ЗАМ, ТЭЭВРИЙН ХӨГЖЛИЙН ЯАМ

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ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR UGTAALTSAIDAM, TSEEL SOUM ROADS IN TUV AIMAG

Mongolia Transport Connectivity and Logistics Project

2021

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1. INTRODUCTION

Project Background Information

The Mongolia Transport Connectivity and Logistics Project aims to improve climate resilient transport connectivity and logistics efficiency for the meat value chain in Mongolia.

The proposed Mongolia Transport Connectivity and Logistics Improvement Project consists of a complementary set of interventions that address the three major drivers of logistics costs in the meat value chain—namely poor physical connectivity, lack of strategically located and efficient logistics hubs, and information asymmetry between the various actors in the supply chain. The project has four components. ***Subcomponent 1.2: Last-mile connectivity for local herders*** will finance the upgrading of approximately 127 km of high-priority local road sections that have been identified for interventions to improve last-mile connectivity, and detailed designs for total 75.97 km last-mile roads in Tseel and Ugtaaltsaidam soums in Tuv aimag are completed.

This ESMP will focus on ***Ugtaaltsaidam and Tseel soum last-mile connectivity roads.*** The detailed designs of these proposed roads are conducted be the Ministry of Road and Transport Development in 2018 under "The Local Road Development project at MRTD".

Table 1 Subcomponent 1.2: Last Mile Connectivity Road for Local Herders

Road	Availability of Detailed Design	Length (km)
Tseel, Tuv *aimag*	Yes	23.7
Ugtaaltsaidam, Tuv *aimag*	Yes	52.27
Total		75.97

These activities will improve local roads that link herdsmen to the national road network. In the context of Mongolia's meat supply chain, this final leg constitutes a major constraint for the livelihoods of herders but also crucially for the entire chain and drives costs for operators, processors, transporters, retailers, and exporters.

MRTD set a goal to connect all province centers to Ulaanbaatar city paved road. Currently 20 aimags and 105 soums are connected with paved roads. Local Road Project aims to connect 45 soums to aimag centers with paved roads to facilitate local communities to promote agricultural sector and promote economic growth, increase employment and quality livelihoods. (MRTD, 2021) In line with this goal, two last-mile roads, Ugtaaltsaidam and Tseel soums are proposed to be financed by the project.

While ESMP provides an important tool that can be used to measure and check, in a continuous mode, the efficacy of the mitigation measures and project commitments incorporated in the "ESMF for Mongolia Transport Connectivity and Logistics project" to minimize or eliminate identified negative impacts. The ESMF has been prepared the project, and as per Appendix 7: Subproject Environmental and Social Management Plan (ESMP), this **ESMP** provides guidance for specific subproject of **Ugtaaltsaidam and Tseel soum road sections in Tuv aimag** (Hereafter referred to as the Ugtaaltsaidam and Tseel road ESMP).

The subproject ESMP is based on detailed design report developed by "MCPC$_{gr}$ llc" in 2018 for the MRTD. All references are made to the specifications identified in the report.

ESMP Objectives and Framework

The ESMP outlines environmental and social guidelines to measure and achieve compliance with environmental and social protection and mitigation requirements of the construction of the new roads planned under Subcomponent 1.2: The Last Mile Connectivity for Local Herders of the project.

The ESMP is sets of mitigation, monitoring, and institutional measures to be taken during implementation and operation of a project to eliminate adverse environmental and social risks and impacts, offset them, or reduce them to acceptable levels. It has been developed in line with applicable domestic and WB EHS guidelines and standards and has drawn on experience in the ESMPs of similar projects and related international good practice notes and guidelines. It contains crucial components to effectively undertake the environmental management within the project including: (i) environmental and socio-economic baseline (ii) legal, policy framework and regulatory requirements (iii) potential environmental and social impacts (iv) environmental and social mitigation measures and protection activities (v) implementation arrangement, responsibilities and capacity building (vi) information disclosure and public consultation (vii) grievance redress mechanism (viii) supervision and reporting (ix) environmental monitoring requirements. This document is particularly relevant for the contractors of the project and shall be attached to the subproject construction contract.

This ESMP will be updated and approved by the WB prior contract award to align with (i) technical specifications, (ii) detailed design alterations, if any, (iii) incorporation of biodiversity and heritage field investigations findings, and (iv) additional impacts and mitigation measures identified during a detailed environmental impact assessment (DEIA) required by the Mongolian Law on Environmental Impact Assessment.

