessment will be carried out and presented to the PIU for approval of the proposed site for such facilities as camps and stockyards (e.g., contractors can proposed such procedure in their construction environmental management plan to be prepared and given to the PIU for approval at the start of their assignment).

- Furthermore, guidance note on worker accommodation, prepared by EBRD/IFC and titled as "Workers' Accommodation: Processes and Standards (August 2009)" needs to be considered by the Contractors while planning the workers accommodation. The Guidance Note is aimed at providing practical guidance to IFC and EBRD specialists, consultants and clients on the processes and standards that should be applied to the provision of workers' accommodation. This guidance note has been provided to the UTG and its requirements were checked with the existing checklist of UTG on worker accommodation. Necessary recommendations were given to the UTG in order to improve their checklist. Hence, this guideline and its checklist will be used to monitor and audit the contractors' campsites in terms of compliance with worker accommodation requirements.
- It should be also noted that the followings are the best practice actions to be considered, but not limited to, while planning the campsites:
  - The design of all buildings must consider the HS and E&S requirements of the Contract, which will refer to the national legislation and international standards.
  - Storage of hazardous materials shall be in accordance with Project's HS and E&S requirements. Hazardous materials shall not be located or stored in proximity to accommodation areas.
  - Provision shall be made for offloading of equipment and consumables, and prevention of contamination from spillage in accordance with the E&S requirements.
  - Generators to be used in the camps and other facilities needed for the construction activities shall meet the emission requirements of the Project (see Section 3.2.1). Power generation areas and emergency power supply areas shall be fenced off with appropriate warning signs.
  - Contractor shall supply a complete, hygienic and odor free system of wastewater and sewage collection and treatment implementing the E&S requirements of the Project. The system and the method of disposal shall comply with the requirements of the national legislation and the UTG's OHS and Environmental policies.
  - The sewage treatment plant for the construction camp shall be provided as capable of treating a minimum required volume of sewage water, based on maximum camp capacity (manpower).
  - The sewage treatment plant shall produce effluent, which can be safely discharged into surface watercourses. Necessary permit will be obtained from the local authorities.
  - Storm water drainage systems shall be designed to perform for local rainfall/snowfall conditions to ensure no surface water accumulation at the camp area.
  - Contractor shall provide effective collection and disposal systems for runoff from all paved areas and buildings. Drainage shall be designed to prevent any inflow of storm water to camp sewerage system (e.g. via manholes) and to prevent any contaminated wastewater streams (e.g. vehicle wash area) from entering drainage systems. Storm water outlets shall not cause erosion where they enter off-site watercourses or drainage channels.
  - Contractor shall design precautions against flooding and erosion to maintain the function of the camp in high rainfall and flash flood conditions.
  - A waste management area shall be sited to avoid disturbance to the camp population and local communities. Temporary storage of wastes will be provided in accordance with the different categories of wastes and the storage

Commented [AB35]: What are the emission requirements for the Project?

site or facility will have necessary precautions not to cause any risk of environmental pollution and health hazard.

- Contractor shall provide a full set of safety and information signs at each construction camp accommodation facilities, stockyard facilities and welfare facilities which:
  - Identify escape routes from buildings;
  - Identify buildings and offices;
  - Give hazard, fire, prohibitive and advisory warnings;
  - Identify individual rooms;
  - Identifies emergency response assembly areas, emergency and medical instructions and contacts;
  - Identify Medical Centre and routes to the Medical Centre; and
  - All information and warning signs shall be in English and Ukrainian (additionally in language which is mostly used by the workers of the contractor in the site).
- Contractor can propose lease agreement to the owner of the land in coordination with the UTG for the temporary use of the identified camp location.

4.1.1. Impacts on Water Courses

Construction Phase

River Crossings

There are only four named rivers along the pipeline sections. Three of these rivers are in Section 4 of the pipeline route whereas the other one is in Section 2. All the other rivers are streams with no name (mostly seasonal) or beams. Section 2 is different than the other sections as it will be built on a route parallel to the existing one at a distance of 32 m, but it will use the existing pipeline only at Sula River crossing. As the existing pipe at Sula River crossing will not be replaced and will be connected to the new line from both ends (at BV's on each side). Thus, no disturbance will occur in Sula River.

Rivers in Section 4 will be crossed with open cut technique the existing old line pipes will be dismantled and instead, the new ones will be installed. The details of the impact assessment and mitigation measures are provided in Rapid Water Resources Impact Assessment Report with Doc.# SYP-GEN-ENV-WIA-001-4_(R_WRIA). , After implementation of the mitigation measures, impacts are expected to be minor and/or negligible as can be seen in the following matrix (taken from RWRIA Report).

The rivers with names in Table 4-1 are the major ones and the others are relatively narrow / small streams which can be considered to be creeks even seasonal creeks. RVX2 ones seem to be wider in comparison to the RVX1's but it should be noted that their depths are less than 0.5 m and hence those streams are considered to be small creeks and they are not named. River Mlynka with its width of 3 m at the crossing point is considered to be in RVX2 based on width, its depth and volume make it major river and can be categorized in RVX1 and hence it is one of the rivers with names in the region.

Table 4-1. River Crossing Locations and Category of Crossing

River/Stream Crossings	KP	RVX3 (w < 1 m)	RVX2 (1< w ≤ 5 m)	RVX1 (>5 m)
Section 1				
Gully with flow of water from an nearby pond (1.3 km)	3371+165	0.5 m	-	-
Gully (not permanent flow) (25.5 km)	3395+485	0.5 m	-	-

*Section 2**				
Stream on swam (km 11,6 of third phase)	3499+695	0.5 m		-
Section 3				
Stream (km 7,0) drying out in summer	3981+643	-	-	13.2 m
Stream (km 17,5) drying out in summer	3992+338	-	5 m	-
Stream (km 20,4) drying out in summer	3995+017	-	-	5.1 m
Stream (km 22,0) drying out in summer	3996+563	-	-	9.0 m
Stream (km 24,6) drying out in summer	3999+188	-	3.4 m	-
Stream (km 25,3) drying out in summer	3999+945	-	4.6 m	-
Stream (km 27,4) having flow with a relatively small depth of 30 cm due to flat bed	4002+218	-	-	17.0 m
Section 4				
Stream (km 3,2) drying out in summer	4104+148	-	-	7.4 m
Stream (km 5,8) drying out in summer	4106+711	-	2.0 m	-
Stream (km 10,7) drying out in summer	4110+743	-	1.9 m	-
Stream (km 11,1) drying out in summer	4111+730	-	4.8 m	-
River Nichlava (km 11,9)	4112+533	-	-	7.1 m
River Nichlavka (km 15,8)	4116+383	-	-	9.4 m
River Mlynka (km 21,4)	4122+000	-	3.0 m	
Canal (km 22,6)	4123+245	-	-	8.6 m

Width of the stream is the distance between the banks of the stream on both sides. Width of the water surface will be much smaller than these figures.

In all sections, if the line will cross watercourses or come close to such water resources, the following methods need to be considered:

- Construction works in the water bodies (in-stream construction) for crossing it shall be kept as minimum as possible;
- Restriction of vehicles and machineries near water courses to the essential machineries;
- In Section 2, the Sula River will not be crossed since the existing pipe in the river will be used. Thus, no impact on the riverbed is expected and hence no impact on water body is expected;
- Contractors shall consider and try to avoid the high precipitation seasons while preparing the schedule of river crossings in order to avoid facing with flooding risk;
- Furthermore, there are seasonal constraints required by the national authorities on water management. These seasonal constraints are provided in the RWRIA Report. In short, Period from April 1 to June 15 are not allowed for construction works in the watercourses. Constraints mapping for water bodies and watercourse crossings are provided in Appendix-K.

Table 4-2. Residual Impact Matrix for watercourse crossings.

Section	Water object	KP	Impact significance	Mitigation measure	Residual impact significance
Section 1 Sumy region	Seasonal Streams	3371+165 3395+485	Minor	Dry season open cut crossing with the implementation of the methods including the suggested ones in WRIAR and method statement to be prepared by contractor and approved by UTG.	Negligible
Section 2 Poltava region	Sula River	3498+367	N/A	-	N/A
Section 3 Vinnytsya region	Seasonal Streams	3981+643 3992+338 3995+017 3996+563 3999+188 3999+945 4002+218	Minor	Same as above	Negligible
Section 4 Ternopil region	Nichlava River	4112+533	Low	Site-specific crossing designs for open-cut watercourse crossings will be prepared by the construction contractors to specify the depth of installation and set back distance, based on a hydrological assessment (during preconstruction surveys of contractors) of the rivers	Moderate
	Nichlavka River	4116+383	Low	Site-specific crossing designs for open-cut watercourse crossings will be prepared by the construction contractors to specify the depth of installation and set back distance, based on a hydrological assessment (during preconstruction surveys of contractors) of the rivers	Moderate
	Mlynka River	4122+000	Low	Site-specific crossing designs for open-cut watercourse crossings will be prepared by the construction contractors to specify the depth of	Moderate

Section	Water object	KP	Impact significance	Mitigation measure	Residual impact significance
				installation and set back distance, based on a hydrological assessment (during preconstruction surveys of contractors) of the rivers	
	Seasonal Streams	4104+148	Minor	Dry season open cut crossing with the implementation of the methods including the suggested ones in WRIAR and method statement to be prepared by contractor and approved by UTG.	Negligible
		4106+711			
		4110+743			
		4111+730			

Followings are the general environmental requirements to be considered for better environmental management of watercourses against the impacts of the construction activities:

- The following mitigation measures are required for all works in or within 50 m of a watercourse as applicable:
    - Clearing of slopes delayed until the construction is imminent. Where this is not possible employ soil protection measures;
    - Stream bed material consisting of rocks, pebbles and coarse gravel overlaying finer material will be stockpiled separately for replacement during restoration;
    - Silt fences will be located on the lower side of topsoil and bed and bank stockpiles and installed between watercourse and the construction area to minimize sediment releases.
    - Soils to be graded away from watercourse, not towards it;
    - Sediment and erosion control measures to be installed as required on watercourse approach and banks to prevent run-off into water course;
    - Diversion banks to be used at the crest of and on the slopes of approaches to stream crossings to divert sheet flow away from backfilled trenches;
    - Stabilize water crossings as soon as possible after work;
    - The bed and bank to be restored to as near a practical to the original profile and banks compacted to ensure stability; and
    - Where required, sandbags, gabion or other scour protection measures will be installed, ensuring these are place to confirm as far as possible with existing natural contours.

Hydrotesting

Hydrotesting is one of the important activities of construction phase, which needs to be taken care of in terms of environmental aspects. The information on water bodies to be used for hydrotest provided in Table 4-3 for the four sections has been formed together with the officials from UTG Cherkassy Construction Department and Environmental Department of the Headquarters in Kiev.

The draining of water displaced from the pipeline after hydrotests without its depuration into the rivers and other bodies of water are prohibited (DBN B.2.5-20-2001. Item 13.9). Wastewater discharge into water bodies shall be admissible only upon availability of standards for maximum allowable concentrations and the established standard requirements to maximum allowable discharge of contaminating substances (See Section 3.3.1). Wastewater discharges using land configuration (ravines, bottom lands, quarries, etc.) are forbidden (ref. Article 70 of Water Code of Ukraine).

For industrial purposes cleaning and hydraulic testing water that contains less than 200 mg/L of suspended particles will be used according to the national EIA report. Temporary intake of surface watercourse shall be settled in a pit surrounded by fish protection device according to Fish Protection and Fish Passing Construction Standards (i.e., VBN V.2.3-33.2.3-…27). Wastewater after the washing and Hydro-testing shall be collected in settling pits.

The water used for hydrotest of the pipeline may only contain minerals-sand, clay and ferric hydroxide. After wastewater is collected in the settling pit, the Contractor with the participation of the UTG shall ensure the terms committed in the EIA Reports. Thickness of sediment formed at the bottom of the settling pits after sedimentation is typically a few cm's. In the absence of toxic sludge after pumping water out of the pit shall bury it in place using soil from pit boards. For dispose of settling pits, remove construction materials used in their construction, garbage, and ensure the area reinstated to the its original conditions.

The baseline data on the volume of the water body (pond, lake) and the flow rates in the rivers are presented in Table 4.3 below.

Commented [AB36]: Please elaborate what exactly do national EIAs require. The contrcators will not read the EIAs!

Commented [GÖ37]: It should be mentioned that the local EIA's are official documents and are part of the official procedures. EIA's must be considered by the contractors and their English translations are available in UTG. These documents will be provided to the contractors upon contract award. This was also mentioned in the specs and here in this ESMMP. No body can say that the EIA's are not useful. Actually their only missing / gap side is international expectations but from the national requirements they are highly valuable documents (in particular waste management, permitting, etc.). They need to be considered by the contractors.

Commented [GÖ38]: The table was updated and this statement is from the previous version of the ESMMP and hence deleted. And it was used in the assessment.

Table 4-3. Volume of water in ponds/flow rates of rivers

Section	Name of the water body to be used for water abstraction and discharge	Average volume of the beamwater in the pond (m^3) / flow in river (m^3/s) / volume of the gully/beam (m^3)	Summer volume of water in the pond (m^3) / flow in river (m^3/s)	Spring volume of water in the pond (m^3) / flow in river (m^3/s)	Max. pipeline length to be filled in during summer (km)	Max. pipeline length to be filled in during wet season (km)	Purpose of Use
Section 1. Sumy region	Pond near Nadyarne and Mykolayivka village	383,000	248,950	467,260	16.94	31.79	Abstraction
	Pond near Sushilino village	331,773.75*	16,588.69	82,943.44	-	-	Discharge
Section 2. Poltava region	Floodplain lake near the Mlyny village	773,660	502,879	943,865.20	34.21	64.22	Abstraction
	Sula river	29.5	19.18	35.99	71.05 (hrs)	37.87 (hrs)	Abstraction
	Gully/Beam near Venslavy village	143,504.87*	-	-	-	-	Discharge
	Gully/Beam near Vyshneve village	61,502.09*	-	-	-	-	Discharge
	Gully/Beam near Krasne village	13,648,358.9*	-	-	-	-	Discharge
Section 3. Vinnytsya region	Pond near Sloboda-Khodatska village	28,653.19	18,624.57	34,956.89	-	-	Not suitable due to sensitivity and hence impact scale
	Pond near Zamozhne village	29,411.49	19,117.47	35,882.01	1.30	2.44	Abstraction
	Pond near Luhove village	57,348.14	33,261.92	69,964.73	2.26	4.76	Abstraction
Section 4. Ternopil region	Mlynka river	0.5	0.33	0.61	-	-	Not suitable due to sensitivity and hence impact scale
	Pond on Mlynka river	158,126	91,713.08	192,913.72	6.24	13.13	Abstraction/discharge
	Nichlavka river	0.9	0.59	1.1	-	-	Not suitable due to sensitivity and hence impact scale
	Pond near Kryvenke village	66,653.69	41,991.82	81,317.5	2.86	5.53	Abstraction/discharge

** Total volume of the pond or beam, not the volume of water.*

Chemical analyses of the water samples taken at the described areas are presented in Table 4.4.

Table 4-4. Quality analysis of water in the studied water bodies

Section	Name of the water body	Suspended solids, mg/l	BOD, mg/l	Iron, mg/l	Chlorides, mg/l	Sulphates, mg/l	Nitrites, mg/l
SanPiN 4630-88 values		Not more than background +0.75 in the control check point	6	0.33	350	500	3.3
DIRECTIVE 2006/44/EC		≤ 25 for both Salmonid water, and Cyprinid water	3, SW 6, CW	- -	≤ 0,005, SW ≤ 0,005, CW	- -	≤ 0,01, SW ≤ 0,03, CW
Section 1. Sumy region	Pond near Nadyarne village	150	2.6	0.01	8	20	0.014
	Pond near Sushilino village	125	3	0.1	2	15	0.12
Section 2. Poltava region	Floodplain lake near the Mlyny	141	3	0.18	11.5	20	0.014
	Sula river	141	2.8	0.1	8	20	0.014
	Beam near Venslavy village	-*	-*	-*	-*	-*	-*
	Beam near Vyshneve village	125	3	0.12	8	20	0.012
	Beam near Krasne village	-*	-*	-*	-*	-*	-*
Section 3. Vinnytsya region	Pond near Sloboda-Khodatska village	120	2.8	0.01	18	20	0.018
	Pond near Zamozhne village	50	3	0.19	13	18	0.014
	Pond near Luhove village	-*	-*	-*	-*	-*	-*
Section 4. Ternopil region	Mlynka river at the projected water abstraction at the projected water discharge	 150 115	 2.5 2.5	 0.26 0.28	 8 8	 20 20	 0.014 0.014
	Pond on Mlynka river	-*	-*	-*	-*	-*	-*
	Nichlavka river at the projected water abstraction at the projected water discharge	 33 152	 3 3	 0.38 0.38	 11 11	 18 21	 0.014 0.021
	Pond near Kryvenke village	-*	-*	-*	-*	-*	-*

** Water was not tested and will be tested prior to the start of the construction by the contractors in the scope of the preconstruction surveys which have to be done by contractor not only for environmental and social issues but also pipeline engineering aspects and logistical point of view etc. Missing water quality data is not deemed to be crucial in the scope of our assessment since these have to be repeated prior to the hdyrotesting works and after its completion. These requirements are also covered in the pertinent construction specifications and the ESMMP.*

The biological resources related to the water bodies are described in Rapid Water Resources Impact Assessment Report (RWRIAR) (Doc# SYP-GEN-ENV-WIA-001-4) and Rapid Biodiversity Impact Assessment Report (Doc# SYP-GEN-ENV-BIA-001-8). A number of the species in all of the described water bodies under each of the sections falls under the category of Least Concern (LC) under the classification of International Union for the Conservation of Nature (IUCN). LC is the conservation status that the IUCN assigns to biological species or taxa that do not fall into any other category and, therefore, face no threat to their existence. Species that have a conservation status under other national and/or international documents (such as the Red Book of Ukraine, the Red Book of the Regions, the Bern Convention) are listed under each of the water bodies in each section of the pipeline in the RWRIAR.

In order to mitigate all impacts to water bodies, caused by water abstraction and discharge, a number of measures must be applied.

To mitigate the disturbance to birds, protected under the Bern Convention, which use the ponds either for feeding or for rest, it is required to take into account the nesting time of the birds and exclude this period from the project works schedule. Although water abstraction and discharge on their own do not directly affect the birds, the noise from the installation of the pumping equipment and vehicles traversing the project area can create a disturbance to birds during their reproductive period. As a result, the period from April to July must be excluded from the works schedule.

Commented [AB39]: If the baseline quality of water is not identified, what parameters will it be monitored against?

Commented [GÖ40]: Dear Bossan, same parameters will be monitored. In order to fulfill the gap of analyses, we recommended to carry out the analysis of the missing data (baseline) for such water objects, prior to the construction.

Another important issue relates to fish spawning, during which all operations that can affect spawning are forbidden. Thus, the period from April 1 to June 15 must be also excluded from the works scheduled due to the fishes and also other hydrobionts. Mitigation of impact on fishing is part of the rapid social impact assessment report.

Regarding the beams, into which water is planned to be discharged for Section 2, all three have waterlogged areas and are regularly flooded in the spring. Due to this fact, it is not recommended to discharge water during the flood period, and this activity must be excluded from the works schedule for Section 2. To prevent soil erosion caused by water discharge to the beam, a tray or pipe must be used to prevent water discharge on the slopes of the beam. The pipe should reach the water surface on the bottom of the beam.

Table 4-5 shows the residual impact assessment

Table 4-5. Residual Impact Assessment

Section	Water object	Impact significance	Mitigation measure	Residual impact significance
Section 1 Sumy region	Pond near Nadyarne village	Minor	Abstraction should be in autumn before/instead the pond discharge	Negligible
	Pond near Sushilino village	Minor	Exclude the period of flooding	Negligible
Section 2 Poltava region	Floodplain lake near the Mlyny village	Moderate	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Minor
	Sula river	Major	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Major
	Beam near Venslavy village	Moderate	Exclude birds' nesting period of (April-15June) and period of flooding Use pipe/tray to prevent soil erosion	Minor
	Beam near Vyshneve village	Minor	Exclude birds' nesting period of (April-15June) and period of flooding Use pipe/tray to prevent soil erosion	Negligible
	Beam near Krasne village	Minor	Exclude birds' nesting period of (April-15June) and period of flooding Use pipe/tray to prevent soil erosion	Negligible
Section 3 Vinnytsya region	Pond near Sloboda-Khodatska village	Major	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Major
	Pond near Zamozhne village	Moderate	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Minor
	Pond near Luhove village	Moderate	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Minor
Section 4 Ternopil region	Mlynka river	Major	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Major
	Pond on Mlynka river	Moderate	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Minor

Section	Water object	Impact significance	Mitigation measure	Residual impact significance
	Nichlavka river	Major	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Major
	Pond near Kryvenke village	Moderate	Exclude birds' and hydrobionts' reproduction period, including the fish spawning period (April-15June)	Minor

The application of mitigation measures will result in a decrease in the impact significance in some cases. However, there are cases when this does not happen.

The pond near Nadyarne Village does not have a rich diversity due to extensive usage of it for fisheries. It discharges every autumn, and thus water abstraction right before the planned discharge will not significantly affect the flora or fauna. It is recommended to consider this pond as a water source for hydrotesting for Section 1 of the pipeline.

The pond near Sushilino Village is also not very rich in flora and fauna. It experiences a seasonal drying and change of species inhabiting it. It is also flooded in the spring. In addition, it is not used for any socio-economic purposes. As a result, the impact will be negligible. It is recommended to consider the pond for water discharge after testing within Section 1.

The floodplain lake near Mlyny Village has a habitat rich in diversity. Several species are under international and local protection. It is also used for fishing by local people, although the diversity of fish is not very rich. The application of recommended mitigation measures will decrease the impact on the lake to the level of non-significant. It is recommended to consider this lake as a source of water for project purposes for Section 2.

The Sula River is a regional river, which flows through Sumy and Poltava regions, and is used by some towns for water supply. It is also used for fishing, as the diversity of fish is quite large. One of the plant species growing within the Sula river basin is nationally protected (under the Red Book of Ukraine), and two plant species are locally protected. A number of species here are under the international protection of the Bern Convention, among which are fishes, amphibia, and birds. Even after the application of the mitigation measures, the impact will remain significant, and thus it is not recommended to use the river as a water supply source for Section 2. The floodplain lake near Mlyny village can be sufficient, as the preliminary data on the volume of the lake is 773,660 m^3, and the water needs are 12,630 m^3. Contractors should make a proper survey to decide about the source of hydrotest and the selection of the source must be approved by the PIU prior to the usage. In case, it is not avoided to abstract the water from Sula, it is strongly recommended to request the information from the State Agency of water resources of Ukraine (Derzhvodagency) regarding the possibility for water abstraction of the required volume; and make a final decision on the basis of the official correspondence.

All three beams/gullies, namely **the beam near Venslavy village, the beam near Vyshneve Village, and the beam near Krasne Village** are almost dry with a swampy bottom due to the flooding in spring. Only one, near Venslavy Village, is characterized by a rich biological diversity, whereas the diversity of the other two is poor due to extensive anthropological influence from the surrounding area. The beam near Krasne Village is used by locals for cattle grazing (the other two are not). There are a number of species of birds under protection that use the beams for feeding. Taking into account all of the above-mentioned factors and the mitigation measures proposed, the impact of water discharge will be insignificant. As a result, it is recommended to consider all three beams as places for water discharge for Section 2.

The pond near Sloboda-Khodatska Village is characterized by a very rich diversity with a fair level of biodiversity, some of which is protected under the national (Red Book of Ukraine), local (Red List of Vinnytsya Region), and international (Bern Convention, the European Red List) protection lists. Moreover, it is a critical habitat supporting globally significant migratory bird species. It is used for fishing and as a breeding site for the local society of hunters and fishermen. None of the mitigation measures outlined above can lower the risk of diversity loss, and the impact will remain significant. It is not recommended to use the pond for water abstraction for Section 3.

Both ponds, **near Zamozhne Village** and **near Luhove Village,** are used for fishing by locals, although the species composition of fish is not large. The residual impact after the application of mitigation measures will be insignificant. It is recommended to consider both ponds as sources of water supply and discharge for Section 3.

The Mlynka River and **Nichlavka River** are two small rivers within Ternopil Region that are fished beyond the project area. The fish diversity is not rich, as is typical for small rivers. The flow rates of both rivers are very low. The abstraction of water is impossible, or will result in a significant impact on the rivers. Therefore, it is not recommended to use the Mlynka and Nichlavka rivers for water supply for Section 4.