Ugtaaltsaidam and Tseel soums road routes and description of the specific design

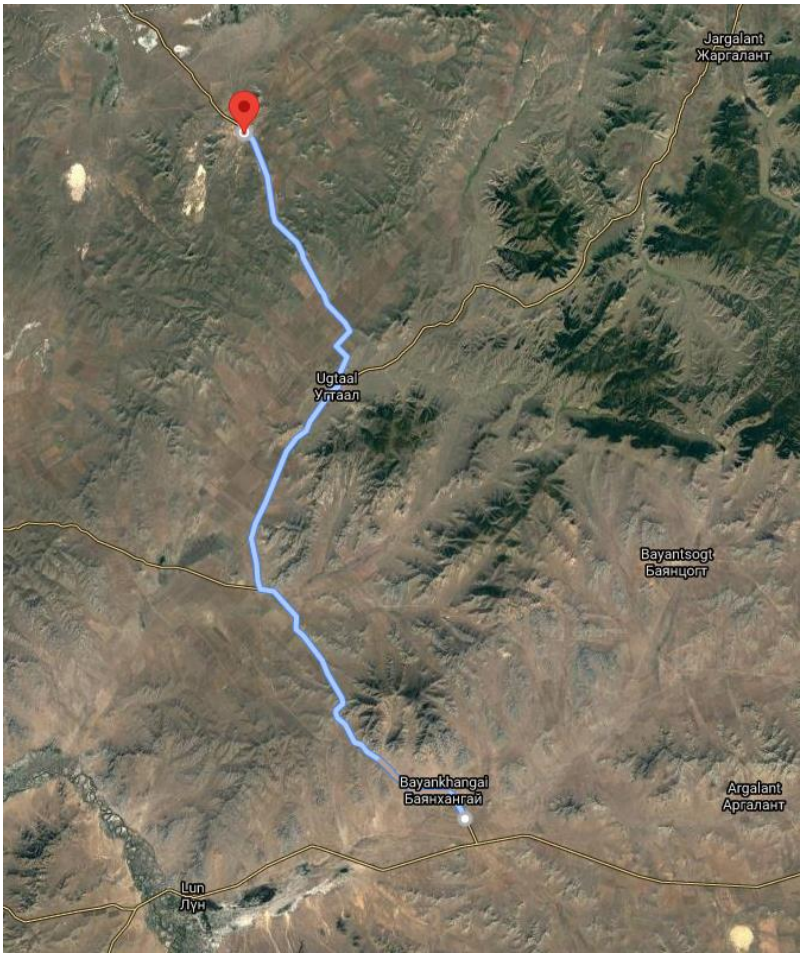


Figure 1 Existing unpaved road in Ugtaaltsaidam and Tseel soums of Tuv aimag

Exact coordinates of the routes can be accessed from Appendix 3 of this ESMP.

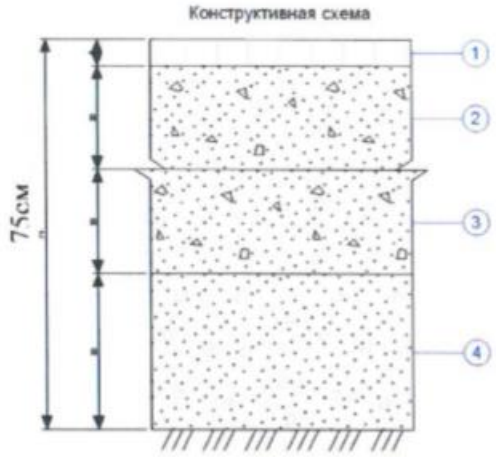
The detailed design has been developed in compliance with "Road Design"33BNdD 22-004-2016 National standard. Following table represents parameters.

Table 2 Design Parameters. Source: Detailed design by MPCPgr LLC.

№	Design parameters	33BNdD 22-004-2016 normative parameters	Selected parameters			
1	Road classification and class	Class 2A. Accumulative roads for inter-aimag and intra-district traffic	Tuv aimag, Ugtaaltsaidam, Tseel soum center connection road			
			Section 1	Section 2	Section 3	Section 5
2	Annual load capacity	over 200				
3	Design description	2А-Хр3-3ХГ-2-70	2А-Хр3-3ХГ-2-70			
4	Vehicle fleet main speed: level terrain	70-80 km/h	80			60
5	Vehicle fleet main speed: rolling terrain	60 km/h	80			60
6	Vehicle fleet main speed: mountainous	50 km/h	60			60

7	Estimate duration	15	15			
8	Classification	D, E	D			
9	Straight route length	5000m	1975	2180	2254	380
10	Slope on level terrain	6%	3%			
11	Slope on rolling terrain	7%	5	3.6	5	
12	Slope on mountainous area	9%	5.6		5.99	5.99
13	Curve radius	250 m	300	400	300	600
14	Width	6.0-7.0m	6.0m			
15	Depth	7.0m	7.0m			
16	Width of roadway	1.5-2.0	2.0m			
17	Width of traveled way		0.5m			
18	Visibility at stop	130m	140m			
19	Visibility during overtake	245m	560m			
20	Crossfall	2%	2%			

The paved road will be constructed, with approximately total of 23.7 km length in Tseel soum and 52.27 km length in Ugtaaltsaidam soum, on the existing dirt roads. Pavement calculations were made on the basis of the available materials, using the INDOR PAVEMENT 9 programme[1]. An asphalt concrete pavement structure is proposed, as shown in below figure.



1. Fine aggregate bituminous concrete – 5 cm
2. Cement treated crushed stone base M40 - 20 cm
3. Cement treated base M40 - 20 cm
4. Sub-base – 30 cm

Figure 2 Proposed structure. Source MCPCgr Detailed Design description

The road cross section, in accordance with the Mongolian Design Standard, will be for terrains such as rolling and mountainous terrain and Type-IIA. In most of the sections, width is -3.0m*2 and 2% cut slope, paved embankment width is -0.5m*2 and unpaved embankment width is -1.5*2 with slope of 4%., total embankment width is -10.0m.

[1] The IndorPavement software is a system designed to calculate pavements for public highways, city streets and roads" Source: https://www.indorsoft.ru/products/pavement/

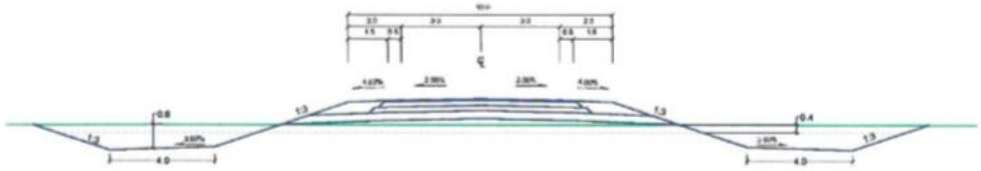


Figure 3 Proposed Road design. Source MCPCgr 2018.

Further design specifications will be determined by the PMO, for the contractors to comply with along with an updated ESMPduring project implementation. However, typical site installation and preparatory work for road projects includes:

- Development of the lay down areas, work sites and construction camps
- Mobilization and installation of the crushing and concrete plan
- Mobilization of supplied and material necessary for construction (vehicles, trucks, construction equipment)
- Temporary signage and the setting up of deviations where necessary
- General cleaning, clearing and cutting of trees where necessary and
- Installation of drainage

The temporary road and haul roads shall be identified and by contractor and this ESMP shall be updated accordingly by the PMO.

During construction, raw materials will be required for road pavement, including sand, concrete, bitumen and aggregate and water mostly sourced locally. All raw materials shall be sourced from licensed entity.

2. SUBPROJECT AREA ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE

Baseline data sources

Due to Covid-19 restrictions, the baseline data for this ESMP is compiled from a number of existing sources through desktop study and is supplemented by additional discussions with local citizen's representatives.

Tuv aimag's Ugtaaltsaidam soum is located in 134 km and Tseel soums is located in 188 km from Ulaanbaatar city.

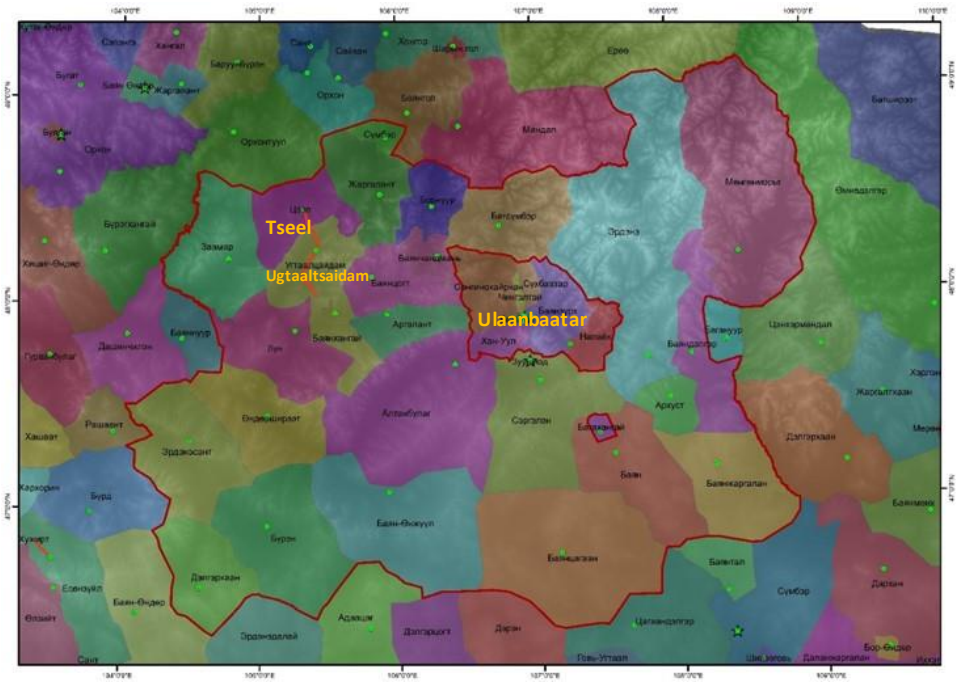


Figure 4 Tuv aimag territory

Geology and geomorphology

The geological structure underlying the project site represents the overall formation of the Khentii mountain region at the elevation of 1215 masl. The rocks originating these mountains are massive of sedimentary and metamorphic accumulated in about 285-350 million years ago and the granites are originated by the end of Jurassic era in about 130 million years ago. There are colluviums and loose sediments of quaternary era in mountain sides and ravines. Earthquake risks in the region is 4-6 magnitude.