The pond on the Mlynka River and **the pond near Kryvenke Village** do not contain wide biological diversity. Both are used for fishing by local people, as the fish diversity is sufficient. There are no species under national protection, although a few of them are protected by the Bern Convention. The impact will not result in significant changes after the application of mitigation measures, and is classified as insignificant. It is recommended to consider both ponds as sources of water supply and discharge for Section 4.

Domestic Wastewater Discharge

Apart from the hydrotest water discharge, there will be domestic discharges during the construction works due to the workers. In the national EIA Reports, it is committed that "*collection of wastewater during the overhaul shall be performed using the sanitary installations of container type*". It is also stated that disposal of wastewater shall be performed using the wastewater treatment plants in accordance with the agreements with local authorities. Thus, no pollution of untreated or insufficiently treated wastewater during the construction works is expected.

Operational Phase

During the normal operation of the pipeline system, no impact on water bodies is expected unless an accidental release occurs. Thus, the national EIA reports did not consider any assessment related to the operational phases of the pipeline sections of concern. Please see the impact assessment, which was carried out for the water bodies in the RWRIAR.

4.1.2. Impacts on Air Quality

Construction Phase

Impacts on ambient air quality in the construction site and its vicinity may occur due to the following reasons:

- Vehicles and on-site facilities' emissions (e.g., Particulate Matter, PM_{10} and Nitrogen Oxides, NO_x);
- Dust arising from construction works and vehicle traffic (dust generated by construction activities can be transported off site by wind or re-suspension by vehicles); and
- Emissions associated with purging of the existing pipeline (During the Project construction, gas will be purged or vented from the pipeline into the atmosphere. A feasibility study carried out as part of the Project reports a total of 1,985,400 m^3

(Section 1: 860,000 m^3; Section 2: 385,400 m^3; Section 3: 405,000 m^3; Section 4: 335,000 m^3) of gas will be purged during this time at either end of the pipeline. This will be undertaken in line with industry regulations and best practice. These locations are described in the national EIA reports. Methane (CH_4) is the main constituent of natural gas and is lighter than air. Provided suitable measures are in place, the vented gas will quickly disperse into the air without accumulating or pooling at ground level and therefore no significant impacts are predicted and will therefore not be discussed further within this assessment).

Consideration has been given to the construction activities proposed and the sensitivity of local receptors. Receptor sensitivities can be classified as Moderate to Low as there are farms and farmland within close distance to the construction corridor of the Project and residential receptors at about 350 m where it passes close to the villages. Appropriate construction phase mitigation measures for the minimization of effects on the existing air quality have been identified. It is anticipated that main dismantling activities would be generally similar to those of the construction phase and hence, impacts on air quality associated with this phase are considered to be of similar nature.

The Contractors are required to demonstrate that they have the procedures in place for implementing the appropriate management measures.

The WBG General EHS Guideline highlights general air emission abatement techniques to be implemented during construction of the Project. Such techniques include the followings:

- Minimizing fugitive dust emissions from material handling sources, such as conveyors and bins, by using covers and/or control equipment (water suppression, bag house, or cyclone);
- Minimizing fugitive dust emissions from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content;
- Dust suppression methods should be implemented, such as spraying water to minimize dust from vehicle movements;
- Selectively removing potential hazardous air pollutants, such as asbestos, from existing infrastructure prior to demolition;
- Managing emissions from mobile sources; and
- Avoiding open burning of any type of solid wastes.

No significant residual air quality impacts are expected to occur as a result of the Project's construction activities, assuming the mitigation measures outlined here will be implemented effectively by the Project Owner (UTG), Contractors and monitored by PIU Consultant and Supervision Engineering Consultant.

During the monitoring of the possible impacts on air quality, measurements of the pollutants can be made and compared with the background/baseline data. It should be noted that the baseline measurements for the determination of the existing background conditions prior to the construction have been performed by the UTG and those data are available in the UTG headquarters and can be provided to the contractors upon request after the contract award.

Operational Phase

Air quality impacts may arise during the operation of the Project and include:

- Emissions associated with operational transport emissions;
- Releases of natural gas as a result of accidents; and
- Fugitive emissions from pipe work, valves and associated infrastructure.

Impacts during the operational phase are likely to be minimal and therefore have only been discussed qualitatively within this assessment. Vehicular access to these sites for maintenance purposes will be limited and hence emissions from such vehicles will be negligible and do not require assessment.

Once commissioned, emissions to air associated with operation of the pipeline will be minimal and result from occasional planning maintenance venting events that typically occur every five years and accidental releases. The feasibility study carried out by Mott MacDonald as part of their Project, reported real data from two accidents in 2007, which damaged the pipeline. During these two events, a total of 5,222,000 m^3 of CH_4 were released. These releases were as a result of the accidents, which are a direct result of the poor condition of the pipeline. The rehabilitation works is likely to have a beneficial impact as a result of the rehabilitation works as there will be less risk of accidents in the future.

As highlighted above, natural gas will quickly disperse into the air without high concentrations forming at ground level, therefore reducing the overall impact. These events are also likely to be isolated and only occur under exceptional circumstances following reconstruction and repair of the pipeline. As a result, there is likely to be no significant impacts to human health and therefore are not discussed further within this assessment.

All pipe works, valves and associated infrastructure could be subject to fugitive emissions. However, fugitive emissions are expected to be negligible since they will be controlled by using the best practice as mitigation measures included within the plant design and therefore, have not been considered further. It should be noted that the Project rehabilitation works are aimed at improving the integrity of the existing pipeline section and hence, the level of fugitive emissions arising form the operation of the pipeline following the works will likely be reduced.

The WBG EHS Guidelines for Gas Distribution Systems and WBG EHS Guidelines for Onshore Oil and Gas Developments (April 2007) provide recommendations to prevent and control air emissions from operational leaks. These recommendations are presented below and will be incorporated within the Project design:

- Gas pipelines and pipeline components, in addition to general installation and pipe joining techniques such as welding, should meet international standards for structural integrity and operational performance;
- Corrosion prevention of buried ferrous metal pipelines should be undertaken using coating or cathodic protection techniques. For underground applications, the use of polyethylene pipe, which is not subject to corrosion, should be considered as an alternative to ferrous metal pipeline materials;
- Testing of pipelines and pipeline components for pressure specifications and presence of leaks should be undertaken prior to commissioning. The system should be gas tight when tested at a higher pressure than the normal maximum operation gas pressure;
- Leak and corrosion detection programs should be undertaken, including use of appropriate leak detection assessment techniques and equipment. Maintenance programs to repair and replace infrastructure should be undertaken as indicated by detection results. Typical urban testing sites include atmospheres in confined spaces of utility infrastructure (e.g. sewer and water system manholes), as well as at openings in pavement and on streets and walkways. Areas of gas infrastructure subject to forces from heavy load traffic or physical land shifts should also be periodically monitored for leaks and ruptures;
- Comparisons of purchased and delivered gas amounts should be periodically examined for discrepancies and unaccounted for gas which may be an indicator of excessive system leakage; and

- Pipelines, valves, and other component infrastructure should be regularly maintained, and ventilation and gas detection / alarm equipment installed in station buildings or vaults.

The Institution of Gas Engineers (IGE) of the United Kingdom document (referred in the ESA Report for the Modernization of the Ukraine Gas Transit System) IGE/SR/23 Venting of Natural Gas also presents recommendations for venting of natural gas and include the following as a minimum which will be incorporated in the Project design in case of need for any planned venting event:

- It is recommended that emissions should be discharged through a vertical vent stack with a minimum height of 3 m above the ground or platform level;
- The minimum design stack exit velocity should be 60 m per second (m/s); and
- Lighter-than-air gases (such as natural gas) may be vented as long as the venting is infrequent.

It should be noted that these recommendations are based on an assessment of potential impacts on air quality only. It does not take account of structural requirements, safety issues or associated regulations, which should also be considered by those using this information to develop the stack design.

4.1.3. Noise Impacts

Construction

The main noise impacts, which are considered to have the potential to affect sensitive receptors, are identified as:

- Short-term temporary impacts during the construction and commissioning phase arising from:
  - Movement of vehicles and mobile construction plant;
  - Operation of construction machineries and excavation;
  - Lifting of new pipe sections between vehicles and the trench;
  - Welding of pipe sections;
  - Backfilling of trenches; and
  - Reinstatement.
- Short-term temporary impacts during the decommissioning or dismantling of the existing pipeline due to activities undertaken during the removal of pipe sections.

Vibration due to the construction of the Project is not expected to be perceptible at residential locations due to the nature of work (excavation, welding, material handling etc. with no piling) and relatively long separation of source-receiver distances. Vibration levels received at fixed receptor locations during all phases of the Project are expected to be well below general thresholds for structural or esthetic damage in light-framed buildings. Therefore, vibration impacts are not considered further.

It has not been possible to assess the potential noise impact at every sensitive receptor in the vicinity of the pipeline route but noise measurements as background level at these sensitive receptors will be done by the UTG prior to the start of the construction works and the results will be presented to the contractors. Contractor within their own budget may repeat the survey once again prior to the construction to ensure or confirm the results with their own resources using accredited laboratories (e.g., having ISO 17025 certificate) of which results will be acceptable to the international authorities.

Sensitive receptors in particular any dwellings within the area of influence or buffer zone of 350 m (i.e., the national regulatory health protection zone) need to be monitored during the construction works in terms of regular noise measurements to check against the baseline measurement values for compliance. It should be noted that the baseline measurements for the determination of the existing background conditions

prior to the construction have been performed by the UTG and those data are available in the UTG headquarters and can be provided to the contractors upon request after the contract award.

Construction activities are expected to be undertaken over a period of 18 months. Construction work is expected to be undertaken during daylight hours. In the national EIA reports, noise impact has not been assessed in detail due to the fact that this impact is limited to the territory of the construction works and temporary. This is stated in the reports. In a similar pipeline section's reconstruction work along the UPU, the noise levels from general construction activities have been calculated for a range of receptor distances from the pipeline route in the ESA Report for the Modernization of Ukrainian Gas Transit System. Construction operations are inherently variable in nature. In that study, noise impacts have been calculated using procedures set out in ISO 9613 Acoustics - Attenuation of Sound during Propagation Outdoors Part 2 General Method of Calculation 1996. This is consistent with the Ukrainian standard DSTU GOST 31295.2:2007 Sound Attenuation with Distance Part 2 General Calculation Methods. The worst-case scenario had been implemented and hence, calculation takes no account of any screening by topography or intervening buildings and therefore noise levels to be measured during the monitoring might be lower in practice. The calculations showed that LA_{eq} noise levels from construction are expected to fall below the daytime guideline value/limit of 55 dB(A) at about 200 m distance from the construction line. And also all other residential receptors, the noise levels will be lower and meeting WBG and EU requirements. As the buffer zone of 350 m is valid for our four sections of concern, the calculations would be the same and the consequence expectations would be similar.

Noise impacts during the construction phase will be minimized by implementing the general principles of noise control wherever practical and safe to do so. General recommendations are given as follows:

- Appropriate location of static plant items to avoid close proximity to sensitive receptors and/or take advantage of opportunities to reduce exposure through screening e.g. positioning generators behind unoccupied buildings;
- Restricting site hours (e.g., from 07:30 to 18:00), if the work is within 500 m of a settlement or other sensitive receptor);
- Have a clear site contact number and noise measuring equipment available to check complaints;
- Screening and/or enclosure of noisy items;
- Adequate maintenance and lubrication of engines and machinery;
- Shut down of engines when not in use;
- Minimize movement of construction traffic around or through settlements;
- Restriction of vehicle movements during sensitive times of the day.

All construction and decommissioning/dismantling period impacts are temporary and hence, there would be no residual impacts.

Operation Phase

Potential noise impacts due to the operation of the Project are expected to be limited to those associated with pipeline block valves with vent stacks. Vent stack noise can be reduced through the application of mufflers or conical disk stack attenuators, as necessary. As this noise impact is already a feature of the existing infrastructure, and is relatively infrequent, it is concluded that noise from venting incidents would not have significant effects on sensitive receptors. Furthermore, it is expected that venting events would be less frequent after the implementation of the Project as the condition of the pipeline would be improved (less maintenance and fewer emergencies).

The noise impacts are short-term with the pipeline valves being vented during the purging of pipeline sections. These occurrences would take place during emergencies and planned maintenance (e.g., every 5 or more years) and take place for a period of not more than 1 to 2 hours.

After completion of the rehabilitation works noise effects during the operational phase could be considered positive due to the fact that the conditions compared to the previous structure of the pipeline system will be better. No further assessment of operational noise impacts is deemed necessary.

In short, operation of the Project is not expected to produce significant impacts therefore there would be no residual impacts

4.1.4. Impacts on Soils

Construction Phase

Impacts on soils are mainly related to the level of performance of the reinstatement of the ground to its preconstruction state. If the preservation of topsoil is not maintained in a proper manner and order (e.g., replacement of the top soil with the subsoil or mixing them instead of separate and appropriate storage along the construction corridor) then the soil quality after construction will be adversely impacted. Similarly, wrong and inadequate implementation of rehabilitation or erosion prevention techniques during construction will yield in negative impacts.

The followings are the general mitigation measures, which will be effective for protecting soil quality:

- Keeping the required width as 45 m in arable fields and 32 m for the other type of lands;
- Any excavated material, which has observable trace of contamination (e.g., color changes or odor) needs to be treated as hazardous waste and disposed according to the national requirements and international best practices. Contractors shall consider this in detail in their Waste Management Plan to be a part (annex or stand alone document) of the general Construction Environmental Management Plan;
- All areas to be proposed for the new camp and warehouses as well as stockyards shall be checked by the environmental experts of the contractors for existing environmental conditions including trace of past contamination prior to the establishment of the above-mentioned facilities;
- No invasive plant species will be proposed in the reinstatement plan and local plant species will be implemented on the site during reinstatement activities of the construction phase;
- Site Specific Reinstatement Plans shall be prepared by the Contractors to describe the implementation of the soil preservation methods, measures against the soil erosion and proper order (subsoil and topsoil preservation and their return to the trenches) of backfilling of the excavated material into the trenches following the lower-in and necessary coating etc. activities;
- Stockpiles of the soils shall be made in proper way to ensure that no drainage channels/galleys occur and no stockpiles are located on the existing flood plains;
- The following general site best practice will be employed while undertaking site preparation works in order to protect the ecological environment, minimise erosion and sedimentation risks, dust generation and to preserve topsoil to allow effective re-instatement:
- Topsoil to be used in re-instatement works and landscaping should be stored up to 2 m in height in rectangular shapes and should be supported with floor and top covers materials to protect it from water.

Commented [AB41]: unlcear

Commented [GÖ42]: It is clear that local plant species will be chosen for the reinstatement activities.

Commented [GÖ43]: changed

- Topsoil storage areas are required to be identified within the main project boundary. Where this is not possible a suitable site outside the Project area should be identified in consultation with specialist ecologists and full re-instatement and monitoring of the area will be required post construction;
- The following should be used as appropriate for erosion control:
  - Erosion matting;
  - Sediment control especially where route crosses a watercourse, e.g. silt fences, straw bale barriers, filter berms, sediment traps.
- All temporary stockpiles to be located at least 50 m from watercourses and crops and be away from traffic. Construction traffic will not route over stored soils;
- All stockpiles shall be formed to follow the direction of surface water flow to prevent pooling; and
- Site staff shall be vigilant in visually assessing excavated materials for signs of contamination during boring, excavating, digging and similar operations.

Operational Phase

During the operational phases of the pipeline sections, no major impact is expected on soil quality except that warmer soils immediately surrounding the pipeline resulting in crop growing faster and consequently sooner harvest needs. Accidental releases or spill will be responded immediately in the scope of the implementation of emergency response plans.

4.1.5. Impacts on Biodiversity

Construction Phase

Biodiversity baseline studies have been conducted in particular for all Section. For Section 2 field and desktop studies have been conducted in detail. Biodiversity baseline studies for remaining sections have been conducted as desktop studies in detail. Also, to verify habitat maps and to have records of the actual conditions at critical spots in vegetation season were visited by using Drone in order to get their latest aerial images as video records and photo shootings. According to the assessment of the ecologist who conducted the survey, flora and fauna species identified during the survey are wide spread in Ukraine.

Major impacts on biodiversity due to the construction works for the pipeline rehabilitation are related to the excavation of trenches and stockpiling of excavated materials. The site clearance along the right of way of the pipeline route is the first step for the construction works. During site clearance the vegetation cover will be removed.

1) habitat loss and habitat fragmentation
2) changes in morphology and hydrology
3) increased exposure to atmospheric pollutants
4) behavioral changes due to noise and vibration
5) increased mortality for wildlife due to site preparation and vehicular traffic
6) introduction and spreading of alien species.

According to the commitments of the National EIA Reports and the international practice, the vegetation clearance needs to be done in between October (please consider the bird migration period as well) and March since this will greatly reduce the losses of wildlife inhabiting in the area of construction. Furthermore, the following measures are committed in the national EIA reports:

- For “habitat loss and habitat fragmentation”;
  - All vehicles will drive on designated routes unless otherwise authorized;
  - Fencing or delimit construction areas to reduce the risk of footprint creep

- Burrows and passages will be provided for wildlife.

- For “changes in morphology and hydrology”;
  - Environmental engineering techniques will be applied in order to create stable slope and minimise the risk of erosion;
  - Developing a site reclamation plan that addresses both interim and final reclamation requirements and that identifies vegetation and soil stabilization.
- For “increased exposure to atmospheric pollutants”;
  - Dust management control measures will be implemented;
  - Minimizing the amount of land disturbance and develop and implement stringent dust control practices; and
  - Using dust abatement techniques on unpaved, unvegetated surfaces to minimize airborne dust.
- For “behavioural changes due to noise and vibration”;
  - Noise and Vibration management control measures will be implemented
- For “increased direct mortality for wildlife due to site preparation vehicular traffic”;
  - Install speed limits and animal crossing signs on the access road and enforce speed limit along the site access road and if necessary, install speed bumps and noise stripes on straight sections of the access road;
  - Provide training to all staff and contractors on road safety and speed awareness.
  - If vegetation clearing need to be performed during nesting season, before the start of bird nesting season, a system to scare the birds away from the construction areas using “bird repellent tape” will be implemented so that it would make the site unsuitable for nesting birds;
  - An ecologist appointed by the Construction Contractor will perform pre-construction surveys in the areas prior to vegetation clearing.
  - Hunting and collection of wild animals, will be strictly prohibited within the Project area.
- For “introduction and spreading of alien species”;
  - if spreading of invasive species is observed, an appropriate eradication program will be developed and implemented.
- Bushes or trees which might have grown along the construction corridor for all Sections which are not expected due to the ongoing patrolling along the existing lines in operation will be removed after getting necessary permit from the local authorities (such site clearance permits will be obtained by the UTG but contractors shall include the planning of the site clearance in their Construction Environmental Management Plan to be prepared upon contract award);
- According to the results given in Table 7-6 of RBIA, in Section 2, there is a net loss of 1.36 ha area in G1.1 habitats and in Section 4 there is a net loss of 0.63 ha area in Dacha Galilei. As Section 2 habitats will be crossed with the new pipeline routing, it is relatively higher than Dacha Galilei in Section 4, which has higher degradation level due to the existing line maintenance works.
  - The followings are the recommendations to be taken as offset measures to be implemented in proper locations within the security zone of pipeline:
    - Enrichment planting in the existing forests; and
    - Afforestation of proper areas.

Commented [AB44]: will these trees be replanted elsewhere as on offset measure?

Commented [GÖ45]: In Rapid BIA we have carried out detailed impact assessment works consisting of net loss calculations. Recommendations on off set are presented in Rapid BIA. In this version of the ESMMP we reflected those texts here.

- For protection of trees outside the construction corridor, where vegetation already removed, it is not allowed
  - To hammer nails into the trees for posting warning signs, barriers, wires etc.;
  - To make collective visits to the forest areas for entertainment or rest or cutting down the trees for any reason;
  - To tie to the trunks or branches wires for different purposes;
  - To dig in or hammer bodies of the trees or to pile materials on the development zone of the trees; and
  - To damage the trees by parking the construction heavy machineries, carrying out any construction activities under the trees.
- For protection of the wildlife during construction and installation works, the followings are also required:
  - Prohibition of using technologies or methods that can harm of cause massive loss of wildlife components (e.g., techniques that can cause massive loss of wildlife components such as blasting in construction phase will not be used and construction activities will be limited to the construction corridor);
  - Prohibition of unauthorized hunting by the workforce of the construction;
  - Exclusion of deforestation and cleaning tree belt areas during nesting (from April 1 to July 10) and autumn migration of birds (October);
  - Where possible, site clearance or stripping of vegetation and topsoil should be conducted prior to the start of the breeding season of birds in order to avoid the nesting in the impact area;
  - Organization of environmental training of the staff to raise the awareness.
- For protection of disturbance on wildlife, construction corridor width shall be kept as follows;
  - 45 m in agricultural lands and 32 m elsewhere including forest areas and similar sensitive habitats along the pipeline sections.

River crossing activities will cause impacts on aquatic life. The followings are proposed as the mitigation measures against the adverse impacts on aquatic life (but please note that these are not limiting the assessment and discussion on what to do for river crossings in the appendices of the national EIA reports – i.e., Fish Survey for Section 4 where three major river crossings exist):

- Do not carry out works in the period from March to June as it may interfere with the conditions of passage for spawning;
- It is obligatory to coordinate the construction sites and terms of carrying out construction works with the ecological conservation authorities e.g., Ministry of Ecology;
- Disposal of waste into the water bodies are forbidden;
- It is forbidden to clean the machineries, to refuel them or to maintain them on the watercourses or near to the watercourses since these activities may pollute and should be done in proper places in the camps or nearby facilities assigned for these purposes.

In addition, the project includes species protected by the Bern Convention. The provisions of the contract will be complied within the scope of the project.

According to this situation, the relevant articles of the Bern Convention will be implemented within the scope of the project;

Appendix-II of Bern Convention

Commented [AB46]: like what? You need to be specific what methods or techniques are prohibited

Commented [GÖ47]: added.

The following will in particular be prohibited for these species:

- all forms of deliberate capture and keeping and deliberate killing;
- the deliberate damage to or destruction of breeding or resting sites;
- the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;
- the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;
- the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article.

Appendix-III of Bern Convention

Measures to be taken shall include:

- closed seasons and/or other procedures regulating the exploitation;
- the temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels;
- the regulation as appropriate of sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

Table 4-6 shows the breeding periods for the vertebrates in terms of construction period determination. The mentioned breeding seasons need to be taken into consideration while planning and implementing construction activities in the habitat types, along the pipeline, stated in the table.

Table 4-6. Fauna Species with their Bern Convention status and breeding seasons

Family	Species	Bern Convention	Habitat	Breeding Season
Reptiles				
COLUBRIDAE	*Coronella austriaca*	Ann-II	wide range of habitats	March-August
	Elaphe dione	Ann-III	wide range of habitats	May–July
	Natrix tessellata	Ann-II	Water bodies, banks of forest lakes, rivers	July-October
	Natrix natrix	Ann-II	Water bodies, banks of forest lakes, rivers	July-October
LACERTIDAE	*Lacerta agilis*	Ann-II	grass or shrubs -	May–June
NATRICIDAE	*Natrix tessellata*	Ann-II	Water bodies, banks of forest lakes, rivers	July-October
Birds				
ACCIPITRIDAE	*Accipiter gentilis*	Ann-III	Forests rich with old and high trees having average lightness and small lawns or outskirts suitable for hunting	April-May
	Buteo buteo *	Ann-II	All kinds of habitat (highly adaptive)	May–June
	Buteo lagopus	Ann-III	Essentially found in tundra, mainly treeless, although also wooded tundra	May–June
	Circus aeruginosus	Ann-III	Dense marsh vegetation, in fresh or brackish water, generally in lowlands	May–June
	Circus pygargus	Ann-III	Open areas with grass or shrubs	May–June
AEGITHALIDAE	*Aegithalos caudatus*	Ann-III	woodland	March-June
ALAUDIDAE	*Alauda arvensis*	Ann-III	Most open habitats	April–September
	Alaudala rufescens	Ann-III	Open land with shrubs and grasses	May-July

Commented [AB48]: Are all of these species found on the RoW? If not, please only list the species that have been identified by the biodiversity survey and/or desktop research.

Commented [GÖ49]: Species listed in the table are determined via both desktop and field studies. First desktop studies showed the potential species according to the habitats to be crossed and then these potential species were observed on the field along the RoW.

Family	Species	Bern Convention	Habitat	Breeding Season
	Calandrella brachydactyla	Ann-II	Dry areas with sparse and low vegetation cover	May–Jul
	Eremophila alpestris	Ann-II	tundra and alpine habitats	May-July
	Galerida cristata	Ann-III	dry plains with sparse vegetation cover and dry cultivated areas	Mar-Jul
	Lullula arborea	Ann-III	open and semi-open habitats	March–July
ALCEDINIDAE	*Alcedo atthis*	Ann-II	shores of lakes, ponds, streams, and in wetlands	March–July
APODIDAE	*Apus apus*	Ann-III	wide range of habitats	May-July
	Tachymarptis melba	Ann-III	wide range of habitats	May to August
ARDEIDAE	*Ardea cinerea*	Ann-III	broad rivers, narrow streams, lake shores, ornamental ponds, fish-ponds, marshes, flood-plains, reeds swamps, rice-fields and other irrigated areas	May-July
CAPRIMULGIDAE	*Caprimulgus europaeus*	Ann-II	dry, open country: lowland heaths with scattered trees and bushes	May to August
CERTHIIDAE	*Certhia familiaris**	Ann-II	forest and woodland	March-June
CHARADRIIDAE	*Charadrius alexandrinus*	Ann-II	flats near brackish or saline lakes, lagoons, seasonal water streams	April-May
	Eudromias morinellus	Ann-III	open, flat uplands, mountain ridges and plateaux, with sparse vegetation	May-July
CICONIIDAE	*Ciconia ciconia*	Ann-II	humid and dry habitats	May–Apr
COLUMBIDAE	*Columba livia**	Ann-III	natural habitat consists usually of rock faces, ledges in caves and sea cliffs	May–Apr
	Streptopelia decaocto	Ann-III	Inhabited areas, well developed wood vegetation	April-May
	*Streptopelia turtur**	Ann-III	wide variety of woodland types, as well as steppe and semi-desert, agricultural land	April-June
CORACIIDAE	*Coracias garrulus*	Ann-II	Forest	May–July
CORVIDAE	*Nucifraga caryocatactes*	Ann-II	Forests	March–July
Cuculidae	Cuculus canorus	Ann-III	All kinds of forest as well as in any half-open and open landscapes having at least separately growing trees or bushes	April-June (brood parasite)
EMBERIZIDAE	*Emberiza calandra*	Ann-III	grasslands, both in natural steppe and in agricultural land, bushes	May–July
	Emberiza citrinella	Ann-II	open, flat uplands, mountain ridges and plateaux, with sparse vegetation	May–July
	Emberiza melanocephala	Ann-II	grasslands, both in natural steppe and in agricultural land, bushes	May–July
FALCONIDAE	*Falco columbarius*	Ann-II	All kinds of habitat (highly adaptive)	March–June
	Falco tinnunculus	Ann-II	All kinds of habitat (highly adaptive)	May-April
FRINGILLIDAE	*Carduelis carduelis*	Ann-II	Forests	April-August
	Fringilla coelebs	Ann-III	Forests and parks	April-June
	*Chloris chloris**	Ann-III	Forests	March–July
	*Linaria cannabina**	Ann-III	Forests	March–July
HIRUNDINIDAE	*Hirundo rustica*	Ann-II	All kinds of habitat	May-August
	Riparia riparia	Ann-II	rivers, streams, lakes, reservoirs and coastal cliffs	April-August
LANIIDAE	*Lanius collurio**	Ann-II	Forests	March–

Family	Species	Bern Convention	Habitat	Breeding Season
				July
LARIDAE	*Larus ridibundus*	Ann-III	wetland habitats	May–July
LOCUSTELLIDAE	*Locustella fluviatilis*	Ann-II	grass thickets, nettles (*Urtica*) and tangled herbage in meadows, moist woodland, damp forest clearings and sedge marshes	May–July
MEROPIDAE	*Merops apiaster*	Ann-II	pasture and cultivated land with shelter-belts and scattered trees	May-June
MOTACILLIDAE	*Anthus campestris*	Ann-II	Open dry habitats	April-August
	Motacilla alba	Ann-II	on-forested wet and dry habitats	April to August
	Motacilla flava	Ann-II	wet habitats with low vegetation	April–August
MUSCICAPIDAE	*Cyanecula svecica*	Ann-II	low dense vegetation	Apr-July
	*Ficedula hypoleuca**	Ann-II	Forests	April-June
	Luscinia luscinia	Ann-II	woodland bordering waterbodies	May-July
	*Luscinia megarhynchos**	Ann-II	lowland open woodland with thickets and dense patches of vegetation of coppice stands, nettles and brambles, bordering waterbodies; and the edges and glades of broadleaf woodland	Apr-July
	Saxicola rubetra	Ann-II	wet meadows, pastures, bogs	April-August
	Muscicapa striata	Ann-II	Various forests, parks and gardens	April-May
	Turdus pilaris	Ann-III	Forest and forest steppe	April-May
	Turdus philomelos	Ann-III	Forest and forest steppe	April-June
ORIOLODAE	*Oriolus oriolus*	Ann-II	semi-open, mixed broadleaf woodlands and plantations, riverine forests with tall willows (*Salix*) and poplars (*Populus*), forested steppes, groves, copses, orchards, parks, large gardens, windbreaks, avenue trees, and other tree clumps in cultivated areas	April-June
PARIDAE	*Cyanistes caeruleus*	Ann-II	Forests	March–June
	*Lophophanes cristatus**	Ann-II	Forests	March–June
	Lophophanes cristatus	Ann-II	Forests	March–June
	Parus major	Ann-II	Forests	April-July
	Poecile palustris	Ann-II	Forests	March-June
PHALACROCORACIDAE	*Microcarbo pygmaeus*	Ann-III	fresh water, including lakes, slow-flowing rivers, deltas and other wetlands	Apr–July
PHYLLOSCOPIDAE	*Phylloscopus sibilatrix**	Ann-III	Forests	May-July
	*Phylloscopus collybita**	Ann-II	Forests	April-August
	*Phylloscopus trochilus**	Ann-II	Forests	April-August
PICIDAE	*Dendrocopos major*	Ann-III	Conifer and leaf forests, small forestry islands, gardens and parks	March-May
	*Dryocopus martius**	Ann-III	Conifer and leaf forests, small forestry islands, gardens and parks	March–June
	*Jynx torquilla**	Ann-II	Conifer and leaf forests, small forestry islands, gardens and parks	March-July
PRUNELLIDAE	*Prunella modularis*	Ann-II	Shrubs and forests	May–August
RALLIDAE	*Gallinula chloropus*	Ann-III	freshwater wetlands, woodland, bushes or tall	March-July

Family	Species	Bern Convention	Habitat	Breeding Season
			emergent vegetation	
REGULIDAE	*Regulus regulus*	Ann-II	Forest	May-July
REMIZIDAE	*Remiz pendulinus*	Ann-III	River valleys, streamside forest plantations	April-May
SITTIDAE	*Sitta europaea*	Ann-II	Various wood plantations, parks and gardens	April-May
STRIGIDAE	*Strix aluco**	Ann-II	Various wood plantations, parks and gardens	March-June
STURNIDAE	*Sturnus vulgaris*	Ann-III	Various wood plantations, parks and gardens, agricultural fields	March-July
SYLVIIDAE	*Acrocephalus arundinaceus*	Ann-II	River valleys, streamside forest plantations	May -July
	Acrocephalus palustris	Ann-II	marsh vegetation at edges of swamps, in reeds on dry ground and even in gardens	May -July
	Acrocephalus schoenobaenus	Ann-II	River valleys, streamside forest plantations	May -July
	Sylvia atricapilla	Ann-II	River valleys, streamside forest plantations	April-May
	Sylvia borin	Ann-II	River valleys, streamside forest plantations	April-May
	Sylvia communis	Ann-II	Shrubs and forests	May-July
	*Sylvia nisoria**	Ann-II	Shrubs and forests	May-July
	Phylloscopus collybita	Ann-II	Wood or shrub plantation	April-May
	Phylloscopus sibilatrix	Ann-II	Various wood plantations, parks and gardens	May-June
TROGLODYTIDAE	*Troglodytes troglodytes*	Ann-II	Various wood plantations, parks and gardens	May-July
TURDIDAE	*Turdus merula*	Ann-III	Wood or shrub plantation, gardens	March-June
	Turdus migratorius	Ann-III	Wood or shrub plantation, gardens	March-July
	Turdus philomelos	Ann-III	Various wood plantations, parks and gardens, agricultural fields	March-August
	Turdus pilaris	Ann-III	Various wood plantations, parks and gardens	March-July
	Turdus torquatus	Ann-II	Rocky areas, forests	April-July
	Turdus viscivorus	Ann-III	Wood or shrub plantation, gardens, agricultural fields	March-June
TYTONIDAE	*Tyto alba*	Ann-II	settlements covered with trees, shrubs, agricultural areas, gardens	March-June
UPUPIDAE	*Upupa epops*	Ann-II	sparse agricultural areas, gardens, sparsely forested areas	May-July
Mammals				
SORICIDAE	*Crocidura leucodon*	Ann-III	Agricultural land, steppe, gardens	March-September
	Sorex minutus	Ann-III	Shrub or grass vegetation	April-September
	Sorex araneus	Ann-III	Shrub or grass vegetation	April-September
CASTORIDAE	*Castor fiber*	Ann-III	streamside forest plantations	April-May
CERVİDAE	*Capreolus capreolus*	Ann-III	deciduous, mixed or coniferous forests, moorland, pastures, arable land, and suburban areas with large gardens	April-June
MUSTELIDAE	*Meles meles**	Ann-III	deciduous woods with clearings, or open pastureland with small patches of woodland	April-June
SCIURIDAE	*Sciurus vulgaris*	Ann-III	Forest Plantation	April-June

**species identified in the Dacha Galileya Forest Reserve*

As the Contractor shall prepare Construction Environmental Management Plan considering this ESMMP and supplementary management plans, it is required that the Contractor shall carry out pre-construction ecological survey (walk over) in order:

i) to determine the critical habitats (sensitivity of the flora and fauna species) along the pipeline section for identification of fauna species and translocation of them, if necessary, and

ii) to arrange its construction schedule accordingly not to disturb the ecosystem but also arrange the construction activities in a feasible manner.

Operational Phase

During normal operations of the pipeline system, no major impact is expected to occur on biodiversity. The followings are the only impacts that may occur and will be temporary due to the activities' concept:

- Potential disturbance due to the patrolling and maintenance works along the routes;
- Accidental releases/spills due to the pipeline failures or any incident that may cause (taken into consideration in the Emergency Response Plan of the UTG);
- Potential disturbance of Monitoring of the biorestoration performance;
- Disturbance of natural habitats around the above ground installations; and
- Contamination of natural habitats due to the operational activities of the Project.

Commented [AB50]: Survey or walk-over? Required survey methods should be identified so the same methods are then sued for biodiversity monitoring.

Commented [GÖ51]: Pre-construction and biodiversity monitoring surveys must be done in accordance with the methodologies presented in the biodiversity documents/reports in order to have a possibility to compare the observations of the preconstruction and monitoring surveys with those presented in these reports.

4.2. Social Impacts and Impact Mitigation

4.2.1. Influx Disruption to Local Communities

The impact of the Project on population change is directly related with the temporary job opportunities of the Project during the construction phase.

Although population increase in the close vicinity of the construction area may create some positive impacts including job opportunities, local procurement, it may also create some negative impacts on the social environment including pressure on the local infrastructure and services, social ills and social conflicts.

Commented [AB52]: As this is the ESMMP I would expect to see all required mitigation measures in here. What is the point of listing impacts if these are not accompanied by mitigation measures?

Commented [EK53]: All mitigation measures are presented in the rapid social impact assessment report since this is not an "impact assessment" report, The reference numbers of the mitigation measures of the relevant impacts are added now presented here. Please see the main the main report for detailed mitigation measures.

Impact Mitigation

In order to prevent indirect impacts from influx, the Project will:

- Hire as many unskilled workers as possible locally. This will reduce the influx of Project workers not native to the Project area, and it will maximise local employment;
- In case non-local Ukrainian workers are hired these will be incentivised to live in District centres rather than in the villages surrounding the Project4;
- If the contractors provide accommodation to all non-local workers these accommodation will meet IFC/EBRD worker accommodation guideline;
- A workers accommodation plan will be implemented;
- HR policy will be implemented;
- Employee training plan will be implemented;

[4] It should be noted that the employement of the foreign workers will be defined by the Contractor and the process will be held in compliance with the procedure for issuing working permits for foreign nationals (the "Working Permit") and their residence permits was simplified due to coming into force of the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine to Remove Barriers to Attracting the Foreign Investments".

- Social induction training will be provided to all Project workers that includes expected behaviour in local communities; especially the female members of the community.
- Implement and disseminate a community level grievance mechanism, through which local community members can submit concerns and complaints about influx and related negative impacts;
- Engage regularly with village heads and relevant governmental agencies to discuss influx and any associated impacts.

4.2.2. Increased Traffic Density During the Construction

During the construction phase of the Project, including the excavation works and transportation of the dismantled pipes and new pipes, there will be a traffic increase. The construction activities of the Project are planned to be completed in 18 months for each Section. According to the design studies, the vehicle figures are given in the figures given below:

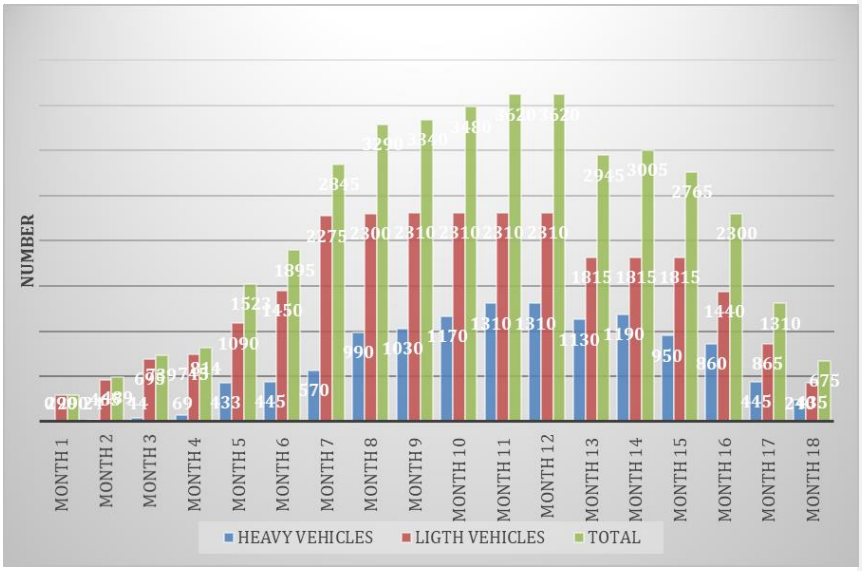

Figure 4-1 Traffic Density of Section-1

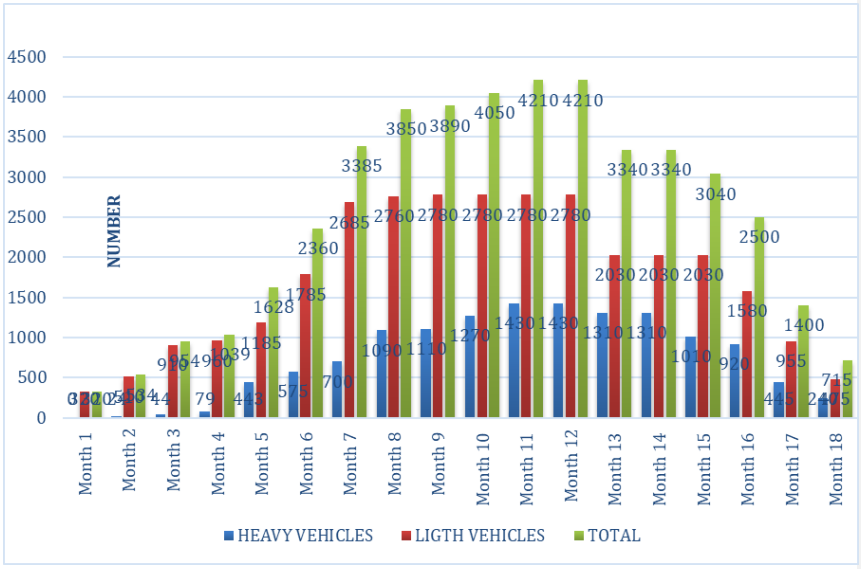

Figure 4-2 Traffic Density of Section-2

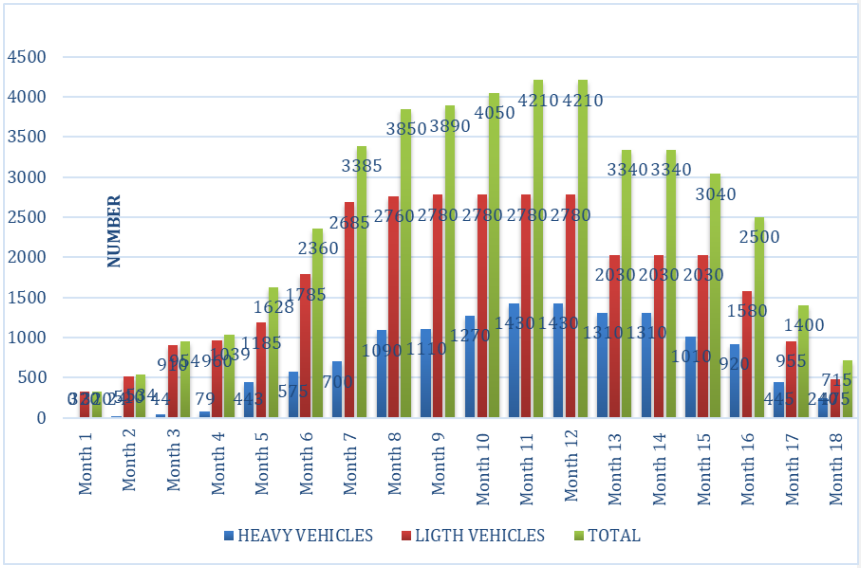

Figure 4-3 Traffic Density of Section-3

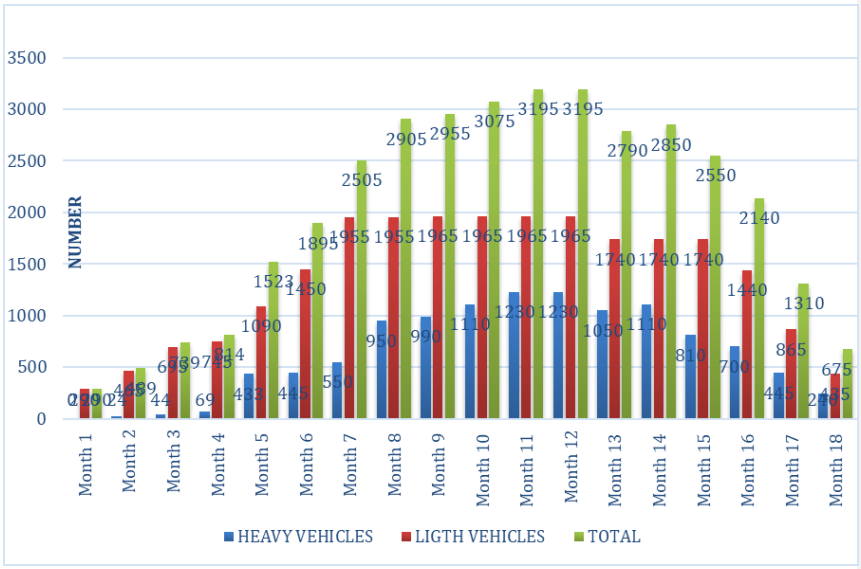

Figure 4-4 Traffic Density of Section-4

The increase in the traffic due to construction works may create impact on community health and safety including; drivers, passengers and pedestrians.

Impact Mitigation

- Traffic Management Plan (SYP-ENV-TMP-GEN-001-2) will be implemented during the construction phase of the Project;
- Contractors will:
- Inform local authorities regarding the date, time and route of the transportation activity;
- Agree with local authorities on traffic safety and management measures to be taken;
- Set up traffic signals and signs that are clear and visible, and appoint flagmen where necessary;
- Apply temporary traffic control methods at intersections and connections that hold higher risk for accidents;
- Ensure that all speed limits (see Table 1. below) on highways are obeyed;
- Provide supervision and escort for heavy machinery and other vehicles carrying construction material for road and railway crossings;
- Ensure that project related traffic is regulated during certain dates and times where local community will require to commute (to/from schools, commercial areas etc.) or take on any agricultural activity (animal grazing or other farming activities etc.);
    - Access of vehicles to settlements will be provided by placing steel plates over ditches during limited hours; in case where limitations on access cannot be avoided, alternative solutions will be determined in consultation with local authorities and community leaders;

- Access to private property will be ensured or appropriate accessing alternatives will be determined in consultation with the owners or users,

- Provide detailed information (closure date and time, locations –where from, where to-, duration of closure etc.) 72 hours prior to closure of roads both to local authorities and communities.
- Actions to be taken for new access roads shall be discussed in the TMP to be prepared by the contractors and hence they will provide procedure for access road assessments (Environmental and social aspects will be considered; special attention will be given to environmentally sensitive areas, water crossings, archaeological sites, natural resources, grazing lands, culturally important areas etc).
- Methods for every road crossing will be determined and agreed upon with authorities prior to taking any action. All methods and construction techniques proposed by the Contractor will aim to minimize possible disruptions caused by road crossings.
- Contractor will ensure that road safety education will be provided under the supervision of the Supervision Engineering Consultant with the participation of the PIU representatives at schools where roads used by children to reach schools are used by construction traffic. Vehicle traffic will be minimized during hours when children are traveling to and from school.
- Contractor will try to avoid excessive dust generation, deposit of mud, soil, rocks on publicly used roads and highways.
- Contractors will include the procedure for vehicle control, management and maintenance in their TMP's.
- In order to prevent traffic accidents the Contractor will comply with the following:

  - Ensuring that all heavy machinery and vehicles utilized in transportation activities (including transportation of personnel) are used by qualified and licensed drivers,

  - Ensuring that all drivers know and comply with all traffic signs, are aware of hotspots of intense traffic that are expected along the pipeline and are trained properly for on and off road conditions,

  - Managing and monitoring working and resting hours drivers according to a fatigue management program that will also comply with Ukrainian Legislation,

  - Monitoring security arrangements for loads, vehicles and drivers,

  - Ensuring that all roads and highways are signposted as required,

  - Limiting night drive/transportation as much as possible to reduce the risk of accidents and obtaining necessary permits shall night transportation be required,

  - Compensating damages caused by an accident due to project activities according to national legislative requirements and the procedure given in the the Grievance Mechanism defined in the Stakeholder Engagement Plan (SEP) of the Project.
- UTG and its contractors will provide defensive driving trainigns;
- Traffic signs will be placed,
- Speed limitations will be applied,
- Vehicles will be controlled periodically and and maintenance will be applied if required,
- Peak period of the

- A Grievance Mechanism Procedure will be set up for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable by the parties;
- The routes of the roads that will be used and the peak hours of the usage of the roads will be shared with village heads and management of the schools,
- The CLOs of the controctors will give awerness trainings to schools if there is a school located on the route of the roads that will be used.

4.2.3. Infectious Disease

The construction of the each Section will require approximately 400 workers and during the construction phase of the Project, infectious diseases and Sexually Transmitted Disease (STD) may occur in the communities due to potential worker in-migration to the area. Although the results of the Community Level Surveys (CLSs) do not show any infectious of STD in the area of influence, especially the STDs are one of the most problematic areas of the nationwide. According to the 2017 statistics of UNAIDS, the country has the second highest level of HIV cases in Europe and more than 240,000 people living with HIV.

Impact Mitigation

- Awareness raising trainings, health promotion activities, health scans of the employees will be ensured with the implementation of community health and safety plan that will be prepared by the contractors and the grievance mechanism prepared in the scope of the SEP will provide UTG feedback on community health and safety issue.
- UTG will be in collaboration with the local Health Agencies and emergency suppliers to prevent any public safety case
- First aid unit of the Project will be fully equipped and relevant trainings will be provided to Project workers.
- Orientation training and occupational health and safety training will also cover topics related with infectious disease and STD.
- UTG has a Worker Code of Conduct, and this should also include, forbidding the use of prostitution, alcohol and drug sale and usage

4.2.4. Nuisance

During implementation of the planned activities, the main noise impact caused by movement of vehicles, machinery operations and gas cutting and welding takes place in the process of construction and mounting works. The sources of noise are vehicles, operating construction machinery, gas cutting and welding machines.

In compliance with the national and international standards, sound pressure level should not exceed 55 dBA during the day and 45 dBA during the night.

Impact Mitigation

The main measure to reduce the noise impact of construction machinery on the environment is the choice of equipment with such noise characteristics that ensure compliance with noise regulations at the workplace and in the nearest residential building. That, in its turn, is provided by design methods:

- use balanced power aggregates and transmission units;

- correct selection and estimation of elastic elements of suspension of power unit, transmission, chassis, exhaust system;
- correct calculation of exhaust system design and determination of the suspension point to the body
- correct modeling of body structure and its solid parts, etc.