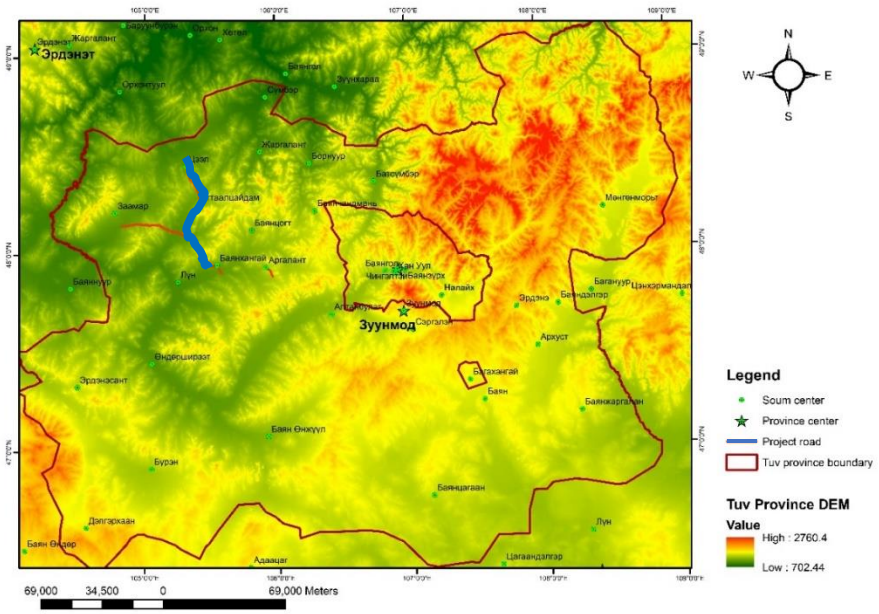


Figure 5 Digital Elevation Model (DEM) showing elevation variations (m) for Tuv aimag and project sites.

Mongolia belongs to the South Transition Zone of global permafrost. The zone is characterized by relatively thin and scattered permafrost distribution. Within Mongolia permafrost is further divided into five sub-zones as follows: (i) Subzone 1: Continuous; (ii) Subzone 2: Non-continuous (iii) Subzone 3. Scattered distribution (iv) Subzone 4. Rare occurrence (v) Subzone 5. Seasonal frost. The project sites are located in the seasonal frost subzone (v). This means that the ground at the site is subjected to annual freeze-thaw cycles according to ambient air temperature and is not influenced by permafrost. The Ugtaaltsaidam project site under sporadic permafrost region.

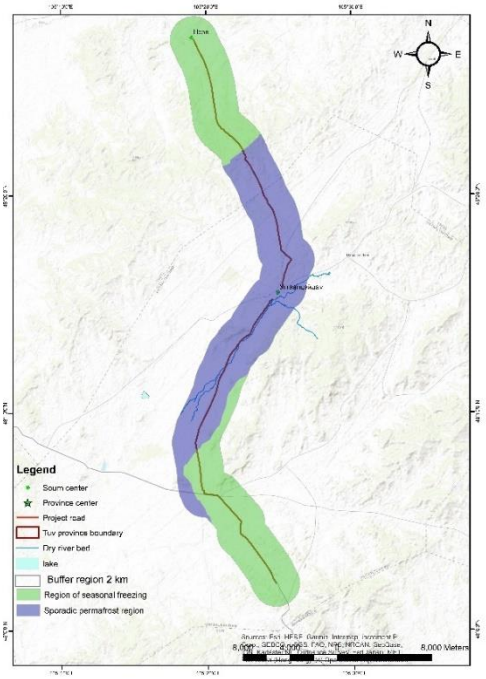


Figure 6 Permafrost zones of the project road

Surface water

Tseel soum is territory is in Orkhon-Tamir river basin, while the Ugtaaltsaidam soum is in the Tuul River basin. It's approximately 40 km from the Tuul river. The Tuul river is approximately 700 kilometers

long with a catchment of approximately 49,840 km3. Ugtaaltsaidam soum road is over an old dry river bed shown in Figure below.