Also, environment protection from the adverse noise effects can be provided by the following measures:

- distribution of employment time of vehicles, idle in a single technological process, in order to avoid noise amplification effect;
- regulation of internal combustion engines of construction machinery
- prohibition of departure to the route of vehicles (including private transport) with non-adjusted engines;
- regular monitoring of the technical conditions of working mashines and mechanisms.

Application of noise reduction:

- application of proof - vibro insulating and sealing materials;
- use of sound-proofing casings.

Noise specifications of machines are specified in their technical passports.

4.2.5. Security Around the Project Site

During the construction and operation phases of the Project, security will be needed on site. According to the results of the community level surveys, there is no conflict between the communities and the village heads are considered the first responsible party to solve the security issues within the villages.

According to the National legal requirements, the parties involved to the Project will follow the Law of Ukraine “On security activity”, “Rules for main gas pipeline protection”, “Typical instruction for fulfilling obligations when patrolling the linear part of main gas pipelines by JSC Ukrtransgaz” to ensure security within the Project site.

Impact Mitigation

- Measures will be taken to discourage entry onto the construction site during construction. This will cover fencing and requirement for identity cards to enter the site;
- Engagement activities prior to construction will ensure that local stakeholders are informed of the risks and consequences of entering the site;
- Security personnel will patrol the site area to prevent any unauthorized access onto the site. They will also ensure that protocols for entering the construction site are enforced;
- A management plan for security personnel will be developed and implemented by the Contractors, outlining expectations around security, in line with Voluntary Principles on Security and Human Rights (VPSHR), the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, the UN Code of Conduct for Law Enforcement Officials and the International Code of Conduct on Private Security Providers, there maintaining the safety and security of assets and persons on the EIB-financed operation within a framework that ensures respect for human rights and fundamental freedoms.

- The grievance mechanism for the Project will capture all grievances raised in relation to security and safety issues. These will be addressed promptly and actions will be taken.

4.2.6. Air Quality

The impact on the air quality is expected to occur during the construction period as a result of excavation works (inorganic dust), welding operations (iron oxides emissions, etc.) and operation of automotive and construction machinery (exhaust emissions from engines) and the impacts may also arise during the operation of the Project due to; emissions associated with operational transport; releases of natural gas as a result of accidents; and fugitive emissions from pipe work, valves and associated infrastructure.

Once commissioned, emissions to air due to operation of the pipeline will be minimal and result from occasional planning maintenance venting events occurring every 5 years and accidental releases.

Impact Mitigation

The Contractors are required to demonstrate that they have the procedures in place for implementing the appropriate management measures.

The WBG General EHS Guideline highlights general air emission abatement techniques to be implemented during construction of the Project. Such techniques include the followings:

- Minimizing fugitive dust emissions from material handling sources, such as conveyors and bins, by using covers and/or control equipment (water suppression, bag house, or cyclone);
- Minimizing fugitive dust emissions from open area sources, including storage piles, by using control measures such as installing enclosures and covers, and increasing the moisture content;
- Dust suppression methods should be implemented, such as spraying water to minimize dust from vehicle movements;
- Selectively removing potential hazardous air pollutants, such as asbestos, from existing infrastructure prior to demolition;
- Managing emissions from mobile sources; and
- Avoiding open burning of any type of solid wastes.
- Gas pipelines and pipeline components, in addition to general installation and pipe joining techniques such as welding, should meet international standards for structural integrity and operational performance;
- Corrosion prevention of buried ferrous metal pipelines should be undertaken using coating or cathodic protection techniques. For underground applications, the use of polyethylene pipe, which is not subject to corrosion, should be considered as an alternative to ferrous metal pipeline materials;
- Testing of pipelines and pipeline components for pressure specifications and presence of leaks should be undertaken prior to commissioning. The system should be gas tight when tested at a higher pressure than the normal maximum operation gas pressure;
- Leak and corrosion detection programs should be undertaken, including use of appropriate leak detection assessment techniques and equipment. Maintenance programs to repair and replace infrastructure should be undertaken as indicated by detection results. Typical urban testing sites include atmospheres in confined spaces of utility infrastructure (e.g. sewer and water system manholes), as well as at openings in

pavement and on streets and walkways. Areas of gas infrastructure subject to forces from heavy load traffic or physical land shifts should also be periodically monitored for leaks and ruptures;

- Comparisons of purchased and delivered gas amounts should be periodically examined for discrepancies and unaccounted for gas which may be an indicator of excessive system leakage; and
- Pipelines, valves, and other component infrastructure should be regularly maintained, and ventilation and gas detection / alarm equipment installed in station buildings or vaults.
- It is recommended that emissions should be discharged through a vertical vent stack with a minimum height of 3 m above the ground or platform level;
- The minimum design stack exit velocity should be 60 m per second (m/s); and
- Lighter-than-air gases (such as natural gas) may be vented as long as the venting is infrequent.

4.2.7. Occupational Health and Safety

During the construction phase of the Project, more than 1,600 workers will be employed and it will be 400 in each section at average. As a consequence of the nature of the work, Construction work will involve high-risk activities with the potential for accidents that may result in injuries and potential fatalities.

According to the APGA Construction Health and Safety Guidelines[5], the followings are the health and safety impact sources that may be arise during the construction of the Project:

Table 4-7. Health and Safety Impact Sources

Source of the Impact	Details of the Source
Working in fenced areas and remote and isolated work	• Working alone • Natural hazards • Poor communications • Falling trees • Electric fences, barb wire • Fauna and stock, snakes • Use of chainsaws • Walking on uneven ground • Dehydration • Overhead and underground hazards • Rough terrain • Stranding/Breakdown
Clear and Grade	• Overhead and underground hazards • Dust • Poor visibility • Inexperienced CH monitors • Poor ground conditions • Personnel in vicinity • Rough terrain

[5] *http://www.apga.org.au/wp-content/uploads/2009/10/APGA-Construction-Health-and-Safety-Guidelines-Rev-3-FINAL-Clean.pdf*

Source of the Impact	Details of the Source
	• Stranding/Breakdown
Pipe Stringing and Load Out	• Overhead hazards due lifting, carrying, strapping, rigging • Crushing • Swinging pipe • Dropped loads • Rolling pipe • Trips, slips, falls Wet, uneven and/or slippery surfaces
Pipe Bending (and cutting)	• Crushing • Falls from height • Swinging pipe • Trips, slips, falls • Wet, uneven and/or slippery surfaces • Burns • Fire
Trenching including exposing buried services by hand	• Slips, trips, falls • Electricity • Manual handling • Overhead hazards • Underground hazards • Dust • Snakes, fauna • Trench collapse • Wet, uneven and/or slippery surfaces
Welding, cutting and Tie- ins	• Falling or swinging pipe • Springing pipe – pipe movement • Crushing • Sparks, buffer wire, burrs • Broken grinding discs • Grinder kickback • Air pressure hoses • Slips, trips, falls • Eye injuries- dust, particles, weld flash • Burns • Fire • Oxygen and acetylene • Electrical hazards (overhead, underground) • Manual handling • Wet, uneven and/or slippery surfaces
Blasting and Field Joint coating	• Abrasive blasting • Pressure hazards • Dust • Chemicals • Manual handling • Air quality • Fire/explosion • Air pressure hoses • Sips, Trips and falls • Chemical fumes and skin exposure • Fire • Static electricity • Wet, uneven and/or slippery surfaces

Source of the Impact	Details of the Source
Lower-in	• Overhead hazards • Falling pipe • Crushing • Slips, Trips, Falls • Wet, uneven and/or slippery ground • Electricity • Open trench, trench collapse
Bedding, Padding, Backfill	• Overhead hazards • Open trench, trench collapse • Dust
Reinstatement	• Moving plant • Fire • Uneven ground • Overhead hazards
Clean and Dry Pipe and hydrotest	• Chemicals and fuel • Slips Trips Falls • Electricity • Working in Bellholes • Manual handling • Welding (see above) High pressure hoses
Non Destructive Testing	• Radiation exposure • Radiation Sources • Chronic health effects • Long term illness and /or death
Camp and Workshop	• Slips, trips, falls • Chemical exposure and spills • Rotating machinery • Sharp objects • Fire • Waste hazards

Impact Mitigation

- Approved fire protection shall be provided and local bushfire and other fire regulations shall be observed.
- Where the pipeline could be damaged by vehicles or other mobile equipment, suitable physical and/or procedures measures shall be implemented.
- Where a power line is in close proximity to the route safe working practice shall be established.
- Where a pipeline is in close proximity to a power line, potential threats from induced voltage and induced or fault currents to personnel safety shall be assessed and appropriate measures taken to mitigate dangers to personnel and equipment.
- Adequate danger and warning signs shall be installed in the vicinity of construction operations, to warn persons about dangers (including those from mobile equipment, radiographic process and the presence of excavations, overhead power lines and overhead telephone lines).
- Unattended excavations in locations accessible to the public or work area shall be suitably barricaded or fenced off and, where appropriate, traffic hazard warning lamps shall be operated during the hours of darkness.

- Provision of adequate measures to protect the workers from hazards caused by welding.
- Procedures to be followed for lifting pipes from stockpile and into trench after welding shall include;
  - Instructions for safe use and handling of chemicals and solvents.
  - Frequency and provision of safety talks (tool box meetings).
  - Accident reporting and investigation procedure.
  - Appointment of safety supervisor and specification of duties.
  - Travel associated with attending the worksite.
  - Statutory obligations.
  - Traffic management plan.
- The construction safety plan shall address safety through all phases of testing of the pipeline during construction.
- The Workers Accommodation Plan shall be prepared and it will be implemented by Contractor and its all subcontractors. Contractor(s) using this document as a basis will prepare section specific worker's accommodation plans. Section specific management plans will be in compliance with the standards indicated in the main Plan, including; general living facilities which are drainage, air conditioning-heating, water, waste water, room facilities, toilet facilities, canteen and laundry services, medical services and leisure social and telecommunication facilities.
- The workers' accommodation facilities will be controlled by Employer according to the Workers' Accommodation Facility Control List given in the scope of the plan. The facility will be checked in 6 months' period from the start. The project management of Contractor shall determine the necessary corrective-preventive activities.

4.2.8. Direct Employment Opportunities

It is anticipated that the Project will be a major source of employment in the area, providing opportunities during both construction period - positive impact. The total number of personnel required during the construction period of the Project will be 1,658 during the peak period.

Personnel distribution for each Section is;

- 430 workers for Section-1;
- 380 workers for Section-2;
- 548 workers for Section-3; and
- 390 workers for Section-4.

Impact Mitigation

In order to sustain the positive impacts, a series of enhancement measures will be taken, such as:

- Recruitment proses of the contractors will be transparent and equal opportunity will be provided to all local candidates for unskilled and semi-skilled positions;
- Job application form will be distributed the local communities;
- If there are no eligible candidates among the applicants, the job announcements will be announced by the following methods.
  - Banner and billboard advertisements,
  - Newspaper and radio advertisements,

Commented [AB54]: How is this an impact?

Commented [AB55]: Thank you for the clarification You would need to specify that this is a positive impact or call it a benefit

Commented [EK56]: According to the definition of the International Association for Impact Assessment:
Social Impact Assessment includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both **positive** and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.

For more information See:
http://www.iaia.org/wiki-details.php?ID=23

Commented [П57]: added

- Internet,
- Municipalities,

- UTG and Contractors will inform workers of their rights under PR-2, national labor and employment law.
- UTG and Contractors make all policies clear and understandable to all workers. Working Conditions and Terms of Employment
- UTG and Contractors will respect its terms.
- UTG and Contractors will provide reasonable working conditions and terms of employment, at a minimum complying with the national labor law.
- Worker representatives will be given access to management.
- UTG and Contractors will hire, promote and compensate workers solely based on their ability to do the job.
- All workers will be given equal access to training, tools and opportunities for advancement.
- UTG and Contractors will ensure that all workers will be free from harassment by management or other workers.
- Positive discrimination may be allowable in cases where it protects disadvantaged or excluded groups and provides them special opportunities.
- A Local Recruitment Plan will be prepared by UTG in compliance with the national requirements and IFI standards and this plan will be implemented by UTG and contractors.
- According to the tender specifications of the Project, local contractors will give priority to local communities during the recruitment process and at least 10% of the total employees will be hired from local communities.
- UTG and contractors will implement the HR policy prepared for the Project;
- UTG and contractors will implement the workers accommodation plan;
- UTG and contractors will implement the employee training plan;
- UTG and contractors will sign workers contract with the each individuals.

4.2.9. Impact on Fishing Activities

According to the Water Resource Impact Assessment Report prepared for the Project,

The impact on fishing activities will be triggered by the water intake from and water discharge to ponds located in the villages that will be performed for hydro testing process.

In Section-1, two ponds will be used.

The pond near the villages of Nadyarbe and Mykolaivka. The pond is used for industrial fishing. The following fish species are bred in the pond: pike (*Esox lucius Linnaeus, 1758*), silver carp (*Carassius gibelio Bloch, 1782*), carp (selection form) (*Cyprinus rubrofuscus Lacépède, 1803*), rudd (*Scardinius erythrophthalmus Linnaeus, 1758*), tench (*Tinca tinca Linnaeus, 1758*), ich (*Hypophthalmichthys nobilis Richandson, 1845*), white amour (*Ctenopharyngodon idella Valenciennes, 1844*), (*Leucaspius delineatus Heckel, 1843*), perch (*Perca fluviatilis Linnaeus,1758*), pikeperch (*Sander lucioperca Linnaeus, 1758*), catfish (*Silurus glanis Linnaeus,1758*).

The second pond is located in Sushylyne village and it is not currently used for economic purposes.

In Section 2, two water bodies are planned for use as the source of water within the floodplain lake near Mlyny Village and the Sula River. Both are used by the locals for fishing. In addition, the Sula River is used for water supply.

Floodplain lake locates in Mlyny village has a natural origin.The following species of bony fishes inhabit the lake: pike (*Esox lucius Linnaeus, 1758*), loaches (*Misgurnus*

fossilis Linnaeus, 1758), silver carp (*Carassius gibelio Bloch, 1782*), rudd (*Scardinius erythrophthalmus Linnaeus, 1758*), tench (*Tinca tinca Linnaeus,1758*).

The total length of the Sula River is 363 km, and the total the area of the basin is 19.6 thousand km^2.

Fish species are represented by pike (*Esox lucius Linnaeus, 1758*), loaches (*Misgurnus fossilis Linnaeus, 1758*), silver carp (*Carassius gibelio Bloch, 1782*), rudd (*Scardinius erythrophthalmus Linnaeus, 1758*), tench (*Tinca tinca Linnaeus, 1758*), *Cobitis taenia Linnaeus,1758*, *Rutilus rutilus Linnaeus,1758*, *Blicca bjoerkna Linnaeus,1758*, *Alburnus alburnus Linnaeus,1758*, *Gobio gobio Linnaeus,1758*, and perch (*Perca fluviatilis Linnaeus,1758*), *Gymnocephalus cernua Linnaeus,1758*.

In Section 3, three water bodies will be used and all of them are used for fishing by local people.

The first pond is located near the northern outskirts of Sloboda-Khodatska Village in Barskiy District.

The pond is used as a spawning site for The Ukrainian Society of Hunters and Fishermen in the Bar District of Vinnytsya Region. The following fish species inhabit it: pike (*Esox lucius Linnaeus, 1758*), silver carp (*Carassius gibelio Bloch, 1782*), rudd (*Scardinius erythrophthalmus Linnaeus, 1758*), tench (*Tinca tinca Linnaeus,1758*), and perch (*Perca fluviatilis Linnaeus,1758*), *Leucaspius delineates Heckel, 1843, Cyprinus rubro fuscus Lacepede, 1803.*

The second pond is located about 370 m to the east of the southern outskirts of Zamozhne Village, in the Bar District, Vinnytsya region. It was created in the upper reaches of a small Murafa river channel.

Fish are represented by silver carp (*Carassius gibelio Bloch, 1782*), tench (*Tinca tinca Linnaeus, 1758*), *Leucaspius delineates Heckel, 1843, Pseudorasbora parva Temminck&Schlegel, 1846, and* perch (*Perca fluviatilis Linnaeus, 1758*).

The third pond is located about 340 m south of the southern outskirts of Luhove Village of the Bar district, Vinnytsya region. It was created in a beam and feeds a creek that forms the left tributary of the small Pidkaminnya River.

Fish include pike (*Esox lucius Linnaeus, 1758*), silver carp (*Carassius gibelio Bloch, 1782*), rudd (*Scardinius erythrophthalmus Linnaeus, 1758*), tench (*Tinca tinca Linnaeus,1758*), and perch (*Perca fluviatilis Linnaeus,1758*).

In Section 4 Mlynjka River, Nichlavka River and ponds located in the villages will be used.

The Mlynk River is the left tributary of the Seret River, and belongs to the Dnister River Basin. It flows through the Borshchiv and Chortkiv Districts of Ternopil Region. The length of the river is 10 km, the width is 3 - 5 m, and it has a depth of 20 - 25 cm (near the shore) to 50 cm (center). The river does not have sufficient water level for fishing.

First pond is located on the eastern outskirts of Zalissya Village of the Chortkiv District, Ternopil Region. It was formed as a result of laying the Mlynka riverbed downstream from the previously described territory of the Mlynka River.

The pond is used for fishing by means of nets, which is the reason for the poor species composition. Ichthyofauna of interest to the locals is represented by silver carp (*Carassius gibelio Bloch, 1782*), carp (selection form) (*Cyprinus rubrofuscus Lacépède, 1803*), tench (*Tinca tinca Linnaeus 1758),* perch *(Perca fluviatilis Linnaeus, 1758),* white amour (*Ctenopharyngodon idella Valenciennes, 1844*).

The Nichlavka River flows through the Gusyatyn and Chortkiv Districts of Ternopil Region and is the right tributary of the Nichlava River. The length of the river is 42 km, and the bed is moderately meandering. Within the project area, the width of the river varies from 1.2 meters to 2.0 meters, and the depth from 30 cm to 60 cm.

The river is used for fishing, and the fish are typical for small rivers, such as *Leucaspius delineatus Heckel, 1843, Carassius gibelio Bloch, 1782*, and *Gobio gobio Linnaeus, 1758*.

The other pond is located on the northwestern outskirts of Kryvenke Village, Chortkiv District, Ternopil Region in the bed of Kryvenky Creek.

The pond is not stocked, and therefore the basis of the ichthyofauna is represented by non-introduced species: *Esox lucius Linnaeus, 1758, Carassius gibelio Bloch, 1782, Tinca tinca Linnaeus, 1758, Misgurnus fossilis Linnaeus, 1758, Gobio gobio Linnaeus, 1758, Perca fluviatilis Linnaeus, 1758, Leucaspius delineatus Heckel, 1843*. The villagers use the pond for fishing.

Impact Mitigation

- It is important to inform villagers who are going to fish during the hyrotesting activities that will cause temporary limitation of use in the catching area nearby test areas.
- For this reason, information meeting in affected villages will be held about limitation in use of the ponds with their causes and timing shall be held at least 2 weeks before test activities;
- Spawning season should be taken into consideration for the timing of the test activities;
- Compensation expenses in accordance with the applicable legislation of Ukraine will be paid to the monetary authorities.
- This impact will be compensated according to the The Law of Ukraine on the Red Book lists the possible negative effects on the habitat of flora and fauna in terms of economic activity. Violation of this requirement entails a legal liability and the damage is compensated in accordance with the legislation (Article 20). However, since the calculation of the compensation is out of date, it is recommended to uptade the compensation values.

4.2.10. Indirect Employment and Local Procurement

Construction of the Project will require the purchase of material and other goods and services. It is foreseen that cleaning, food and soft drinks, security services is likely to be provided at District level.

Commented [AB58]: Once again, this an opportunity; not an impact.

Commented [EK59]: Employment and local procurement opportunities can create positive impacts and may create a change on people's way of life – including how they live, work. As a result it is considered as an impact.

Impact Mitigation

- An inventory of the local suppliers will be prepared by UTG and it will be provided to the contractors;
- Priority will be given to the local companies to supply goods and services to ensure, providing indirect employment opportunities,
- In relation to child labor, UTG will continue to procure such goods or materials having received satisfactory undertakings or evidence that the supplier is committed to implementing a programme in line with good international practice to eliminate such practices within a reasonable time frame. UTG will report on progress with the implementation of such programme on a regular basis.
- In relation to forced labor, UTG will continue to procure such goods or materials having received satisfactory undertakings or evidence that the supplier has taken appropriate steps to eliminate the conditions that constitute forced labor.
- Additionally, where significant safety issues are identified among core supply chain workers, UTG will introduce procedures and mitigation measures to ensure that relevant suppliers are taking steps to prevent or correct life-threatening situations.

- In addition to the labour related risk UTG will ensure the following in case of uses of suppliers of living natural resources:
- Only living natural resources of a legal and sustainable origin are purchased;
- The living natural resources do not originate from protected areas or from areas with recognised biodiversity importance, and that the biodiversity and the functions of the affected ecosystem are maintained in accordance with internationally and nationally approved standards.
- Local CLOs will inform local people before construction about the procurement opoortunities of the Project.

4.2.11. Economic Displacement of Land Owners

Land Servitude Agreement will be established for the Project to be used for the construction period of the Project, which will be the main source of the economic displacement.

Within this Agreement, the land servitude will be established for 4 years from the moment of state registration of the right to use, in compliance with the Law of Ukraine. However, the construction of the each section will be finalized in 18 months and during this period of the time the landowners will not be able to continue agricultural activities will cause loss of income.

A total of 1,280 land plots will be affected within the scope of the project. 1010 of these plots are private and 270 of them are state-owned. Section-2 is the most affected section of the pipeline in terms of private plots. Since the affected plots are shareholders, the total number of affected individuals is 1333. The plot numbers for the sections are according to the ownership status of the lands is given in Figure 4-1.

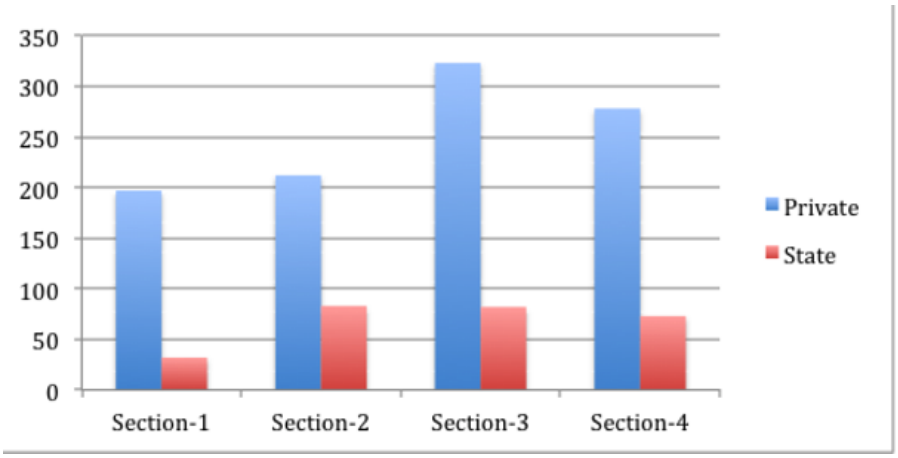

Figure 4-5 Affected Lands According to the Land Ownership Status

Land types in the RoW is classified and presented in Figure- 4-6. Approximately 400 hectares of agricultural land will be affected in the construction corridor of the all sections. Section-4 is the least affected part of the agricultural areas; and Section-2 is the area of the most affected area.

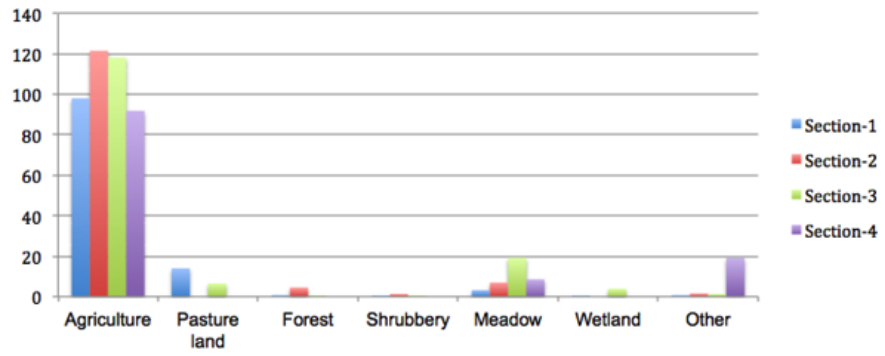

Figure 4-6 Affected Lands According to the Land Ownership Status

- Impact MitigationLACF and Site Specific LACMs will be implemented;
- Access to the other lands will not be prevented;
- The contractor will inform the landowners before the start of the construction works
- The contractor will decide the access routes and storage areas with the local communities not to prevent access to the other cultivated lands;
- Land entry and land exit protocols will be signed with the landowners with the participation of the village heads, contractor and the UTG representatives,
- All CLOs will be introduced to the all affected settlements and the CLOs will inform the villagers about the land acquisition, compensation and the grievance process.
- All grievances about the land acquisition and compensation will be recorded.
- UTG will inform Contractors in terms of the vulnerability level of the affected people in terms of land acquisition. During the recruitment process, priority will given to the households who has small land plots with the assistance of UTG.

4.2.12. Economic Displacement of Land Users

The pipeline route passes through agricultural areas intensively. During the construction period of the project, in addition to the landowners, the land-lease farming enterprises will also be affected. Both interviews with UTG officials and public participation meetings have shown that agricultural lands in all sections heavily leased by the enterprises.

According to the information obtained from UTG, a total of 42 firms engaged in agricultural production by renting land from the villagers. 16 of these companies are located in Section-1, 8 of them are in Section-2, 10 of them are in Section-3, and 8 of them are in Section-4. The range of the size of the affected lands is between 0,8 and 117, 2 square meters. Agricultural companies in each section and land sizes to be affected lands are presented in Table 4-8.

Table 4-8. Affected Lands of Enterprises

Name	Section No	% of the Affected Land	Total Rented Lands (ha)	Affected Land
LLC Agrarne	1	1,23	300	3,7
LLC Agro Peremoga	1	N/A	N/A	35,1
LLC Agrofirma Viktoria	1	N/A	N/A	10,7
LLC Agrofirma Vladana	1	N/A	N/A	7,7

_LLC Alvika	1	1,33	60	0,8
LLC Baryshivska zernova	1	N/A	N/A	14,1
LLC Demetra-Veles	1	0,68	500	3,4
LLC Druzhba	1	N/A	N/A	14,2
LLC Haivshchyna-Agro	1	N/A	N/A	2,2
LLC Khlibodar	1	0,63	2965	18,7
Naton FG	1	X	N/A	17
PSP Slobozhanshchyna Agro	1	N/A	N/A	19,9
SAP Rodiuchist	1	N/A	N/A	6
Severynivska AF LLC.	1	N/A	N/A	9,9
SFG Nyva	1	12,44	45	5,6
SFG Vira	1	9,6	50	4,8
FG Moya Zemlya	2	0,63	300	1,9
LLC Chornukhinsky kray	2	N/A	N/A	N/A
LLC Kharkivets	2	N/A	N/A	1,2
PP Stokolos	2	N/A	N/A	2
PrJSC Raiz-Maksymko	2	0,20	60000	117,2
SFG Barvinok	2	1,23	350	4,3
SFG Viktoria	2	10,5	60	6,3
STOV Bohdanivske	2	N/A	N/A	15,3
Farming enterprise “Three B	3	N/A	N/A	15,1
LLC “Agrofirma Rubansky	3	0,02	13000	2
Kraevyd Podillia	3	0,14	10000	13,9
LLC “Mizhlissia”	3	N/A	N/A	16,6
Podillia Agroservice”	3	0,66	1500	9,9
LLC Enselko Agro	3	1,16	1000	11,6
LLC Kyianivka	3	N/A	N/A	7,8
SFG Bohdaniuk	3	5	30	1,5
SFG Sadivnyk	3	7,35	68	5
STOV PROGRES	3	0,70	500	3,5
LLC Mriya Farming	4	0,01	160000	9,6
LLC Agrosyntez Podillia	4	N/A	N/A	2,6
PAP Berezyna	4	0,31	1500	4,7
PAP Dobrobut	4	1,15	558	6,4
PAP Dovira	4	0,06	5000	3
PAP Nichlava	4	N/A	N/A	20,9
PAP Obriy	4	0,47	2764	13
SVK Dobryi Sad	4	0,77	65	0,5

In order to understand the economic impacts of the project, CLOs of UTG conducted a short survey with the above-mentioned companies. Below questions were asked to the participants;

- Amount of land affected by the project,
- Ratio of affected land to total leased land,

- Size of the total land rented by the company,
- Produced agricultural products,
- Evaluation of the impact, and
- Opinions and recommendations of land users..

All affected businesses located on the RoW are participated in this survey.

When the agricultural enterprises were asked about the total rents they have rented, 23 of them indicated the amount of total rents. The majority of the enterprises stated that the affected lands are below 5% when it compared to the total rented lands. The details of the interviews are presented in Table below.

Table 4-9. Details of the Affected Lands of the Land Users

No	Name	Section No	Products	Evaluation of the Impact Level
1	LLC Agrarne	1	soy, corn	Moderate
2	LLC Agro Peremoga	1	corn, sunflower	Moderate
3	LLC Agrofirma Viktoria	1	wheat, soy, corn	Moderate
4	LLC Agrofirma Vladana	1	corn, wheat, sunflower	Major
5	_LLC Alvika	1	soy, corn, sunflower	Moderate
6	LLC Baryshivska zernova	1	Corn, sunflower, soy	Major
7	LLC Demetra-Veles	1	Corn, sunflower, soy	Major
8	LLC Druzhba	1	Sunflower, corn, wheat	
9	LLC Haivshchyna-Agro	1	Corn soy	Major
10	LLC Khlibodar	1	corn, sunflower	X
11	Naton FG	1	sunflower, corn	N/A
12	PSP Slobozhanshchyna Agro	1	Corn, soy, wheat, sunflower	X
13	SAP Rodiuchist	1	soy, sunflower, rape plant, corn, wheat	N/A
14	Severynivska AF LLC.	1	sunflower	Major
15	SFG Nyva	1	corn, wheat, sunflower	Moderate
16	SFG Vira	1	corn, soy, sunflower	Moderate
17	FG Moya Zemlya	2	corn	Moderate
18	LLC Chornukhinsky kray	2	Corn soy	Moderate
19	LLC Kharkivets	2	soy	X
20	PP Stokolos	2	soy	X
21	PrJSC Raiz-Maksymko	2	corn	Major
22	SFG Barvinok	2	Wheat, corn, soy	Moderate
23	SFG Viktoria	2	Wheat, corn, soy	Moderate
24	STOV	2	corn, wheat, sunflower,soy	Major

	Bohdanivske			
25	Farming enterprise "Three B	3	sunflower, corn, wheat	Moderate
26	LLC "Agrofirma Rubansky	3	Wheat, corn, sunflower, rape plant	Moderate
27	Kraevyd Podillia	3	corn, soy, wheat, sunflower	Moderate
28	LLC "Mizhlissia"	3	corn, sıy, wheat	Moderate
29	Podillia Agroservice"	3	corn, soy, wheat,sunflower	Negligible
30	LLC Enselko Agro	3	sunflower, corn, wheat	N/A
31	LLC Kyianivka	3	wheat, corn, soy	Moderate
32	SFG Bohdaniuk	3	wheat, soy, oat, sunflower, rapeplant	Moderate
33	SFG Sadivnyk	3	Black currant, strawberry	Moderate
34	STOV PROGRES	3	Soy, corn, wheat	Major
35	LLC Mriya Farming	4	Wheat, corn	No Impact
36	LLC Agrosyntez Podillia	4	Sunflower, corn	Negligible
37	PAP Berezyna	4	Wheat, corn	Moderate
38	PAP Dobrobut	4	corn, wheat, soy	Moderate
39	PAP Dovira	4	Wheat, Sunflower, corn, soy	Major
40	PAP Nichlava	4	Summer wheat, summer barley	Major
41	PAP Obriy	4	corn, wheat	Moderate
42	SVK Dobryi Sad	4	Fruit and berries	Moderate

Impact Mitigation

- Land Acquisition and Compensation Framework and Section Specific Land Acquisition and Compensation Management Plans are prepared;
- Fair and transparent compensation will be provided to the land users for their loss crops;
- Compensation of the crop loss will be provided to the land users in a timely manner and all payments will be recorded;
- All enterprises will be informed about the details of the construction including the activities to be held, construction period and cultivation;
- A Grievance procedure will be introduced to the affected enterprises and the procedure will be implemented throughout the construction phase;
- Land entry and land exit protocols will be signed and the records will be kept;
- Local enterprises will be informed on impacts on traffic due to project activities and the contractor will inform local enterprises periodically access routes with the participation of the local communities including enterprises; and
- Reinstainment practices will be applied after the construction.

4.2.13. Damages on Crops During Construction

Project vehicle movements and other construction activities may accidentally damage crops near the Project site or along the transportation road. The construction activities of the Project will be 18 months for each Section.

Impact Mitigation

- Any loss of or damage to crops caused by Project activities will be compensated.
- The Project will minimize damage to crops by minimizing the area of disturbance caused by vehicle movement and other construction activities.
- A Grievance Mechanism Procedure will be set up for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable by the parties;
- Accidental damages caused by project activities will be compensated according to the procedure for compensation of the value of agricultural crops to land users in Ukraine is carried out in accordance with the Resolution of the Cabinet of Ministers of Ukraine No. 284 of 19.04.1993. In accordance with the aforementioned normative document, compensation was made for the cost of both sown crops and those, which have not yet been sown (lost profit). That is, in the case of restricting the rights of the land user in sowing any crops, the compensation of this reduced income may be paid in accordance with the legislation in force.

4.2.14. Changes in Access to the Natural Sources

The forest areas are mostly affected within the Section-2 area, while the second affected area is the Section-1. The affected areas within the Sections 3 and 4 constitute only 1% of the total affected areas. Figure 4-7 below shows the distribution of forest areas to be affected by the construction area according to the Sections.

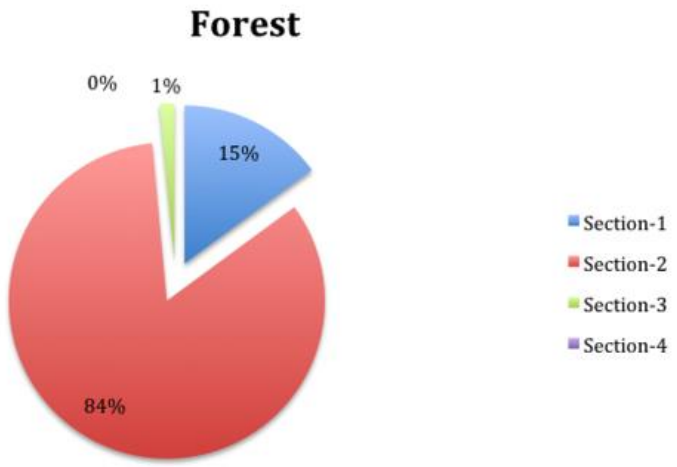

Figure 4-7 Affected Forest Areas

Locations of affected forest areas within the sections are given in the following bullets.

Section-1

- Severynivka village council lands

- Stepanivka village council, AF LLC "Vladana"
- Postolne village council lands

Section-2

- Pyriatyn forestry
- Lokhvytsia forestry
- Chornukhino forestry

Section-3

- Khodaky Village Council
- Vinkivtsi District Forestry Enterprise

Section-4

- Chortkiv forestry for lumbering

The forests' use is intensive as the herbs collection and also hunting is common. According to the information obtained from the village headmen, the form of forest use is summarized in the following Table 4-10.

Table 4-10. Forest Usage of the Villages According to the Settlements

Village	Forest Usage
Section-1	
Verbove	7 families are engaged with the herbs collection. The families mainly collect 3 kg rosehip in one season.
Skliarivka	15 families are engaged with the herbs collection. The families mainly collect 8 kg rosehip in one season.
Sokolyne	No forest usage
Marivka	15 families are engaged with the herbs collection. The families mainly collect 5 kg rosehip and immortelle in one season. In addition 3 families are engaged with hunting fox and hare.
Lyntarivka	No forest usage
Holovashivka	No forest usage
Stepanyshkove	Herbs collection (20 kg) and hunting is available.
Likarske	Herbs collection (20 kg) and hunting is available.
Postolne	Herbs collection (20 kg) and hunting is available.
Section-2	
Harkivci	The entire of the families collect firewood in the autumn season. In addition hunting fox and hare is available.
Mlyny	Approximately 18 families are collecting herbs.
Venslavi	No forest usage.
Yablunivka	Approximately 60 families are collecting herbs.
Section-3	
Dashkivtsi	Approximately 200 families are collecting berries and mushroom and 15 families are hunting fox and hare.
Section-4	
Kolyndyany	Herbs collection is available.

There are areas consisting of individual oaks, forming local value to the nearby communities in terms of spiritual meanings. According to the outcome of the social baseline survey, it was learned that in addition to the Dacha Galilei Forest Reserve in Section-4, there are other locations along the other Sections such as the following ones:

- Section-2: Lokhvytsia Village having an oak possessing spiritual meaning to the residents of the village.
- Section-2: Ovdiivka Village having an oak possessing spiritual meaning to the residents of the village.

Commented [AB60]: So, are these people going to be directly affected by the Project? If so, what are the proposed mitigation measures?

Commented [EK61]: **As mentioned above all mitigation measures are presented in RSIA Report. As an example; for this impact, mitigation measures include;**
The local forestry will carry out land clearing from vegetation and woods in locations used for construction works. The said forestry will be notified not later than 60 days before the commencement of construction works.
Local authority of the forestry will write an official letter to the representative of the village council and local CLOs will also inform the villagers. Villagers will also be notified at least 30 days before the commencement of the construction works.
De-forestation will be carried out according to special permits on forest clearance with exact indication of cubature of wood to be cut, which will be further compensated to the forestry.
Additional consultation should be conducted before the clearance of the forestlands and if the villagers recommended the red oaks should be relocated to avoid impacts.
In the forest areas the construction corridor will be reduced from 45 m to 32 m.
UTG contractors will consider the firewood collection, herbs collection and hunting periods with the assistance of village heads.
The contractors will inform villagers before the activities in the forestry areas.
All vehicles will drive on designated routes, fencing or delimit construction areas twill be implemented, existing roads will be used as much as possible in the conveyor and pipeline installation to minimize habitat loss and habitat fragmentation,
Environmental engineering techniques will be applied in order to create stable slope and minimize the risk of erosion and prevent changes in morphology and hydrology,
Dust management control measures will be implemented
Noise and Vibration management control measures will be implemented
Install speed limits and animal crossing signs on the access road and enforce speed limit along the site access road and if necessary, install speed bumps and noise stripes on straight sections of the access road;
Provide training to all staff and contractors on road safety and speed awareness.
If vegetation clearing need to be performed during nesting season, before the start of bird nesting season, a system to scare the birds away from the construction areas using "bird repellent tape" will be implemented so that it would make the site unsuitable for nesting birds;
An ecologist appointed by the Construction Contractor will perform pre-construction surveys in the areas prior to vegetation clearing.
Hunting and collection of wild animals will be strictly prohibited within the Project area.
If spreading of invasive species is observed, an appropriate eradication program will be developed and implemented.
Topsoil will be separately stored at the site and used for progressive restoration and rehabilitation after contraction
Progressive restoration of areas cleared during construction but not subjected to the placement of permanent facilities (e.g. laydown areas, pipeline route) will occur, with the goal of producing a stable vegetative cover to minimize erosion, dust and spreading of invasive alien species. The restoration of these areas is also expected to produce positive direct effects on local flora, fauna and habitats.

- Section-4: Sosunivka Village having a “red” oak possessing spiritual meaning to the residents of the village.

Impact Mitigation

The local forestry will carry out land clearing from vegetation and woods in locations used for construction works. The said forestry will be notified not later than 60 days before the commencement of construction works.

Local authorirty of the forestry will write an official letter to the representative of the village council and local CLOs will also inform the villagers. Villagers will also be notified at least 30 days before the commencement of the construction works.

De-forestation will be carried out according to special permits on forest clearance with exact indication of cubature of wood to be cut, which will be further compensated to the forestry.

Additional consultation should be conducted before the clearance of the forestlands and if the villagers recommended the red oaks should be relocated to avoid impacts.

In the forest areas the construction corridor will be reduced from 45 m to 32 m.

UTG contractors will consider the firewood collection, herbs collection and hunting periods with the assistance of village heads.

The contractors will inform villagers before the activities in the forestry areas.

All vehicles will drive on designated routes, fencing or delimit construction areas twill be implemented, existing roads will be used as much as possible in the conveyor and pipeline installation to minimize habitat loss and habitat fragmentation,

Environmental engineering techniques will be applied in order to create stable slope and minimize the risk of erosion and prevent changes in morphology and hydrology,

Dust management control measures will be implemented

Noise and Vibration management control measures will be implemented

Install speed limits and animal crossing signs on the access road and enforce speed limit along the site access road and if necessary, install speed bumps and noise stripes on straight sections of the access road;

Provide training to all staff and contractors on road safety and speed awareness.

If vegetation clearing need to be performed during nesting season, before the start of bird nesting season, a system to scare the birds away from the construction areas using “bird repellent tape” will be implemented so that it would make the site unsuitable for nesting birds;

An ecologist appointed by the Construction Contractor will perform pre-construction surveys in the areas prior to vegetation clearing.

Hunting and collection of wild animals will be strictly prohibited within the Project area.

If spreading of invasive species is observed, an appropriate eradication program will be developed and implemented.

Topsoil will be separately stored at the site and used for progressive restoration and rehabilitation after contraction

Progressive restoration of areas cleared during construction but not subjected to the placement of permanent facilities (e.g. laydown areas, pipeline route) will occur, with the goal of producing a stable vegetative cover to minimize erosion, dust and spreading of invasive alien species. The restoration of these areas is also expected to produce positive direct effects on local flora, fauna and habitats.

Commented [AB62]: Are these going to be adversely affected by the Project? If so, what are the proposed mitigation measures?

Commented [EK63]: Additional consultation should be conducted before the clearance of the forestlands and if the villagers recommended the red oaks should be relocated to avoid impacts. (See RSIA)

4.2.15. Changes in Access to the Grazing Lands

The settlements on the route of the pipeline that generate income from animal husbandry may be affected due to temporary occupation of meadow and pasture lands during the construction phase. The pasture and meadow areas are mostly affected within the Section-3, while the second affected area is the Section-1. The below shows the distribution of pasture and meadow areas to be affected by the construction area according to the Sections.

Table 4-11. Affected Pasture and Meadow Lands

Sections	Pasture and Meadow Total (ha)
Section-1	17,15
Section-2	6,88
Section-3	25,78
Section-4	8,56

Commented [AB64]: How will the impacts on grazing land mitigated? Any alternative grazing land secured by the Project?

Commented [EK65]: The seasonal streams are used for grazing purposes and the villagers should be informed about the restrictions on grazing during construction periods.

All sections has wide range of alternative grazing areas and alternative areas should be provided to the affected people to prevent possible grievances.

The UTG CLO will be responsible to coordinate with the local people and construction contractors to minimize access to the grazing areas.

In order to prevent the access to grazing lands during pipe installation, a consultation should be held and appropriate gates will be provided according to the suggestions

Impact Mitigation

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In order to prevent the access to grazing lands during pipe installation, a consultation should be held and appropriate gates will be provided according to the suggestions.

4.2.16. Changes in Transportation Infrastructure

Two impact sources have been identified that may create impact on the transportation infrastructure:

- One is the additional vehicle that will be used to carry construction materials; and
- The other source of the impact is road and railway crossings.

The impacts on traffic density are assessed in detail in Section 10.2.1 of Rapid SIA. The peak period of traffic movement will occur on the 11th and 12nd months of the construction in each Section. The peak period numbers for vehicle movements are given below for each section:

- Section-1: 3,620 vehicles,
- Section-2: 4,210 vehicles,
- Section-3: 4,210 vehicles,
- Section-4: 3,195 vehicles,

In addition to the traffic density, road and railway crossings will be another source of impact on the traffic infrastructure. There are eight (8) major crossings in Section-1, nine (9) in Section-2, nine (9) in Section-3 and seven (7) in Section-4. Details of these crossings are presented in the following table.

Table 4-12. Major Infrastructure Crossings

Section-1		Section-3	
1.	Motorway crossing - Km 3368,859	1.	Motorway crossing CS 37 - Km 3974,80

2.	Motorway crossing - Km 3370,734	2.	Railway Zhmerynka-M. Podilsk - Km 3977,43
3.	Motorway crossing - Km 3372,792	3.	Motorway Seferivka – Bar -Km 3982,714
4.	Motorway crossing - Km 3380,495	4.	Motorway Snitkiv-Lugove - Km 3986,19
5.	Motorway crossing - Km 3381,682	5.	Motorway Lubar- Nova Ushitsa - Km 3988,14
6.	Motorway crossing - Km 3385,803	6.	Inactive railway - Km 3992,55
7.	Motorway crossing - Km 3388,691	7.	Motorway Verkhivka-Khodaky - Km 3993,825
8.	Railway crossing -Summy- Vorozhba - Km 3373,746	8.	Motorway Khmelnitsk-Yalushkiv - Km 4000,923
		9.	Motorway Hovory-Selikhove - Km 4003,96
Section-2		**Section-4**	
•	Motorway at CS-3 Hrebinkivska by extention of the existing casing Km 3488,61	1.	Motorway crossing - Km 4102,57
•	Motorway Lohvitsa- Gadeach -Installation of a new casing by horizontal drilling Km 3492.82	2.	Motorway crossing - Km 4111,07
•	Railway between stations Iskivtse - Sula-Installation of a new casing by horizontal drilling Km 3493,61	3.	Motorway crossing - Km 4113,85
•	Motorway Haivschina- Lohvitsa-Installation of a new casing by horizontal drilling Km 3498,35	4.	Motorway crossing - Km 4117,18
•	Motorway Lohvitsa - Lubny - Installation of a new casing by horizontal drilling Km 3504,97	5.	Motorway crossing - Km 4120,40
•	Motorway Yablunivka - Rygy -Installation of a new casing by horizontal drilling Km 3508,40	6.	Motorway crossing - Km 4121,79
•	Motorway Lohvitsa - Drukivschina -Installation of a new casing by horizontal drilling Km 3512,30	7.	Railway crossing -Ivane Puste-Vyhnanka - PK 128+170
•	Motorway Krasne- Iskivtsi-Installation of a new casing by horizontal drilling Km 3518,00		
•	Village Krasne - bore well -Installation of a new casing by horizontal drilling Km 3518,70		

This section is focusing on damage of the roads due to movement of heavy vehicles. The road and railway infrastructute will continue to flow since the horizontal drilling will be applied and existing casing will be used.

Commented [AB66]: How will this impact be mitigated?

Commented [EK67]: •Communication with interested parties will be ensured including village schools, road administration and village heads for the pedestrian safety.
•Traffic management plan will be implemented,
•Village heads will be informed about the routes and the peak hours,
•Regular maintenance will be implemented to the damaged roads. Duri
During the pre-construction survey, contractor will take the photos of the existing road conditions and will include this photos to social monitoring repor. After the construction, the conditions of the road will be compared. If required, Road Rehabilitation Plan will be prepared and implemented by contractor

Impact Mitigation

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- Traffic management plan will be implemented,
- Village heads will be informed about the routes and the peak hours,
- Regular maintenance will be implemented to the damaged roads. Duri

During the pre-construction survey, contractor will take the photos of the existing road conditions and will include this photos to social monitoring repor. After the construction, the conditions of the road will be compared. If required, Road Rehabilitation Plan will be prepared and implemented by contractor.

4.2.17. Visual Impacts

The Project will not cover the any new above ground installations such as compressor stations, the block valve, pigging and metering stations.

The accommodation areas and the pipe stockyards are considered to be the impact source of the visual impact. Since the exact location of the workers accommodation is not foreseen at this stage of the Project and it is likely to be the usage of the existing houses and the hotels, workers accommodation is not scoped into the assessment of the visual impact.

Section 1: a lease agreement is signed with the private landowner. Total area for the storage area is 3 ha. Fitting and valves is planned to be stored in the compressor station in Romny. The nearest settlement to the area is Nadyarne and the approximate distance to the area is 900 m.

Figure 4-8 Storage Area of Section-1

Section 2: storage are is located in the close proximity to the existing compressor station of the UTG. Since Sula River is blocking (the exiting bridge cannot be used for the pipeline transportation. the construction area, two storage area will be used for Section-2. One storage area belongs to the UTG, which is 3 ha and the size of the private land is 2 ha which is located in Pastichevske and the approximate distance to the area is 150 m.

Figure 4-9 Storage Area of Section-2

The nearest settlement to the area is Vyshneve and the approximate distance to the area is 850 m.

Figure 4-10 Storage Area of Section-2

Section 3: the storage area for Section-3 is located in Mtky village and the approximate distance to the area is 550 m. The type of the land is governmental land, which does not have an official registration currently. The permission process for the land usage is ongoing. Total size of the land is 3 ha.

Figure 4-11 Storage Area of Section-3

Section 4: UTG land is planned to be used for near the compressor station and the size of the land is 5 ha. The nearest settlement to the area is Sydoriv, which is located 1200 m distance to the storage area.