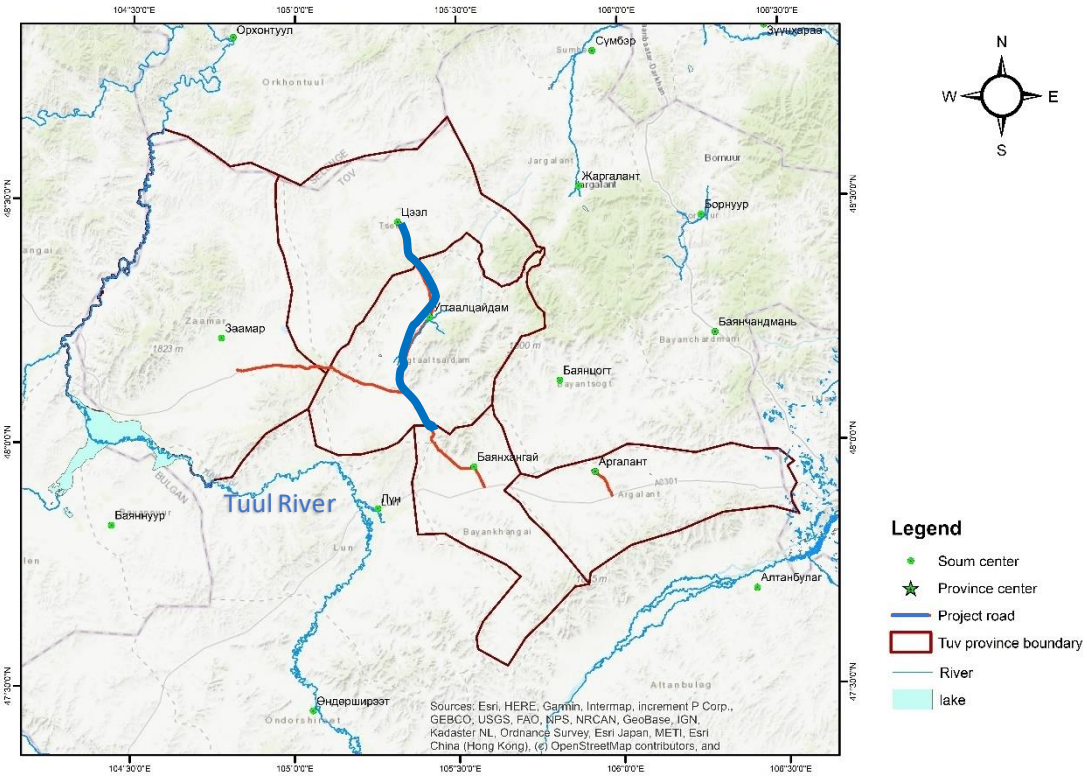


Figure 7 Identified surface water bodies in Tuv aimag.

Climate

The project area lies in the Temperate Zone and experiences a severe continental climate of long winters and short summers. The coldest temperature was registered in 1954 with -54°C and the hottest in 2005 with +39.5°C at the project site. The monthly average air temperature ranging from -21.0°C in January to +17.7°C in July with an annual average air temperature of -0.58°C according to climatic data of the last 10 years. The cold days with freezing temperature continue for 130 days between November and March.

Table 3 2012-2017 Temperature data of Tuv aimag

Year	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Mean
2012	-24.6	-20.8	-9.5	1.4	9.8	13.4	16.2	14.1	10.0	-1.5	-13.5	-23.1	-2.3
2013	-19.8	-20.5	-7.2	-1.2	10.2	14.1	16.3	14.3	8.1	-0.1	-9.0	-16.0	-0.9
2014	-17.7	-19.1	-5.7	5.9	7.1	14.0	16.4	14.9	8.7	1.7	-9.6	-17.5	-0.1
2015	-15.5	-13.9	-7.8	2.6	7.4	15.4	18.4	17.3	9.3	1.8	-12.1	-15.4	0.6
2016	-24.3	-16.3	-5.6	2.2	8.0	14.5	19.9	16.7	9.7	-2.8	-13.4	-14.2	-0.5
2017	-18.7	-13.6	-5.5	4.0	11.7	18.0	19.7	14.3	8.5	0.1	-12.7	-16.7	0.8

Source: Meteorological Monitoring Station in Zuunmod, 2018

Average rainfall in the project area ranged between 222-308 mm in accordance with the last 10 years monitoring data from the nearest meteorological station and 85% of the precipitation falls from beginning (May) of spring to end of fall (October), with nearly 70% of it falling in the summer months between June and August. The snow stays during the winter on the average at 1.8 centimeters deep.

Table 4 Average rainfall 2008-2017 in Tuv aimag

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
2008	1.2	0.5	7.3	5.8	15.9	81.8	49.1	59.5	7.8	18.1	1.1	5.9	254.0
2009	0.2	6.0	1.0	1.8	31.0	49.7	73.7	64.0	14.0	13.4	3.5	3.0	261.3
2010	0.7	4.6	15.2	1.8	28.0	32.2	36.2	73.2	15.0	9.4	9.7	0.2	226.2
2011	0.9	8.8	0.0	14.7	27.8	81.5	55.5	27.1	9.0	28.3	12.9	1.9	268.4
2012	0.0	0.5	1.5	5.9	8.1	80.5	112.2	56.9	12.2	7.8	14.5	8.3	308.4
2013	0.3	2.2	5.0	11.9	21.4	44.9	55.5	65.4	7.4	16.0	7.9	1.6	239.5
2014	0.4	3.4	1.2	7.9	56.1	48.2	67.1	22.7	11.5	1.2	0.8	2.3	222.8
2015	0.7	0.5	17.8	18.7	17.8	13.5	115.9	43.6	22.9	6.6	8.5	3.4	269.9
2016	1.0	1.0	18.9	2.7	17.8	56.8	70.6	49.1	38.2	10.1	18.0	0.7	284.9
2017	0.2	0.2	0.3	3.0	7.9	35.5	27.8	145.5	26.7	8.1	11.8	1.9	268.9

Source: Meteorological Monitoring Station in Zuunmod, 2018

There are other climatic conditions that are of concern for road construction and operation such as road surface frosting or snowstorms that could potentially affect road usage and traffic safety. Available information for other climatic conditions that are of concern are included in this section.

Number of days with snow

Snow fall occurs, on average, about 35-45 days a year in the road corridor during September to May. Most of the snow falls occur in November and December. During these months snow falls 5 to 9 days per month in the Ugtaaltsaidam and Tseel soums.

Table 5 Number of snow days in the Project Area

Weather station	Months								
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Ugtaaltsaidam and Tseel soum	0.4	5.8	8.9	9.1	7.0	4.1	4.5	4.4	0.9

Dust storms

Weather records show 10-24 dust storm occurrences in the soums. Dust storm[2] events occur 22-35 days a year in the project area. Dust storm frequency is highest during April and May months due to the windy conditions and general dryness of the season. Dust storm occurrence is dependent on other climatic conditions such as soil moisture and snow cover. Strong dust storms create reduced visibility for traffic, as well as respiratory health concerns if people exposed to dust for extended periods. In some cases, similar to snowstorms, dust storms could deposit excessive dirt on the roads creating additional traffic hazard and road maintenance work.