Figure 4-12 Storage Area of Section-4

The stockyards are located within UTG's own fields or far away from the viewpoints of the settlement. Since the construction period will be maximum 18 months for each Section, the magnitude of localized impact will be low. In addition, interviews with UTG showed that the maximum height of the pipes in the storage areas would be 2,5 meters.

Visual impact during the construction activities is likely to occur. The significance of the impact is low.

The receptor sensitivity of the impact is low, considering the distance of the residential areas to the storage areas. The overall impact is assessed negligible. Although the impact is negligible site leveling will be avoided.

Impact Mitigation

Although the impact is negligible site levelling will be avoided.

4.2.18. Cultural Heritage

According to the national EIA reports and the community level surveys there no cultural assets in the route of the pipeline excluding the Section-2.

According to the official letter of Centre of Protection and Research of Archaeological Monuments, the Department of Culture, Poltava Regional State Administration, there are archaeological assets in the vicinity of the route in Section 2 (between Grebinki and Sofiivka), which requires supervision of the works by archaeologists during the excavation works at those locales referred in the letter.

The Centre has examined the data regarding the land plot of 123,19 ha planned to be allocated for reconstruction of the main gas pipeline "Urengoy-Pomary-Uzhgorod" section km 3488,36 – 3519,87 within the territory of Lokhvytsia and Chornukhine districts in Poltava region.

According to the examined archival archaeological materials, the area planned to be allocated for reconstruction of the main gas pipeline "Urengoy-Pomary-Uzhgorod" intersects the territory of the of Romenska culture and Old Russian times, located South-Westwards from the village of Ryhy, Lokhvytsia district.

Moreover, there are also archaeologic sites within the close proximity to the construction area namely:

- A burial mound (kurgan), located North-Westwards from the village of Ovdiivka, Lokhvytsia district;
- A group of burial mounds, consisting of five hills, and two independent burial mounds, located Southwards, Eastwards and North-Eastwards from the village of Ryhy, Lokhvytsia district;
- A settlement, belonging to Romenska culture and Old Russian times, and sites with materials of the Bronze Age and the late Middle Ages, located Eastwards from the village of Mlyny, Lokhvytsia district.

Considering the above-mentioned issues, the Centre of Protection & Research Archaeological Monuments the Department of Culture Poltava's Regional State Administration requires addressing archaeological institutions when performing earthworks for reconstruction of the main gas pipeline "Urengoy-Pomary-Uzhgorod" at the areas where the mentioned archaeological sites are located and perform the mentioned works under archaeological supervision. Furthermore, archaeologists will be present during the excavation and they will have the authority to stop work on case of a a chance find. Chance Find Procedure in Appendix J of this ESMMP will be implemented.

Furthermore, the ongoing official correspondence with the relevant authority for the extension of the security zone in Section 2 to 32 m due to parallel routing, results in the decision that UTG has to extend the existing security zone border then, UTG must obtain information from relevant cultural management authority (given above) whether

there are any registered archaeological / cultural archaeological asset in the additional part of the security zone prior to the commencement of any site clearance works.

Since there are no identified cultural assets in the route of the pipeline, the occurrence of the impact is unlikely. The receptor sensitivity of this insignificant impact is low and the impact is negligible.

Commented [AB68]: This is more appropriate for the cultural heritage section

Impact Mitigation

A chance finds procedure is prepared for the Project and it will be implemented for the all Project Sections. According to the this procedure; when a chance find happens during the excavation works, Contractor staff following the procedure given in this document must inform relevant parties.

- An archaeological supervision will be provided during the earthworks.
- Construction works will be stopped and a protective zone around the finding shall be set.
- Construction workers shall inform their archaeologist in the environmental and social monitoring team about the chance find. Construction contractor's archaeologist will contact with the construction manager.
- Construction manager will inform the construction supervision engineering company / consultant's relevant expert (i.e., preferably archaeologist).
- Construction supervision engineering company / consultant's archaeologist will get in contact with the local authority (i.e., Centre for Protection and Research of Archaeological Monuments, Department of Culture, Poltava State Administration).
- Meanwhile the Construction Contractor's archaeologist will take necessary precautions (flagging / signs) in order to isolate and secure the chance find site. Removal of chance find or its disturbance is forbidden until the arrival of the local authority and the official decision of the authority.
- Chance Find Form needs to be filled out by the archaeologist of the Construction Contractor and copy of it will be sent to Supervision Engineering Consultant's archaeologist within 24 hours following the chance find.
- The Supervision Engineering Consultant's archaeologist will make contact with local authority right after receiving the Form from the archaeologist of the Construction Contractor.
- After decision of the local authority's archaeologist is conveyed to the archaeologist of the Supervision Engineering Consultant, the Construction Contractor's archaeologist will be informed by the archaeologist of the Supervision Engineering Consultant.
- Archaeological heritage investigation will be held for each new land plot required by the Project.

4.3. Supporting Management Plans

4.3.1. Environmental Supporting Management Plans

The ESMMP refer to a number of supporting management plans for the achievement of the environmentally sound project development.

Construction Environmental Management Plan

After contract award, the Contractor shall submit Construction Environmental Management Plan (CEMP) which will cover the Environmental and Social Management (ESM) measures and tools and will be the revised version of the draft ESM Plan (ESMP) to be delivered in the proposal for tender and will be titled as to explain how the Client's environmental and social requirements will be managed and monitored during the execution of the Works. There will be also other management plans to be

delivered as supplementary plans to the CEMP (as appendices) by the Contractor. The list of deliverables is given below:

- CEMP (detailed ESMP including monitoring plan)
- OHSS Management Plan (HSSMP) and supplementary procedures
- Traffic Management Plan (TMP);
- Waste Management Plan (WMP) incl. solid and liquid wastes like wastewater as well as disposal of the dismantled pipes and coatings in coordination with UTG;
- Emergency Response Plan (ERP);
- Aggregate Management Plan (AMP) if needed;
- Biodiversity Action/Management Plan (BMP);
- Site-Specific Reinstatement Plan (SRP) or Recultivation Plan using the existing Recultivation Plans prepared by the design engineers and provided within the design documentation;

The CEMP will set out the specific actions that must be implemented to minimize the disruption and negative impacts for all receptors including ecological components and nearby settlements to be affected by construction works of the Project. This includes actions to minimize disruption to infrastructure and natural resources as well as measures to avoid damage to household and community assets such as land, houses, roads, water supply and irrigation networks etc. Where damage does occur this plan outlines the actions that should be taken to assist settlements in the compensation process. The CEMP will be a living document and will be updated as per the changes in the Project and when required by the UTG.

Occupational Health, Safety (and Security) Plan

Contractor will prepare an OHSS Plan of which preparation guidelines are presented in Appendix-A of this ESMMP. According to the WBG's HSE Guidelines for Onshore Oil and Gas Developments, occupational health and safety issues should be considered as part of a comprehensive hazard or risk assessment, including, for example, a hazard identification study [HAZID], hazard and operability study [HAZOP], or other risk assessment studies. The results should be used for health and safety management planning, in the design of the facility and safe working systems, and in the preparation and communication of safe working procedures. Health and safety management planning should demonstrate that:

Commented [AB69]: So will the requirement to conduct these studies be included in the tender and contractual documentation?

Commented [GÖ70]: Yes

- A systematic and structured approach to managing health and safety will be adopted;
- Controls are in place to reduce risks to as low as reasonably practical;
- Staff are adequately trained; and
- Equipment is maintained in a safe condition.

The formation of a health and safety committee for the Contractor is recommended.

Traffic Management Plan

The Contractor shall prepare a traffic management plan that sets out the procedures for the following aspects of the works:

- Standard land trucks - delivery plan;
- Environmental protection;
- Car and medium goods vehicles;
- Notification;
- Speed limits and strict adherence to the agreed itinerary/GPS tracking

- Local communities; and
- Contingency plan.

Details of such a TMP is provided in the TMP prepared by the PIU Consultant with some useful project specific information at the site level (e.g., access roads to the site etc.) and national level (e.g., legislation) and it is presented in Appendix-B.

Waste Management Plan

Environmental pollution due to the mismanagement of wastes to be generated during the construction works is a crucial potential impact associated with this kind of pipeline projects. In this manner, in order to prevent such an impact or minimize the consequences, a Waste Management Plan (WMP) shall be prepared by the contractors and submitted to the UTG for review and approval. Project specific WMP prepared by the PIU Consultant on behalf of the UTG is presented in Appendix-C to give requirements of such plan to be prepared by the contractors. It should be noted that dismantled pipes will be the property of UTG rather than waste to be disposed and will be stored in the stockyards proposed by the UTG.

The following key steps need to be addressed in the WMP:

- Roles and responsibilities - different individuals may be responsible during the various stages of the Project. These individuals must be identified for each task and responsibilities. They will be required to hold sufficient authority to ensure compliance with the WMP by other site operatives;
- Identify the types and quantities of waste - all waste streams that will be produced during construction, operation and decommissioning require to be identified (please refer to the national EIA Reports for this purpose since detailed estimations on the waste amounts based on the design figures and construction organization made by the design company in the scope of the engineering works at that time);
- Hazardous Classes - Hazardous wastes should be classified according to the requirements of the EU Hazardous Waste Directive classification system and National Code on Waste of Ukraine;
- Identify waste management options - a waste hierarchy for on and off-site options needs to be prepared. Where hazardous wastes are being generated, particular attention to the arrangements for identifying and managing such waste will need to be addressed and procedures put in place;
- Provide temporary waste collection and storage facilities and ensure waste collection containers are clearly labelled and waste is segregated.
- Identify and audit waste management sites - the location of waste management sites will need to be identified, ideally the most local sites should be used to minimize transportation costs. It is important that legal contracts are in place when using waste disposal contractors and waste disposal contractors are licensed and comply with the legal responsibilities of the local and national area (for this item, also refer to the national EIA reports in order to understand the existing waste management infrastructure and the pertinent authorities as well as service companies if any in the region) and Lenders/EU standards;
- Training - all staff must be trained to ensure they understand the requirements of the WMP and their responsibilities therein, this includes in-house teams and sub-contractors - procedures for doing this should be set out in the WMP;
- Plan - using the steps above, establish indicative percentages of the waste quantities to be produced over the life span of the Project construction phase;
- Measures - the quantities of wastes produced should be recorded and documented on a monthly basis, and where possible measures taken to re-use, reduce or recycle waste as appropriate; and

Commented [AB71]: What?

Commented [GÖ72]: Corrected

- Monitor - throughout the Project construction phase, waste management on site should be monitored, to ensure compliance with the WMP.

To support the production of the WMP's it is proposed that the construction contractors and the UTG consult and coordinate with relevant administrative divisions to assist in identifying recycling and re-use opportunities during the project development stage.

Project Emergency Response Plan

Emergency response procedures identify preventive actions and the methods and approaches for handling the accidents/incidents. Comprehensive plans will be documented that address each potential accident, and issued to all relevant managers. These should follow a standard format comprising of the following:

- Title;
- Details of Crisis Management Team;
- List of contacts with external organizations (names, address, telephone numbers) and individual responsibilities for making these contacts;
- List of individual responsibilities under the headings;
- Preparation in the event of an accident;
- Actions during the emergency;
- Actions after the emergency; and
- Sources of necessary information and locations of the pollution control facilities.

The Emergency and Response Plan should be integrated with any fire fighting and safety response plan required by the national legislation. Any environmental incidents must be dealt effectively and immediately. Spill kits will be available at all worksite locations (e.g. in locations where fuels, oils and chemicals are stored and used) where spills may occur and found to be critical as a result of a risk assessment to be done by the Contractor prior to the construction works. Construction workforce will be trained to identify report and deal with incidents, including cleanup of spills as part of the work induction program. An incident reporting form will need to be completed whenever there is an incident that requires action.

In any major incident, the Construction Manager at site should take direct responsibility, supported by the managers responsible for environment, safety, security, public relations and the department where the accident has occurred. The HSE Manager(s) (along with all other potential team members) should be fully aware of their responsibilities beforehand. It must also be understood that environmental concerns will in certain circumstances take sub-ordinate priority to the protection of human life and property.

Security Management Plan

A management plan for security personnel will be developed and implemented by the Contractors, outlining expectations around security, in line with UN Voluntary Principles on Security and Human Rights (VPSHR), the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials, the UN Code of Conduct for Law Enforcement Officials and the International Code of Conduct on Private Security Providers, there maintaining the safety and security of assets and persons on the EIB-financed operation within a framework that ensures respect for human rights and fundamental freedoms.

- The grievance mechanism for the Project will capture all grievances raised in relation to security and safety issues. These will be addressed promptly and actions will be taken. Grievances will be analysed on a regular basis to identify recurrent trends and assess the effectiveness of the grievance resolution measures; and summary of grievances will be provided to stakeholders

- Measures will be taken to discourage un-authorised third-party entry onto the construction site during construction. This will cover fencing and requirement for identity cards to enter the site.
- Engagement activities prior to construction will ensure that local stakeholders are informed of the risks and consequences of entering the site.
- Security personnel will patrol the site area to prevent any unauthorized access onto the site. They will also ensure that protocols for entering the construction site are enforced.
- Contractors' security team must pass through training on conflict management if they will be equipped with firearms.

Reinstatement / Recultivation Plan

Introduction

Reinstatement or recultivation is a regulatory requirement in Ukraine with the following statement in Regulation on Land Reclamation, Preservation and Rational Use of Topsoil and Soil in the Development of Minerals Exploration, Construction and Other Works, revised in 1991 (still in force).

- "*Companies, organizations and institutions that develop mineral deposits, conduct exploration and surveys or construction and other works in agricultural land or forest land, or require to pass these lands, they are responsible to bring these lands to conditions suitable for its original use in agriculture, forestry or fisheries at their own expense.*"

Minimization of adverse impacts from the proposed activity on the subsoil shall be ensured by reinstatement or recultivation as titled in Ukraine, i.e. a set of measures aimed at restoring the national economic performance, the value of disturbed lands, and the improvement of environmental conditions (as defined in the national EIA reports in Ukraine). The reinstatement strategy is based on the following principles:

- Areas disturbed by pipeline construction activities will be restored to pre-construction conditions (e.g., contours) to the greatest extent possible;
- There will be no adverse impacts on sensitive habitats outside of the RoW as a result of construction activities, in particular when forming cuts on side slopes;
- Soils in disturbed areas will be stabilized, using both temporary and permanent controls, to protect the integrity of the pipeline and minimize potential sediment and erosion impacts;
- Topsoil will be handled and stored to retain soil structure, viability of its natural seed bank, and its fertility;
- Topsoil and subsoil operations will be carried out in a way which minimizes the risk of soil loss down slopes and into watercourses;
- Bio-restoration of disturbed areas will be to conditions similar to the immediately adjacent off-RoW, and will be undertaken in order to:

  (a) restore the ecology existing before construction, particularly the variety and distribution pattern of plant species, using indigenous flora,
  (b) establish sufficient vegetative cover to minimize erosion and meet the performance target of better restoration of the local plant community.
- Surplus excavated material will be disposed of in an environmental manner; and
- Reinstatement activities will be monitored until environmental requirements and goals will be achieved.

Initial basis for the development activities on land reclamation/reinstatement shall be:

- Land and forestry legislation of Ukraine;

- The rules of land allotment;[6]
- Standard of "Ukrtransgaz";[7]
- Institutional building codes;[8] and
- Materials of engineering researches.

The followings are the summary of the estimated area sizes of the sections to be reinstated for all sections, contractors need to recalculated the area sizes while preparing the section specific Reinstatement Plans:

- In Section 1, the design of the capital repairing for the UPU envisages land recultivation (reinstatement) area of 139.603 ha.
- In Section 2, the design of the capital repairing for the UPU envisages land recultivation (reinstatement) area of 306.922 ha.
- In Section 3, the design of the capital repairing for UPU envisages land recultivation (reinstatement) area of 144.0848 ha.
- In Section 4, the design of the capital repairing for UPU envisages land recultivation (reinstatement) area size of 103.566 ha.

For the areas of works according to materials of engineering survey engineering-geological section is presented by a floral layer, back-filling soil (heavy, dusty, semi-solid, tough clay loam), heavy, dusty, tough clay loam. Impacts on the subsoil during the overhaul of the pipeline will include:

- Temporary mechanical imbalance during excavation;
- Replacement of natural soil in the trench with sand as a basis for laying the pipeline;
- Possible local contamination of easement (RoW) with waste from construction machinery, household waste and petroleum products.

Disturbed lands mean lands that have lost their economic value as a result of the planned activities or are the consequences of adverse environmental impacts in connection with man-made terrain, changes in the hydrological regime and the nature of the subsoil with full or partial loss of fertility. In order to prevent these adverse impacts, reinstatement / recultivation planning and implementation is needed. The Contractors will prepare their site-specific reinstatement plans and send for the approval of the UTG prior to the start of the construction works.

Methods of Land Recultivation

The return of disturbed land to its condition prior to construction shall be achieved by a consistent implementation of technical and biological recultivation measures in Ukrainian practice.

- "**Technical Recultivation**": In general, technical recultivation involves the preparation of lands for biological recultivation and includes:
  - Removal, storage and preservation of topsoil (potentially fertile layer), its transportation if necessary to a new site; selective (layer-by-layer) forming piles;

[6] *Sanitary Standards 452-73. Norms of allotment (acquisition) of land for gas pipelines.*

[7] *Standards Institution 320.300019801.088-2003 "Reclamation of land, protection of flora and fauna in the construction and operation of the transmission system", "Ukrtransgaz", 2003.*

[8] *Institutional Construction Codes of Ukraine B.2.3-00013741-07:2007 Main pipelines. Construction, Earthworks (Excavation) and Reclamation.*

- Planning works on flattening of slopes and hollows, leveling of disturbed lands; coating the recultivated topsoil with subsoil or layers suitable for forming thicker recultivating layer;
- Woodland conservation, drainage and land clearance operations; and
- Cleaning of stones; removal of bumps, etc.

Technical recultivation is carried out either simultaneously with the execution of construction and other works involving disturbance of land or after these works. Technical recultivation shall be performed by the contractors.

Depending on the type of design, technical recultivation has the following features:

Route of the Pipeline

Land recultivation shall be carried out in the following order:

- The removal of topsoil from the area, transport to a temporary dump by bulldozers;
- Trench excavation is performed by excavator with the mineral soil laying to the temporary land allotment area;
- After completion of the overhaul of pipes and installing them on the track, pipeline in the trench shall be covered by mineral soil by bulldozers and compacted by pneumo-rollers or crawler tractors;
- The excess mineral soil shall be allocated along the recultivation area using the longitudinal passages by bulldozers or graders and shall be further compacted by bulldozers;
- Return of the topsoil by bulldozers shall be performed in longitudinal passages.

Upon removal, transporting and storage of fertile topsoil, it's mixing with underlying rocks and pollution with liquids or solid bulk materials shall be forbidden. Upon the pipeline overhaul completion throughout the construction zone before the return of the removed fertile soil, the following measures shall be taken:

- Removal of all temporary facilities and structures;
- Backfilling and layer-by-layer tamping or surfacing the hollows and pits unexpectedly arisen as a result of violation of working regulations;
- Cleaning of construction wastes;
- Selective removal of soils in places where unexpected contamination by oil products and other substances deteriorating fertility occurs;
- The PIU together with its supervisory consultants shall check the topsoil readiness for its return;
- Return the soil to its original place, testing the quality of works and executing the relevant act.

The volumes of technical recultivation works within the linear pipeline portion are shown in the national EIA Reports.

Site Facilities along the Pipeline

- Removal of fertile topsoil from the area of vertical planning and its moving to the storage area free from buildings and communications section planting fast-growing grass;
- Construction and installation of design provided facilities, utilities, etc.;
- Stacking of mineral soil according to the vertical planning areas;
- Construction of roads, platforms and walkways;

Commented [AB73]: What is the vertical planning area?

Commented [GÖ74]: See above response

- Final planning of planting areas before returning the topsoil;
- Return of topsoil from the storage areas to the planting areas with leveling, planning and compacting.

Scraping and removal of topsoil shall be performed by bulldozers; direction of transporting to the dump pit and further return of fertile soil from the storage area shall be determined on the basis of the relative position between original location and dump pit.

- "**Biological Recultivation**": Biological recultivation is aimed at restoring the soil fertility and shall be executed after the technical recultivation. It includes a set of agronomic and other measures to restore the soil fertility for reproductive farmlands. Typically such measures are:
  - Plowing or other type of mechanical tillage;
  - Enriching with mineral and organic fertilizers;
  - Fixing the surface layer of soil by planting perennial or fast-growing grass (crops).

  Biological recultivation shall be carried out by the permanent land users for agricultural lands along the pipeline sections.

  Areas outside of the arable fields will be biorecultivated. The volume of work on the biological recultivation is presented in the national EIA Reports.

  Based on designed volumes for the overhaul of pipeline, the design provides for enriching with mineral fertilizers in the form of ammonium sulfate and organic fertilizers in the form of compost. These recommendation together with the estimated amounts of the substances to be used are presented in each EIA Report of the pipeline sections of interest. According to approved EIA Reports, this complex of fertilizers is the most appropriate for the restoration of reclaimed land fertility. To prevent erosion certain amounts of fast-growing grass seeds shall be sown in non-agricultural areas.

Timing of the Reinstatement Works

The fertile soil has to be removed usually in the before the soil freezes (prior to winter or after winter). If necessary during the winter season, it is necessary to remove and settle it in the storage area in advance (before freezing).

After completion of the overhaul and during the warm season the fertile soil shall be returned from the stockpiles along the route to its original location.

Work on the removal and restoration of topsoil (technical recultivation) shall be carried out by the construction company.

Restoring of soil fertility (fertilizing, plowing and other agricultural works, i.e. biological recultivation) shall be carried out by the permanent land users.

The transfer of the restored lands shall be recorded in due course with the participation of the land users, the construction contractor, agricultural and administrative authorities controlling the use of land.

Biodiversity Management / Action Plan

Main impact on plant species will occur due to the vegetation removal for clearance of the route and topsoil stripping as well as opening additional access roads and establishment of camps. Disturbance on the plant communities at the close distance to the line; soil contamination due to the improper disposal of construction wastes and/or construction machineries' used oil; undesired compaction of the soil layers due to the movements of the construction heavy machineries causing slow growth of plants during the reinstatement period can be also considered other potential impacts of such pipeline construction activities.

The followings are some of the proposed actions to be taken in order to manage the impacts on biodiversity and to take into account while preparing site specific biodiversity action/management plan (*in particular, Section 2 possesses additional importance due to the new line construction in comparison to the other sections where the existing line will be replaced with the new pipeline and hence, there is a special biodiversity survey report prepared by academicians of Ukraine for Section 2 and presented as Appendix-C of the Rapid Biodiversity Impact Assessment (BIA) Report (SYP-GEN-ENV-BIA-001-8). In the same report (i.e. Rapid BIA), there are habitat maps, which show different habitat groups crossed by the pipeline sections. The national protected area "Dacha Galilei Forest Reserve" in Section 4 is another important biodiversity feature of the route and its detailed biodiversity survey report (SYP-GEN-ENV-BIA-002-4) is given in Appendix-D of the Rapid BIA. The Rapid BIA together with its appendices will be provided to the Contractors for taking the necessary measures during their reinstatement planning and biodiversity management planning*):

- A site walkover will be undertaken by the biologists prior to works commencing to verify no features requiring special attention;
- Identify all trees for removal in support of future re-planting requirements;
- Keep the corridor width as narrow as possible without threating the occupational safety of the workers in the areas sensitive in terms of ecological values such as forests and river crossings;
- Prefer the use of existing access roads to reach the construction corridor rather than constructing new access roads;
- Please prepare proper reinstatement plans to have better biorestoration in special habitats;
- Consider to translocate and/or collect seeds of plant species from the construction corridor and its vicinity to use them during the reinstatement (biorestoration).
- In Section 2, while preparing the reinstatement plans for forest and marshland crossings please use the biodiversity assessment report prepared by ecological experts in 2016. Please note that most of the findings are applicable for the other sections since the bioregion of the all sections are the same type.
- Train the construction workers who will work in the sensitive areas in terms of ecological awareness and not to do items.
- Please avoid using invasive plant species that are brought from other localities.
- Consider the erosion prevention techniques to protect the soil and hence allow a better performance of biorestoration.
- Avoid habitat fragmentation as much as possible. For instance, as the trees will not be allowed to grow in the corridor along the route, in order to minimize the habitat fragmentation consider growth of bush type of plant species (forming ecological corridors in between two segments of habitat), which are already in the region.

4.3.2. Social Supporting Management Plans

Temporary and permanent land requirement and construction related impacts of the Project are considered as the main sources that need specific management.