Table 6 Number of days with dust storm

Weather station	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ugtaaltsaidam and Tseel soum	1.4	1.3	1.9	2.7	3.6	2.9	1.8	1.0	1.1	1.5	1.4	1.3

[2] Weather condition in which dust and sand particles lifted to the atmosphere by wind reducing visibility.

Groundwater

Groundwater is the main water source in Mongolia for drinking water and industrial water. It may be estimated that 99% of the population uses groundwater for drinking water. Livestock watering uses groundwater from wells in areas away from rivers.

Soil

Ugtaaltsaidam and Tseel soums are generally covered with steppe valley, mountain and low mountain soil types.

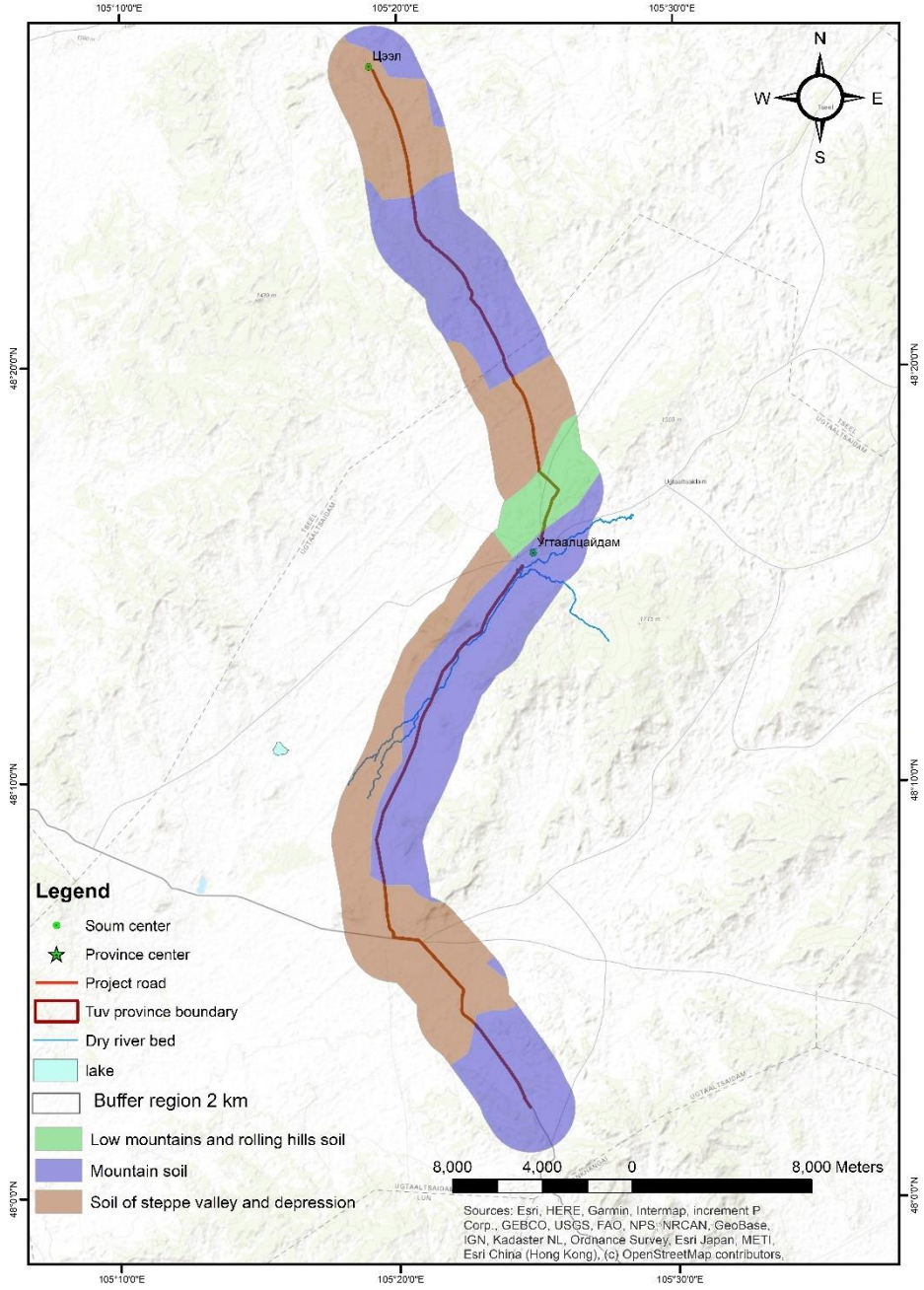


Figure 8 Soil classification

Monthly average soil surface temperature in the project region exhibits strong seasonal variation ranging between -22.5°C during winter and 23°C during summer. Soil temperature drops to sub-zero temperatures during the months of November to March.

Table 7 Monthly average soil surface temperature

Weather station	Months											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ugtaaltsaidan and Tseel soums	-22.5	-16.5	-5.8	5.7	14.1	21.5	23.3	19.6	11.6	0.6	-11.4	-19.5

Vegetation

In the Khentii mountain ranges, there are various trees such as cedar, larch, poplar, willow, pine, aspen, and salmon. Medicinal plants such as herbs, licorice, sea buckthorn, thyme, sagebush are recorded.

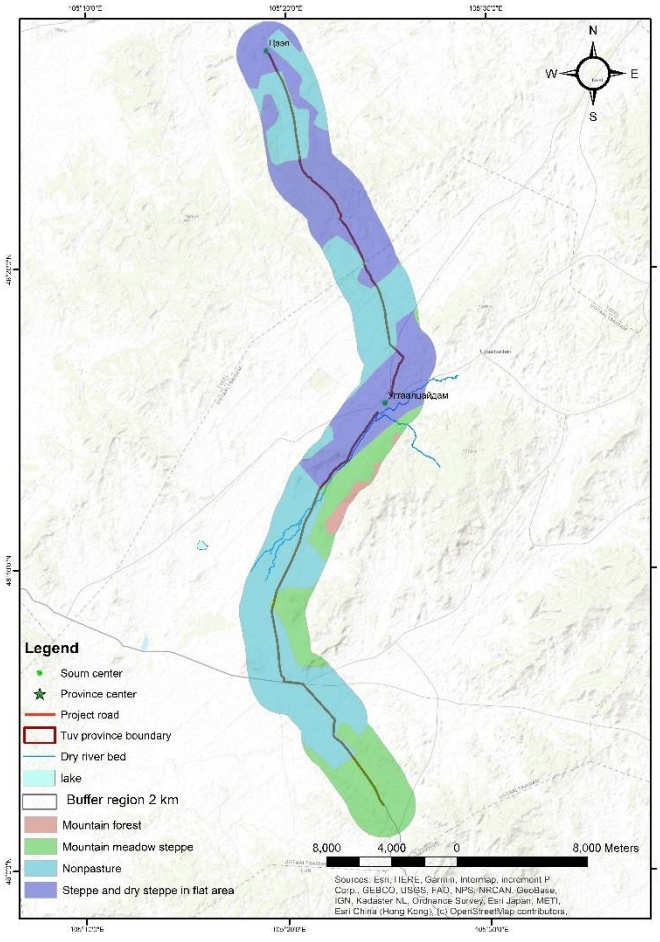


Figure 10 Vegetation type

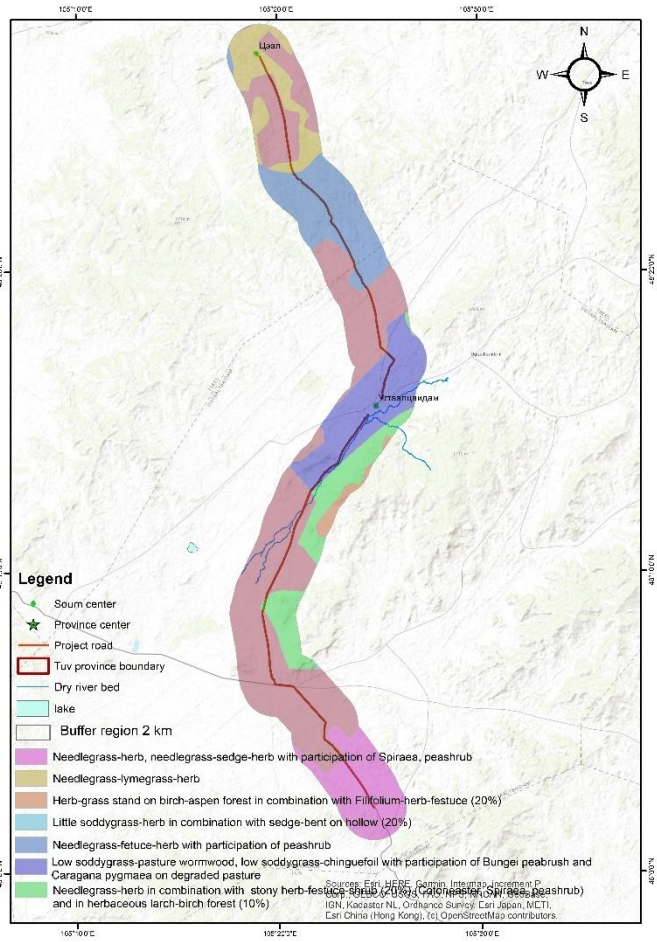


Figure 9 Vegetation group

Fauna

In addition to 16 protected mammals such as deer, elk, argali rams andsnow leopards, Tuv aimag has more than 30 species of birds and birds of prey such as Daurian ground squirrel (*Spermophilus dauricus*) LC, Mongolian marmot (*Marmota sibirica)* IUCN EN, Corsac fox (*Vulpes corsac)* LC, pigs, bears and Eurasian lynx (*Lynx lynx)* LC. The species are usually far from areas with human being activities.

Ugtaaltsaidam soum has been recorded as a migratory path for Red Deer (Cervus Elaphus) with population of 200 and Mongolian gazelle (Procapra gutturosa) with population of 800. Before bidding

of the 76km last mile connectivity roads, an in-field investigation to the roads including biodiversity investigation and heritage survey will be conducted. The ESMP for Ugtaaltsaidam and Tseel soum roads will be updated with an integrated biodiversity management plan (BMP) if the adverse impacts to biodiversity are identified during the biodiversity investigation. Mitigation measures including changing the route of the road, if necessary, will be also proposed in the updated ESMP.