The Contractors will establish their own Environmental and Social Management System (ESMS) in compliance with the requirements of ISO 14001:2004 Environmental Management System and shall ensure that all relevant mitigation measures identified in the national EIA, international rapid impact assessments such as Rapid Biodiversity Impact Assessment, Rapid Water Resources Impact Assessment, Rapid Social Impact Assessment, Stakeholder Engagement Plan (SEP), Land Acquisition and Compensation Framework, Section Specific Land Acquisition and

Compensation Management Plans, Human Resource Policy, Local Procurement Plan, Employee Training Plan and Workers Accommodation Plan.

The following management plans and policies will address the mitigation measures to eliminate or minimize social impacts:

- Community Relations Plan to be prepared by Contractor using SEP as a basis;
- Community Health and Safety Management Plan to be prepared by Contractor using SEP and HSS plans;
- Employee Training Plan (ETP) to be prepared by Contractor using the existing ETP (see Appendix-D) prepared by UTG;
- Human Resources Policy including Workers Grievance Mechanism to be prepared by Contractor using the existing HR policy (see Appendix-E) prepared by UTG as a frame
- Workers Accommodation Plan (WAP) to be prepared by Contractor using the existing one (see Appendix-F) prepare by UTG as a basis;
- Local Procurement and Supply Chain Management Plan (LPSCMP) using the existing one (see Appendix-G) prepared by UTG;
- Land Acquisition and Compensation Framework (LACF) and the section specific management plans (LACP's) prepared by UTG and presented in Appendix-H (no need for Contractor to prepare).

Community Relations Plan (*using SEP as basis****)***

Community Relations Plan that will be prepared by the Contractors will be directly linked with the Stakeholder Engagement Plan (SYP-GEN-SOC-PLN-002-0), which presents consultation and engagement process for the Project (see Appendix-I). It outlines a systematic approach to stakeholder engagement that will help Uktransgaz develop and maintain constructive relationships with their stakeholders throughout the Project lifetime including planning, construction and operations.

Roles and Responsibilities

UTG will provide Contractors this SEP within the ESMMP and each Contractor will prepare their own site specific Community Relations Management Plan and provide training on CRM to all their employees. Training process will be monitored by UTG.

Contractor will also ensure implementation of CRM by subcontractor and CLO team of contractor will monitor this process.

Prior to Operational Phase of the Project, the Contractor will organize community meetings to introduce social team and present brief information about general health, safety and security issues.

Requirements for Community Relations Management:

There are seven CLOs to be appointed under the Project: Chief CLO, working at the UTG Administration, who will be mostly responsible for implementing the Stakeholder Engagement Plan, and two local CLOs appointed from the branch employees of the Directorate for construction and rehabilitation of the gas transport system – the first one shall be responsible for the eastern Sections of the Project ("Romny – Grebinky" and "Grebinky – Sofiivka") and reconstruction of the Romny CS, and the second one – for the western Sections of the Project ("Bar – Gusiatyn" and "Gusiatyn – Bogorodchany"), as indicated in Figure 5-1 above. Each contractor that will be responsible for the construction will have a separate CLOs to deal will the pre-construction, construction and reinstatement issues.

The main function of the abovementioned CLOs is to establish connections and interact with stakeholders, and participate in the grievance mechanism during construction and operation.

Local CLOs have to work directly at the Project site (mainly in the construction areas) to ensure their accessibility to the local stakeholders.

Duties and responsibilities of the Chief CLO:

- *Interaction with the top-level stakeholders (central executive authorities, representatives of IFOs, NJSC Naftogaz, etc.)*
- *Coordination and support of the local CLOs.*
- *Coordination and monitoring of implementation of the stakeholder interaction program under the Stakeholder Engagement Plan. Development of measures to improve cooperation with the stakeholders.*
- *Disclosure of the Project information, particularly regarding interaction with stakeholders (publications on the corporate website, in UTG publications, in the corporate brochures, etc.)*
- *Responsibility to handle complaints/comments, submitted to the UTG Administration, and respond to any of such complaints/comments.*
- *General responsibility for grievance handling.*
- *Summarizing appeals and decisions taken on complaints after the consultation period. Writing a summary report published on the UTG website.*

Duties and responsibilities of the local CLO:

- *Attends meetings of district and village councils (if necessary), meets non-governmental organizations.*
- *Collaborates with internal (PIU team, PIU consultants, contractors) and external stakeholders (rural residents, village heads, village and district councils, non-governmental organizations, local authorities, including licensing authorities, etc.) in order to create effective communication and strengthen relations;*
- *Recommends appropriate measures/action plan as a result of interaction with external stakeholders, ensuring effective communication to achieve strategic goals and tasks.*
- *In collaboration with the Chief CLO at the UTG Administration, local CLO develops, plans and/or coordinates different systems of measures (for example, measures for interaction with public, mass media, etc.) aimed at strengthening relations with communities, improving effectiveness of public relations under the Project and promoting positive overall image of UTG.*
- *In cooperation with the Chief CLO and PIU Head develops measures to improve Stakeholder Engagement Plan (SEP) and forecast future demands of a district or a community in order to ensure feedback from external stakeholders.*
- *Provides information on security to public organizations and schools, as required by the Environmental and Social Action Plan, before construction begins and the movement of trucks and / or construction equipment increases.*
- *Visits citizens to improve environmental and social awareness and prevent any emergencies or accidents. In addition, the staff of the Public Relations and Press Department of the UTG Administration may also participate in regular meetings of the community.*

- *Bears responsibility for handling complaints. Reports on available complaints from the local stakeholders, in accordance with the Complaints Register, to the Chief CLO, and helps to find a solution to the complaints.*
- *Facilitates promotion of various district and school programs (aimed to achieve good health and safety level in terms of, for example, traffic management) and activities (for example, public relations programs, school meetings, etc.) to communicate with internal and external stakeholders.*
- *Prepares and delivers written and verbal messages to various stakeholders to identify issues and recommendations, and acts as a representative of the UTG in local community relations.*
- *Recommends various communication mechanisms for communicating with stakeholders to develop a creative and innovative approach aimed at clear and precise reflection of the activities according to goals and objectives.*
- *Sharing all information, messages and notices related to his level engagement and contacts (for the Project purposes only).*

Duties and Responsibilities of Contractor CLO

- *To introduce Grievance Mechanism to the affected communities and the Project workers through regular meetings;*
- *To record all grievances including reached by e mail, verbal, phone or letter;*
- *To check the registration of verbal or written complaints received by other personnel;*
- *Informing the complainant about the situation of the complaint and recording progress;*
- *Make sure your complaints are recorded in appropriate way;*
- *To follow the process of the grievance from beginning till the end of the closure by considering the time schedule*
- *Informing the complainant in the manner specified in the Grievance Mechanism,*
- *To supervise the complaints management process by guiding the public relations team on the resolution of complaints;*
- *To decide on corrective actions if necessary, to discuss with third parties where this is not the case;*
- *Ensuring that third parties perform all necessary actions to resolve the complaint;*
- *Ensure that all parties have agreed on corrective action in the solution process; and*
- *To ensure about the management of the complaints of the sub-contractors.*

Monitoring:

Key monitoring measures are set out below,

Table 4-13. Key Monitoring Measures of Community Relations

Topic/ Aspects	Methods	Responsible Parties	Frequency

Grievances	UTG will review Grievance Log/Database, including complaints closed and those unresolved per period (at a minimum monthly but more likely as they occur) to include: • Number of outstanding complaints and grievances opened in the month; • Number of complaints and grievances opened in the month • Number of complaints grievances closed in the month; • Recurrent trends of grievances and • Type of grievance. The CLO team will provide regular reporting back to the community on the treatment of community grievances (including the type of grievance, how they have been addressed and the outcomes arising).	CLO team	Monthly
Community engagement activities	Community Liaison Officers record formal and informal engagement with local communities.	CLO team	Monthly
Disclosure materials disseminated	Community relations staff will keep records of the types of leaflets, brochures, newsletters prepared and distributed, by location	CLO team	Biannually
Feedback to local communities	The Community Relations team will monitor feedback to local communities	CLO team	Biannually

Community Safety Management Plan

Purpose and Scope

The aim of this plan is to protect Project workers and local communities during the construction activities. Community safety plan is directly linked with the emergency response, traffic management employment training, waste management and community relations' plans.

Roles and Responsibilities

As stated in other management plans all contractors will adapt this framework into their site specific management plans. All contractors are responsible to update their plans according to changings conditions of their working environment.

Specific roles and responsibilities in CSMP are given below:

- CSMPs of the contractor's will meet minimum requirements of internal system of UTG which is in compliance with the Laws of Ukraine on Pipeline Transport, Oil and Gas, Security Activity, and Security Rules for Main Pipelines (no:1747 dated November 16).

- UTG will control the implementation of the CSMP and H&S procedures by the Contractors in compliance with the existing internal system of UTG,
- Emergency systems will be included in the pipeline design,
- Contractors will be responsible for informing its employees on the requirements of the CSMP and H&S procedures,
- Contractors will be controlling the performance of all subcontractors regard to this CSMP, the project-specific CSMP and procedures;
- Contractors will be responsible for producing reports,
- Contractors will communicate with the local authority for specific project activities such as; river, railway, road crossings,
- Contractors will bring the condition of the roads to the level before the start of construction in case of any damage to the road due to project activities. In line with this issue, Contractor must have photo records of the roads to be used prior to the start of works in order to have evidence against any claim of damage to the road that might be raised by locals,
- Contractors will perform medical surveillance among its workers and ensure medical examinations are done for workers performing health critical activities,
- Contractors will conduct soil analyze before the establishment of workers accommodation.
- All employees will be informed about communicable diseases.

Requirements for Community Safety Management

- Community safety management will have specific requirements according to different characteristics of construction area and contractor will consider conditions of the construction area will determine specific requirements and training and information needs of the communities.
- Security staff will be hired in order to ensure the security of the working areas.
- Health screening report will be provided by candidates during the recruitment process.
- Random drug and alcohol tests will be performed, recorded and audited.
- Health awareness training will be provided to workers periodically throughout the Project.
- Campsites will be provided with health facilities equipped to deal with emergency procedures including first aid equipment.
- First aid team will be determined and trained.
- Waste management plan of UTG will be implemented.
- Catering companies will be monitored.
- The crossings on the trenches will be made safe and recognizable, surrounded by fences and illuminated.
- Community members will be informed and consulted for the location of the crossing points, they will be informed on the H&S precautions and procedures through consultation meetings at the intervals defined in coordination with UTG as a minimum once a week where construction passes very close to settlement and once a month in a settlement located in 2 km corridor.
- Training will be delivered to community members for increasing the awareness on the project-induced hazards.

- Trainings will be provided to the adults and children in the settlement areas along and around the pipeline route in order to increase traffic awareness within the scope of the Traffic Management Plan.
- Transport during nighttime should be avoided to the extent possible in order to prevent road accidents.
- All drivers will adhere to Project driving rules and appropriate training will be provided.
- Related Ukrainian legislation on speed limits depending on the type of vehicles and roads shall be obeyed. Project personnel should be warned/trained to be more sensitive while driving in or close to settlements.
- Local authorities and local communities will be informed and consulted on impacts on human H&S due to project activities and planned mitigation measures during the pre-construction and construction meetings and related Stakeholder Engagement Activities.
- Grievance Mechanism will be used for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable.
- Compensations to accidental damages caused by project activities will be determined according to the Grievance Management of UTG.
- Entrance to trenches and project areas will be prohibited with fence when the trenches are filled with water and appropriate signs to reduce human injuring risks; trespassing of fenced areas will be prohibited and security personnel will control these areas.
- Total length of the trench will not be more than 300 meter for the Section 1,3 and 4 and it will not be more than 3 km for Section-2.

Monitoring

The table below summarizes the key performance indicators and associated key monitoring actions that will be used to assess the progress and effectiveness of proposed mitigation strategies.

Table 4-14. Key Performance Indicators and Monitoring Actions (CSMP).

Topic	Indicator	Method	Periodicity	Location
Community Safety	Number of recorded security incidents involving UTG workers and members of the local population.	Security Record Grievance Records	Monthly	Affected communities
Traffic and transport	Number of community members involved in road safety training sessions.	Training Records	Before and after 3 months of start of construction – monthly; during construction - 3-monthly	Affected communities
Community health changes	District key health statistical analysis. Number of health promotion activities run with local community.	Baseline info from local authorities HSE Records	3-monthly	Affected communities

Topic	Indicator	Method	Periodicity	Location
Health service capacity	Number of training sessions runs with local health service providers.	Training Records HSE Records	6-monthly	Affected communities
Community contact with hazardous materials	Review results of pollutants, water quality and quantity, noise and vibration, hazardous chemical substances and visual intrusion monitoring as per support management plans.	Water quality survey records	Monthly	Affected communities
Emergency Prevention, Preparedness and Response Plan	Project will implement the relevant Emergency Response Plans	Review and update of management Plan	As stated in Emergency Prevention, Preparedness and Response Plan	Mine affected neighbourhoods Project areas.
Noise and Vibration	Noise measurements will be conducted at the sensitive receptors throughout construction stage. Where complaints are received related with noise emissions, measurement location will be added as necessary.	Grievance Records	Monthly	Affected communities
Community Security	Monitor the performance of security personnel through the use of a range of indicators.	Grievances mechanism, Contract reporting, Engagement between Contractor and Company CLO teams	Monthly	Project site

Commented [AB75]: Could you specify the frequency here to be consistent with the rest of the table and hold all required information in one document?

Local Procurement and Supply Management

Purpose and Scope

The Local Procurement and Supply Management (LPSM) will aim to maximize the local supply of products and services to be used during the construction phase of the Project in order to create positive impact on local economy and accessibility to goods and services of Contractor.

All Contractors would fulfill these requirements defined in this LPSM by adapting them to their own operations. Each Contractor must develop their own PSMP prior to construction and then develop the site specific and project-specific plans and procedures, which explain the way to implement the requirements of this plan.

Roles and Responsibilities

- UTG will monitor the Contractors on local procurement and supply;
- UTG developed prequalification criteria for the evaluation of the main contractors that would refer to their Environmental, Health, Safety and Social performances and all selection process of contractors and local subcontractors will be conducted according to these specifications;

- Contractors will maximize the local provision of products and services;
- Contractors will implement a fair and transparent bidding system for product and service procurements;
- Contractors will develop prequalification criteria for the evaluation of the main sub-contractors that would refer to their Environmental, Health, Safety and Social performances which will be adopted from UTG's E&S Specifications;
- Contractors will ensure that all plans developed by UTG are implemented;
- Contractors will keep records of supply and provision practices; and
- Contractors will report regularly to UTG.

Requirements for Procurement and Supply Management

- The bidding system to be implemented for the product and service procurements will be transparent, compliant with UTG transparency policy and fair;
- Local supply of products and services would be prioritized;
- Information on procurement opportunities will be given to local businesses, through communication with Oblast Authorities and Village Councils;
- All contractors and subcontractors will have to comply with UTG Policies for their procurement activities; and
- A Grievance Mechanism will be established for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable by the parties.

Monitoring

The table below summarizes the key performance indicators and associated key monitoring actions that will be used to assess the progress and effectiveness of this management plan.

Table 4-15. Key Performance Indicators

Procurement and Supply Management KPI	Period	Target
% of goods procured locally (village, district or province affected by pipeline)	Monthly	N/A
% of services that are procured locally (village, district or province affected by pipeline	Monthly	N/A
# of complaints relating to the procurement process Measure Quarterly N/A	Monthly	N/A
# of complaints received from suppliers regarding payment from contractors for goods or services	Monthly	Negative trend

Employee Training Plan

Purpose and Scope

Section specific employment and training management plan will be established and implemented during the construction phase by Contractor and this plan will be monitored by UTG.

The aim of this plan should be raise local employment opportunities and enhance skills of local labor force in accordance with legislative requirements. The plan will take into consideration Ukrainian legislation; international practices and core conventions of ILO and it will address the following issues at minimum:

- Equal opportunity of workers;

- Non-discrimination (ethnic, gender, religion, sexual orientation);
- Implementation of grievance mechanism;
- Avoid child labor and forced labor;
- Implementation of health and safety requirements; and
- Monitoring of supply chain on above-mentioned issues.

This plan will assure that local employment is maximized during the construction and operation phases of the project by setting local employment targets. This plan provides at this stage of the project a special focus on the land preparation and construction phase.

Accordingly, Employee Training Plan (ETP) will include the social commitments of the project. In addition Contractor is responsible to implement UTG's Human Resource Policy, workers' contract, and job application form. The contractor will prepare an employment strategy to understand what work skills are available locally and what actions should be implemented to increase local employment opportunities.

The recruitment processes of the Project will be transparent, public and non-discriminatory, providing equal opportunities with respect to ethnicity, religion, language, gender and sexual orientation.

The Contractors will regularly update their ETP as the project needs change or requirements are identified in detail. ETP will be developed by the Contractors will include:

- Identification of needs of the employment;
- Trainings needs of the personnel; and
- Maximizing local employment.

Roles and Responsibilities

- UTG will audit and inspect the implementation of ETP by the Contractors.
- UTG will provide clear information on the recruitment process. Village councils, public meetings and newspaper announcements will be used for the information sharing about labor requirement of UPU Project.
- Contractors will maximize the local employment for unskilled and semiskilled workforce and also make sure that there is non-discriminatory, transparent, open to all and fair recruitment process.
- Contractors will make sure all personnel receive the legally required trainings.

Requirements for Employee Training

- The recruitment process will be monitored by third party organizations or institutions to ensure that it is done according to UTG's HR Policy and commitments.
- Job descriptions will be clearly communicated in advance and will contain information on working conditions: duration, salary, working hours, conditions, skills required, etc.
- Two copies of contracts will be prepared in compliance with the existing legal requirements, will be signed mutually and a copy will be provided to the future employee.
- The temporary nature of work opportunities will be highlighted during all recruitment phases to ensure that people manage salary wisely and understand consequences of leaving a previous job or farming activities to work on the Project.

- Job vacancies created during the construction phase will be communicated locally through systems like those used during the recruitment process.
- Workers will receive work place and work-task specific training; a training program will be planned and implemented throughout the entire phases.
- Training will be provided by professional trainers or experienced employees. All employment records will be kept and provided to UTG as requested.
- Skill-based training will be defined and include work place and specific training.
- Before the start of work all employees will take compulsory training.
- The content of the induction training for the new employees will be defined.
- Training records will be kept.

Monitoring

The table below summarises the key performance indicators and associated key monitoring actions that will be used to assess the progress and effectiveness of this training plan.

Table 4-16. Key Performance Indicators

EMPLOYMENT KPI	Period	Target
# of worker grievances	Monthly	N/A
# of worker strikes	Monthly	N/A
Number of staff that take induction courses	Monthly	%100 of UTG and subcontractor staff
Number of foreign staff that take cultural awareness courses	Monthly	%100 of UTG and subcontractor staff
Total training duration in a month (hour)	Monthly	N/A

Human Resource Policy

Purpose and Scope

The aim of this document is to enhance some of the procedures and conditions and establish an active human resource management to meet with the quality and quantity requirements of UTG, its Contractors and their Subcontractors. UTG will ensure that Contractors and their subcontractors will comply with the requirements stipulated in this project specific HR Policy which is in line with the national legislation and international lender standards.

Roles and Responsibilities

HR Department will be the main responsible party during the implementation of the Workers Grievance Procedure in coordination with the other departments according to the nature of the grievance. Key roles and responsibilities during the implementation of the procedure are provided in Table 4-17 below.

Monitoring

HR team will conduct internal monitoring and the results of the monitoring will regularly reported to the Operational Manager who collects all the above stated feedback and reports the outcomes of the monitoring activity through monthly reports to Management. Reporting will cover items listed below:

- Reporting period will be weekly & monthly basis,
- Social KPIs will be included,

- Grievances related to recruitment process,
- Worker grievances - open, closed, number per category,
- Number of demobilizations,
- Number of women workers at the offices.
- UTG will prepare quarterly reports that will include the above stated records.
- Project will prepare monthly reports that will include the above stated records.

The monitoring measures that are to be implemented to assess compliance with Project Standards are described in the Table below.

Table 4-17 Roles and Responsibilities During Grievance Management Process

Entity	General Role & Responsibility
General Manager	Ensures that this Procedure implemented Provides necessary resources for proper implementation of this Procedure
Operational Manager	Ensures that this Procedure implemented Provides necessary resources for proper implementation of this Procedure Coordinates with parties for proper implementation of this Procedure
Human Resources Department	Implements and improves this Procedure Determines necessary resources for proper implementation of this Procedure and submits to his line managers Will evaluate the compliance with laws, regulations, Will search the causes of the grievance Expedites, monitors, follows up HR for proper implementation of this Procedure Will monitor all complaints and ensure that all complaints are resolved and closed, Coordinates with parties for proper implementation of this Procedure Will create all necessary reporting to Management Implement this Procedure Ensure that all site staff, including Sub-Contractors worker's complaints process and resolutions comply with this Plan, Evaluate the compliance with laws, regulations and Project requirements with Legal departments, Inform to workers about contract details and legal rights, Participate & Support the audits that will be done by third party auditors. Follow procedures related of employment and training for site-specific issues Record general and local employment rates and processes Assure that salary payments of all employees (including its subcontractor employees) will be done on time, in compliance with the national legislations
Workers Union	The trade union is responsible for ensuring the implementation of the collective agreement, providing agreement for the disputes relating to the collective agreement with the related departments.
Other Departments	Comply with requirements of this Procedure
Contractors	Comply with requirements of this Procedure

Table 4-18 Key Monitoring Measures

ID	Topic	Indicator	Method	Periodicity	Location
1	Employment	Analysis of records of male/female workforce ratio, including those in managerial positions (supervisors and above)	HR Employment records (contracts, employee register)	Bi-Annual	Project site (and administrative office if different than site)
2	Employment	Number of worker grievances submitted, processed and resolved,	Grievance Records		Project site (and administrative office if different than site)
3	Training	Percentage of employees completing mandatory training as outlined in Personal Training Profiles and the Annual Training Plan	Training Records	Bi-Annual	Project site (and administrative office if different than site)
4	Policy Implementation	Number of cases of discrimination or harassment reported	Grievance Records	Bi-Annual	Project site (and administrative office if different than site)
5	Policy and Procedure Implementation	Review of procedure implementation records	Document Control Records	Bi-Annual	Project site (and administrative office if different than site)
6	Contractor Compliance	Review of records by UTG	Grievance Records	Quarterly (construction) Annual (operations)	Project site (and administrative office if different than site)

Table 4-19. KPIs of Complaint Management Procedure

Complaint Management	Type	Period	Target
% of HR personnel hired and deployed against the planned organization chart	KPI	Monthly	100%
Total of complaints, disputes and suggestions	Measure	Monthly	N/A
% of complaints that are responded within 10 days	KPI	Monthly	100%
% of complaints that are closed within 30 days.	KPI	Monthly	90%*
Number of workers strikes	KPI	Monthly	N/A
Number of demobilization	KPI	Monthly	N/A

Land Acquisition and Compensation Framework and Management Plans

Purpose and Scope

The purposes of the "Land Acquisition and Compensation Management Plan (LACMP) are to:

- define the scope of the Framework and set out applicable management interfaces;

- define land requirement of the Project;
- define roles and responsibilities;
- define UTG's approach to land acquisition and compensation;
- define agreement and management of compensation and entitlements;
- present implementation schedule;
- define Project commitments, operational procedures and guidance relevant to this Management Plan;
- define monitoring and reporting procedures, including Key Performance Indicators;

Roles and Responsibilities

Principal roles and responsibilities for the implementation of this plan are outlined in the Table below.

Table 4-20. Key Roles and Responsibilities

Names	Role	Responsibilities
• Mr. Fuzhenkov Oleksandr Ivanovych	Chief Engineer	1) Approval of calculations of compensations according to acts issued by district state administrations; 2) Obtaining of permit for topsoil removal;
• Mr. Fernebok Yevhen Yuriiovych	Head of Production and Technical Department	1) Land Entry; 2) Arrangement of procedure for selection of a land allocation documentation developer; 3) Support of documentation development procedure; 4) Method supervision over the procedure for registration of land use rights; 5) Arrangement of earthworks performance methodologies; 6) Payment for servitude agreements; 7) Payment of compensation for lost crops; and 8) Internal monitoring.
• Mr. Davydenko Valeriy Ivanovych	Leading engineer Community liaison officer	1) Negotiations with land users; 2) Holding of public hearings (within national legislation); 3) Public participation meetings (within social impact assessment survey); 4) Accepting lands from and delivering them back to land users; 5) Preparation of documents concerning compensation to land users; 6) Participation in meetings of district state administration commissions on calculation of compensation amounts; 7) Control over the adherence to quality, technology and completeness of earthworks during reclamation; and 8) Land entry.
• Mr. Bakalyna Valeriy Vitaliiovych	Surveying engineer Community liaison officer	1) Negotiations with land owners; 2) Preparation of land allocation documents; 3) Stipulation and registration of land servitude agreements; 4) Methodological support of procedure for registration of land use rights; 5) Negotiations with land users; 6) Holding of public hearings (within national legislation); 7) Community level surveys;

Names	Role	Responsibilities
		8) Public participation meetings (within social impact assessment survey); 9) Accepting lands from and delivering them back to land users; and 10) Land entry.
• Mr. Sotnyk Halyna Venedyktivna	Leading engineer of Production and Technical Department	1) Preparation of applications for servitude payment; 2) Preparation of applications for compensation.

Monitoring

UTG will regularly monitor the implementation of the land acquisition and compensation according to the indicator listed in Table 4-21. In addition to the internal monitoring an external independent third party compliance audit will be carried out the control the commitments provided in the LACF and site specific management plans in compliance with the EIB and EBRD requirements.

Table 4-21.. Key Performance Indicators

Input Indicators	Additional Notes	Frequency of measurement
Overall spending on land acquisition,	• Cash compensation, • Compensation of fisheries, • Costs of providing assistance, by type of assistance • Consultation and engagement cost • Costs of evaluators and surveyor • Costs of legal fees • Costs of taxes and registration fees • Costs of consultancy input • Costs of vehicles, computers, and so on • Other costs (and type).	Monthly
Number of employees and consultants involved to the process,	• Members of UTG land acquisition team • Members of other departments and sectors • Social workers • Skill trainers • Land acquisition consultants.	Monthly
Total number of land owners and land users,	• Initial data will be received through the cadastral records, • Updates will be made continuously as the implementation team • Identifies all owners/users/fisheries of all land plots (for example, through the management of grievances).	Monthly

Total number of private and governmental lands,	• Data will be received through cadastral records,	Monthly
Output Indicators		
Number of land plots for compensation agreements signed,	• The percentage should be calculated from the total number of affected land plots/houses/businesses, as identified by the census/survey.	Monthly
Number (and percentage) of land plots / businesses for which compensation agreements were refused/are still pending	• If possible, a breakdown of reasons why compensation agreements have been declined (or have still not been accepted) should be provided (land/ businesses).	Monthly
Number (and percentage) of owners/users who refused to sign compensation agreements/ are still deliberating	• If possible, a breakdown of reasons why compensation agreements have been declined (or have still not been accepted) should be provided (land/ businesses).	Monthly
Number (and percentage) of compensation agreements executed (compensation paid)	• The percentage should be calculated from the number of compensation agreements signed.	Monthly
Number of vulnerable persons/households assisted by the implementation team by type of assistance and by category (owners/users)	• Assistance to prepare ownership documents (monetary assistance, provision of information, legal aid, and so on) • Other assistance (and type)	Monthly

5 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Environmental and Social Monitoring Plan shall include monitoring activities to verify:

- Mitigation measures are effective; and
- Unforeseen negative impacts or trends are detected and addressed.

Monitoring shall focus upon key indicators of project performance and environmental impact, shall be aligned to the elements of the baseline conditions, and shall be specific, measurable, achievable, relevant, and periodic.

Some examples of Environmental and Social (E&S) Key Performance Indicators (KPIs) based on the outline of the applicable commitments in the national EIA Report and contractual requirements in line with the international lender safeguards are as follows:

- Compliance with the ESMS;
- E&S Incidents;
- Environmental Emissions (dust, noise);
- Waste Management;
- Water and Wastewater Management;
- Local Employment;
- Local Procurement;
- Project Related E&S Complaints; and
- Reinstatement.

The environmental and social monitoring plan shall meet the requirements of local authorities and conform to applicable environmental and social legislation and regulations related to the Project and the international lender requirements such as PR's of EBRD and PS's of WBG.

5.1. Environmental Monitoring Plan

Environmental inspection and monitoring during construction will include, but not limited to, the following parameters:

- Sediment control and water quality at watercourse crossings;
- Sewage/wastewater discharges;
- Drainage – including the effectiveness of both temporary drainage systems during construction and permanent drainage systems;
- Temporary and permanent erosion control;
- Marking of RoW and demarcation of important ecological and archaeological sites;
- Noise levels at sensitive receptors such as residential areas;
- Air emissions;
- Hydrotesting;
- Condition of soil storage areas and dust generation and control;
- Traffic movements and the condition of public highways and roads;
- Waste management procedures;
- Water consumption;
- Fuel storage and handling; and
- The storage and handling of hazardous chemical substances and additives.

In addition to the UTG's PIU audit or Supervision Engineering Consultant audit, internal audit by the Environmental Manager of the Contractor, any monitoring requirements specified by regulatory authorities will be fully complied with.

5.1.1. Preconstruction Surveys

Appropriate pre-construction surveys will be undertaken to ascertain the following:

- Pre-construction quality of temporary and permanent access roads;
- Presence, status and extent of ecological resources (in line with the requirements stipulated in the Biodiversity Assessment Survey Report for Section 2, national EIA reports for all four sections, and this ESMMP);
- Location and suitability of existing licensed quarries;
- Additional lay down/stock yard and camp areas requirements (environmental and social constraints consideration at the site – see Section 4.1 of the ESMMP);
- Existing damage to property potentially affected by construction activities;
- Pre-construction condition and existing property damage at staging areas.

5.1.2. Monitoring Program

It is neither necessary, nor practicable, to continuously monitor all potentially affected environmental parameters. Ultimately monitoring program is a compromise that can effectively serve to characterize existing environmental conditions and then, continue through construction and into operation to detect unacceptable changes. The sampling program will be designed in order to inform robust decision-making through the testing of the hypothesis that 'project construction activities have had no significant effect on environmental resources'.

The monitoring program, by systematic sampling, will assess the quantity and quality of project discharges and emissions to the resources. In general, monitoring data derived for noise, solid waste and air will be compared to project environmental standards (see Section 3.2.1 and 3.2.2). Monitoring data for receiving waters will be compared not only to the established standards, but also with upstream samples collected at the same time as downstream samples.

The following components will be included in the monitoring and the sampling plan defined for the project construction phase:

- Solid wastes that will be generated:
  - During the excavation activities in the form of construction debris;
  - At the construction camps from canteen and accommodation facilities;
  - At the construction sites in the form of excess construction material; packaging, discarded construction equipment tools and etc.
- Liquid wastes in the form of:
  - Wastewater treatment discharges;
  - Hydrotest water discharges;
  - Equipment and vehicle cleaning; and
  - Drainage from site.
- Air emissions in the form of dust generated during the construction and transportation activities
- Noise emissions from construction and transportation equipment

Construction monitoring program will clearly specify the following information for each element of the program:

- The legal requirements;
- Issue;
- Indicator (parameters to be monitored/sampled);
- Responsible person(s);
- Where, how often and when monitoring will take place;
- Collection standards;
- Recording and reporting requirements;
- Review and auditing requirements.

The monitoring results will be reported by Monthly Reports.

Construction monitoring will begin at the commencement of construction activities. The schedule for regular monitoring events will be site specific based upon the actual construction activities occurring in an area (for example, water quality monitoring will only be performed in rivers during periods when construction is taking). Monitoring will continue throughout the construction activity at that location, and the timing and number of samples may be modified to best characterize any affected environmental resources. Periodic monitoring after completion of a construction activity may be performed if required to demonstrate the return to pre-construction conditions (i.e., needs to be discussed with the UTG before taking a decision). It should be noted that the UTG has been carrying out a bioresource survey, which will cover the analyses of “the qualities of water bodies”; and “the quality of ambient air” and “background noise levels” at sensitive receptors (e.g., villages) and the quality of soils” that might be affected by the project. The results will be provided to the contractors prior to the start of the construction works as the evidence of the existing environmental conditions at the pipeline sections. This survey can be repeated by the Contractors at their own expenses.

5.1.3. Monitoring Methods

Monitoring program to be prepared by the Contractors and submitted within their Construction Environmental Management Plan (CEMP) to the UTG via Supervision Engineering Consultant or directly to the PIU, whichever is available at the time of the delivery, will specify the exact types, location, and schedule of specific monitoring. In general, the following monitoring methods will be utilized:

- Solid Wastes: Solid waste will be measured by weight or volume of the material transported to and from construction areas. The type of waste, such as inert, non-hazardous, hazardous, as well as the disposal method of the waste (e.g. deposit in landfill, re-use, other) will also be recorded as stipulated in the Waste Management Plan in Appendix-C of this ESMMP.
- Liquid Discharges: Receiving water potentially affected by construction will be sampled on a regular basis. The frequency of sampling will be dependent upon the particular construction activity.

  The domestic wastewater to be produced during land preparation and construction phase of the project shall be treated at the package wastewater treatment facility and after complying with the "national standards" to be provided with the water use permit and the “international standards” given in Section 3.2 (the most stringent ones of the same parameters will be applied), it will be discharged to the nearest receiving environment.

  Wastewater produced after the hydrostatic test shall be monitored for the requirements presented in the national EIA Reports and outlines in Section 4.1.1 of the ESMMP. In addition to the limits defined in RWPC, limit values determined by IFC (Environmental, Health, and Safety Guidelines for Onshore Oil and Gas Development) will also be respected.

Commented [AB76]: What about EU standards?

- Air Emissions: The primary air quality issue during the construction is dust. Dust monitoring will primarily be addressed through site inspection to ensure that good site practice with respect to dust control is being effectively implemented on site. Dust sampling is not considered to be an effective means of monitoring dust during construction due to the delay between sampling and the receipt of sampling results. A more immediate means of identifying unacceptable levels of dust is required so that remedial measures can be implemented immediately. The level of dust generation during construction activities will constantly be assessed and appropriate mitigation measures (e.g., dust suppression via watering of unpaved roads) will be implemented as required.
- Noise: Noise will be monitored during various phases of construction. Noise monitoring will focus on those activities that have the greatest potential to generate nuisance due to the type of activity undertaken or due to the duration or timing of the activity. Noise monitoring will be performed at the construction activity areas in the proximity of sensitive areas (i.e. human receptors or ecologically sensitive areas). The results of the monitoring will then be immediately compared to the appropriate noise standard. If the standard is exceeded, additional mitigation measures will be implemented. Such measures may include the use of noise barriers, a change in equipment or method of working. The monitoring will then be repeated to confirm the adequacy of the measures implemented.

Commented [AB77]: Please specify what are the mitigation measures.

Key Performance Indicators

The monthly reports will include the results of the Key Performance indicators. The content of the monthly report will be approved by the UTG before the start of the construction activities.

The key performance indicators to be reported are mentioned in the above sections. Other E&S Key Performance Indicators that could be monitored in the monthly reports:

- Number of raised complaints and grievances on noise, dust, visual aesthetics, vibration, increased traffic, damages to local infrastructure and similar in reaction to project activities including the operation of barrow pits and quarries.
- Records of consultation and liaison with community
- Records of training topic, hours and attendees; completed for the reporting month and planned for the next month
- Percentages of Employees for the following groups: locals, women,
- MSDS Sheets
- Local employment ratios
- Local procurement ratios
- Recorded complaints and grievances on project vehicles and drivers
- Records of dust and noise monitoring
- Records of wastewater discharge quality analysis
- Records of groundwater withdrawal amounts, if any
- Records of amount of surface water use
- Records of vehicle emission certificates
- Records of revegetated areas
- Records of biorestoration results if applicable during the construction period
- Records of soil contamination remaining after construction
- Amount of removed or replaced soil

- Record of deviations from the delineated RoW and additional work areas
- Amount of water consumption records during hydrostatic testing
- Records of public access and use of watercourse crossing locations
- Records of changes to wildlife habitat
- Records of disturbances to sites of historical or cultural value during construction
- Records of public access to sites of historical or cultural value due to project

The following table is a typical monitoring plan/program table included in this kind of management and monitoring plans provided to the international lenders such as WBG. This table can be a good example for the contractors to prepare their site-specific monitoring programs to be included in the CEMP's.

Table 5-1. Monitoring Program (template)

Phase	**What** *parameter is to be monitored?*	**Where** *is the parameter to be monitored?*	**How** *is the parameter to be monitored/ type of monitoring equipment?*	**When** *is the parameter to be monitored-frequency of measurement or continuous?*	**Responsibility**
Construction	Excavated material disposal method, topsoil management	Excavation and storage sites	Site observation and document review whether or not disposal area and the method are approved by the pertinent local authority and the UTG.	Daily by the constructional staff	Contractor
Construction	Vegetative topsoil conditions (height of the storage-1. -2 m at max.)*	Excavation and storage sites	Site observation	Daily by the constructional staff	Contractor
Construction	Noise (Excavation and lay in works)	Nearest neighboring sensitive receptor	Noise measurement with a calibrated sound level meter	Monthly and especially during the activities that increase noise levels (measurements should be performed more frequently depending on the complaint of the public).	Contractor
Construction	Dust	Nearest neighboring sensitive receptor (ex. backyard of the nearest house)	Site observation and measurements with a PM_{10} device	Monthly measurements after the initiation of construction facilities and during the facilities that increase dust formation (measurements should be performed more frequently depending on the complaint of the public)	Contractor
Construction	Construction wastes disposal method	Excavation and storage sites	Site observation	Daily by the constructional staff	Contractor
Construction	Domestic solid waste disposal method	Construction and storage sites	Site observation	Monitoring of the domestic solid wastes will be defined in the WMP to be prepared by the Contractor.	Contractor
Construction	Domestic wastewater disposal method	Septic tank or treated via package wastewater treatment plant (WWTP)	Measurement of wastewater level in septic tanks or sampling and analyses of the discharged treated effluent	Daily by the constructional staff for septic tank Monthly for WWTP effluent analyses for required parameters by the authority	Contractor

* The methodology of these surveys / assessments will be outlined within the method statement and pertinent plans to be prepared by Contractors. Assessments will be undertaken by qualified and trained botanists / ecologists and will likely involve a combination of field surveys and remote sensing. During the Operational Phase of the Project, the continued effectiveness of the reinstatement will be monitored through the assessments of:

- Vegetation cover & diversity of reinstated areas;
- Species of conservation concern (SCC) flora monitoring;
- SCC Terrestrial fauna monitoring;
- SCC Aquatic fauna monitoring;
- Evaluation of Reforestation activities (including reforestation offset locations)

5.2. Social Monitoring Plan

Table 5-2 shows the proposed social monitoring plan and responsible parties for the monitoring activities.

Table 5-2. Social Monitoring Plan

Phase	Issue	Mitigation Measure	Monitoring	Institutional Responsibility
Construction	Influx Disruption to Local Communities	Hire as many unskilled workers as possible locally. In case non-local Ukrainian workers are hired these will be incentivised to live in District centres rather than in the villages surrounding the Project; A workers accommodation plan will be implemented şn compliance with IFC/EBRD worker accommodation guideline; HR policy will be implemented; Employee training plan will be implemented; Community grievance mechanism will be implemented; SEP will be implemented. Local Recruitment Plan will be implemented.	UTG will monitor all training records of the contractors, UTG will review Grievance Log/Database, including complaints closed and those unresolved per period (at a minimum monthly but more likely as they occur) to include: Number of outstanding complaints and grievances opened in the month; Number of complaints and grievances opened in the month and evolution since Project start (graphic presentation); Number of complaints grievances closed in the month; and Type of grievance.	UTG and CONTRACTOR
Construction	Increased Traffic	Traffic Management Plan (SYP-ENV-TMP-GEN-001-2) will be implemented during the construction phase of the Project; Compensating damages caused by an accident due to project activities according to national legislative requirements and the procedure given in the the Grievance Mechanism defined in the Stakeholder Engagement Plan (SEP) of the Project. UTG and its contractors will provide defensive driving trainings; A Grievance Mechanism Procedure will be set up for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable by the parties; The CLOs of the contractors will give awareness trainings to schools if there is a school located on the route of the roads that will be used. A community health and safety plan will be prepared by each contractors and in compliance with this plan all contractors will report all the safety incidents associated with construction traffic, nuisance, air quality and security.	Complaints regarding community safety issues will be recorded and resolved in accordance with the grievance mechanism as explained in SEP. Contractors will follow the following indicators monthly and submit it to UTG monthly, Number of community safety engagements, Number of safety incidents involving public. Number of community safety trainings done, Number of traffic or access related complaints received Number of traffic incidents. The grievance mechanism for the Project will capture all grievances raised in relation to security and safety issues. These will be addressed promptly and actions will be taken.	UTG and CONTRACTOR
Construction	Infectious Disease	Awareness raising trainings, health promotion activities, health scans of the employees will be ensured with the implementation of community health and safety plan that will be prepared by the contractors and the grievance mechanism prepared in the scope of the SEP will provide UTG feedback on community health and safety issue. UTG will be in collaboration with the local Health Agencies and emergency suppliers to prevent any public safety case Orientation training and occupational health and safety training will also cover topics related with infectious disease and STD. The Worker Code of Conduct will include, forbidding the use of prostitution, alcohol and drug sale and usage		
Construction	Security Around the Project Site	Measures will be taken to discourage entry onto the construction site during construction. This will cover fencing and requirement for identity cards to enter the site; Engagement activities prior to construction will ensure that local stakeholders are informed of the risks and consequences of entering the site; Security personnel will patrol the site area to prevent any unauthorized access onto the site.		
Construction	Occupational Health and Safety	Occupational Health and Safety Plan; Traffic management Plan, Code of Conduct, and Workers Accommodation Plan shall be prepared will be implemented by Contractor and its all subcontractors.	Procedures for ensuring plant is checked prior to use; Planned regime of health and safety inspections; Work activity observations; Pre-operation inspections of vehicles and plant; Inspection and testing of electrical equipment; Inspections of cranes and lifting equipment; Inspections of pressure vessels and pressure testing equipment; Inspections of emergency, first-aid, fire and spill control equipment; and Camp and amenities inspections.	UTG and CONTRACTOR

Phase	Issue	Mitigation Measure	Monitoring	Institutional Responsibility
Construction	Employment Opportunities	A Local Recruitment Plan will be prepared by UTG in compliance with the national requirements and IFI standards and this plan will be implemented by UTG and contractors. UTG and contractors will implement the HR policy prepared for the Project; UTG and contractors will implement the workers accommodation plan; UTG and contractors will implement the employee training plan; UTG and contractors will sign workers contract with the each individuals.	Grievances related to recruitment process, Worker grievances - open, closed, number per category, Number of demobilizations, Number of women workers at the offices. UTG will prepare quarterly reports that will include the above stated records. Project will prepare monthly reports that will include the above stated records. The monitoring measures that are to be implemented to assess compliance with Project Standards will include: Records and ratio of local employees; Analysis of records of male/female workforce ratio, including those in managerial positions (supervisors and above) Number of worker grievances submitted, processed and resolved, Percentage of employees completing mandatory training as outlined in Personal Training Profiles and the Annual Training Plan Number of cases of discrimination or harassment reported Review of procedure implementation records Review of records by UTG	UTG and CONTRACTOR
Construction	Impact on Fishing Activities	Information meeting in affected villages will be held about limitation in use of the ponds with their causes and timing shall be held at least 2 weeks before test activities; Spawning season should be taken into consideration for the timing of the test activities; Compensation expenses in accordance with the applicable legislation of Ukraine will be paid to the governmental authorities. This impact will be compensated according to the The Law of Ukraine on the Red Book lists the possible negative effects on the habitat of flora and fauna in terms of economic activity.	Total number of fisheries; Number of compensated fisheries and related authorities; Information disclosure materials before hyrotesting activities; and Records of information disclosure meetings.	UTG and CONTRACTOR
Construction	Local Procurement and Indirect Employment	An inventory of the local suppliers will be prepared by UTG and it will be provided to the contractors; Local Procurement and Supply Management Plan will be implemented.	Percentage of goods procured locally (village, district or province affected by pipeline) Percentage of services that are procured locally (village, district or province affected by pipeline Number of complaints relating to the procurement process Measure Quarterly N/A Number of complaints received from suppliers regarding payment from Contractors for goods or services	CONTRACTOR
Pre Construction	Economic Displacement of Land Owners	LACF and Site Specific LACMs will be implemented; Access to the other lands will not be prevented; The contractor will inform the landowners before the start of the construction works The contractor will decide the access routes and storage areas with the local communities not to prevent access to the other cultivated lands; All CLOs will be introduced to the all affected settlements and the CLOs will inform the villagers about the land acquisition, compensation and the grievance process. All grievances about the land acquisition and compensation will be recorded. UTG will inform Contractors in terms of the vulnerability level of the affected people in terms of land acquisition. During the recruitment process, priority will given to the households who has small land plots with the assistance of UTG.	The input monitoring process will be developed in compliance with the IFI requirements and the following monitoring measures will be taken into consideration of the monitoring process. Number of employees and consultants involved to the process, Total number of land owners and land users, Total number of private and governmental lands, and Total number of fisheries. Output Monitoring This monitoring process will be used to measure the results of the input process including; Number of land plots for compensation agreements signed, Number (and percentage) of owners/users who signed compensation agreements Number (and percentage) of land plots /houses/businesses for which compensation agreements were refused/are still pending Number (and percentage) of owners/users who refused to sign compensation agreements/ are still deliberating Number (and percentage) of compensation agreements executed (compensation paid) Number of persons/households assisted by the implementation team by	UTG
Pre Construction	Economic Displacement of Land Users	Land Acquisition and Compensation Framework and Section Specific Land Acquisition and Compensation Management Plans will be implemented. A Grievance procedure will be introduced to the affected enterprises and the procedure will be implemented throughout the construction phase; Reinstainment practices will be applied after the construction.		UTG
Construction	Damages on Crops	Any loss of or damage to crops caused by Project activities will be compensated. A Grievance Mechanism Procedure will be set up for communities and individuals to formally communicate their concerns, complaints and grievances and facilitate resolutions that are mutually acceptable by the parties;		

Commented [AB78]: What does this mean?

Commented [EK79]: Since it is considered as governmental water body, compensation of the fishes will be paid to related governmental authorities.

Phase	Issue	Mitigation Measure	Monitoring	Institutional Responsibility
Construction	Assess to Natural Sources	The local forestry will be notified not later than 60 days before the commencement of construction works. Local authority of the forestry will write an official letter to the representative of the village council and local CLOs will also inform the villagers. Villagers will be notified 30 days before the commencement of the construction works. UTG contractors will consider the firewood collection, herbs collection and hunting periods with the assistance of village heads. Dust management control measures will be implemented Noise and Vibration management control measures will be implemented An ecologist appointed by the Construction Contractor will perform pre-construction surveys in the areas prior to vegetation clearing. Topsoil will be separately stored at the site and used for progressive restoration and rehabilitation after contraction Traffic Management Plan will be implemented.	type of assistance and by category (owners/users) Input monitoring process will be developed in compliance with the IFI requirements and the following monitoring measures will be taken into consideration of the monitoring process, Number of compensated fisheries. Compensation records to forestry.	
Construction	Access to Grazing Lands	The UTG CLO will be responsible to coordinate with the local people and construction contractors to minimize access to the grazing areas. In order to prevent the access to grazing lands during pipe installation, a consultation should be held and appropriate gates will be provided according to the suggestions.		
Construction	Changes in Transportation Infrastructure	Communication with interested parties will be ensured including village schools, road administration and village heads for the pedestrian safety. Traffic management plan will be implemented, Regular maintenance will be implemented to the damaged roads.	The monitoring of the traffic activities during construction will be conducted by HSE Manager of the Contractor in coordination with Social Manager. Auditing records of vehicle maintenance, servicing, driver training, driver medicals, journey management forms, check calls, daily vehicle check list, night driving permits, safe pass cards, driver permit card will be carried out on a weekly and monthly basis.	UTG and CONTRACTOR
Construction	Visual Impacts	Although the impact is negligible site levelling will be avoided.	Monitoring of the visual impacts will be considered within the external Grievance Mechanism as indicated in the above Sections.	UTG and CONTRACTOR
Construction	Cultural Heritage	A chance finds procedure is prepared for the Project and it will be implemented for the all Project Sections. According to the this procedure; when a chance find happens during the excavation works, Contractor staff following the procedure given in this document must inform relevant parties. Cases of damage to, or disruption of, cultural heritage properties and actions taken.	Cultural heritage-related complaints and actions taken; The related department of UTG will conduct routine inspections of site activities in consultation with the Construction Manager and Operation Manager to assess the potential for chance finds at work sites and any other cultural heritage issues that may arise.	UTG and CONTRACTOR

6 PUBLIC CONSULTATION AND DISCLOSURE

This ESMMP will be disclosed to the public via posting on the official web sites of the UTG and pertinent lenders financing the project. Furthermore, a public hearing meeting campaign will be made in order to verbally disclose the project's E&S impacts and proposed measures to the possible project affected people inhabiting in the nearby villages. Details of Public Consultation and Disclosure planning related to the Project is outlined in the SEP (Doc# SYP-GEN-SOC-PLN-002-5).

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