Socio-economy

Ugtaaltsaidam soum was established in 1924, commonly referred as Ugtaal. Agricultural sector is developed in the region. The soum center Ar-Asgat population is 2276, with 648 households. Total area of the soum is 154,800 hectares. 103,000 hectare is pastureland, 32,000 hectare is agricultural, 8,000-hectare forest area, 1200-hectare hay land, 3200-hectare land is used for road and other infrastructures to sustain the soum. Number of livestock registered in 2017 is 126646.

An average of 5,000-10,000 hectares of crops, 120-200 hectares of potatoes and vegetables are grown annually. Eighty-five percent of all households in the soum grow potatoes and vegetables. Business entities and individuals harvest 300-4500 tons of hay annually and not only meet their domestic needs, but also sell it on the market. 25 enterprises and 68 individuals own 32,000 hectares of land.

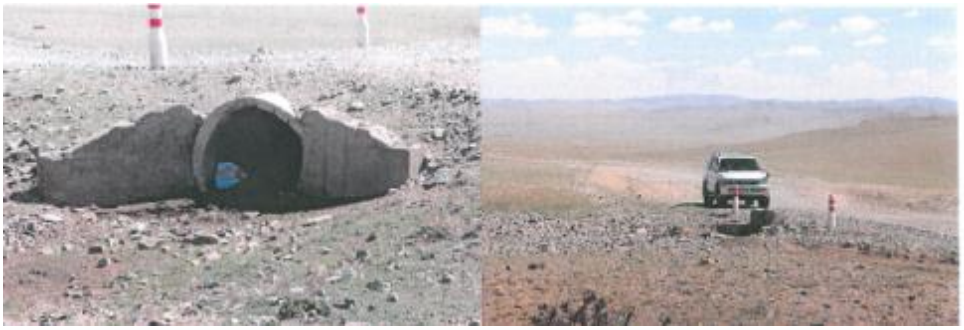
Tseel soum was established in 1976 and officially registered as a soum in 1977. Settlers were mainly farmers, herders and individuals. Northern part of the soum is sandy and named “Elsen Tsagaan”. 36000 hectare crop fields, 14400 hectare hay field, 110000 hectare pastureland and 4500 hectare forest areas are registered. Total area of the soum is 165600 hectare. Total population of the soum in 2014 is 2534 with 729 households. Total of 122600 livestock is registered in Tseel soum in 2017.

Logistics and connectivity

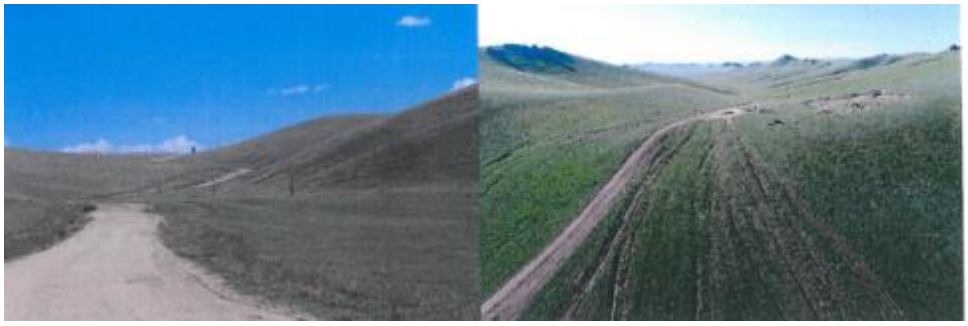
Ulaanbaatar to Bayankhangai soum road is paved in 100 km distance. From Bayankhangai to Ugtaaltsaidam, 45 km road is dirt road. During heavy precipitation, safety concerns are raised to the vehicle sliding on a mud, and the dirt road floods causing vehicles to create alternative routes leading multiple route creation.

Currently, Ulaanbaatar to Ugtaaltsaidam public transport travels one time daily. Due to poor road condition vehicles maintenance is required more frequently. No mechanical services are available in Ugtaaltsaidam and Tseel soums.

Current road conditions of the Ugtaaltsaidam soum (Source: Detailed Design Study Report P2-39, MCPCgr LLC):



Current road conditions of the Tseel soum (Source: Detailed Design Study Report P2-40, MCPCgr LLC):



Physical cultural resources

In 2018, Enkhtur.A, Dalantai.S and Buyankhishig.Ts [3] from Mongolian Academy of Sciences, Institute of History and Ethnology, has conducted a preliminary archeological survey along the unpaved road paths in Tuv aimag Bayankhangai, Ugtaaltsaidam, Tseel, Zaamar soums. The findings of the preliminary survey concluded that five archeological landmarks are identified along the unpaved road paths in Ugtaaltsaidam and Tseel. A heritage survey will be conducted before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank. The route of the last-mile roads will be changed to avoid any heritage sites if the survey identifies any heritage sites and their protection areas on the last mile roads financed by World Bank.

In addition to identified archeological landmarks, during virtual public consultation held on September 9th, 2021 with the Tseel soum local community representatives noted that "Aadgain Davaa ovoo", a built up of a stone by people that are usually built at a higher altitude as part of a religious practices, is one of the valued site. The bagh representative expressed the need for lower slope on "Aadgain Davaa ovoo" for improved safety.

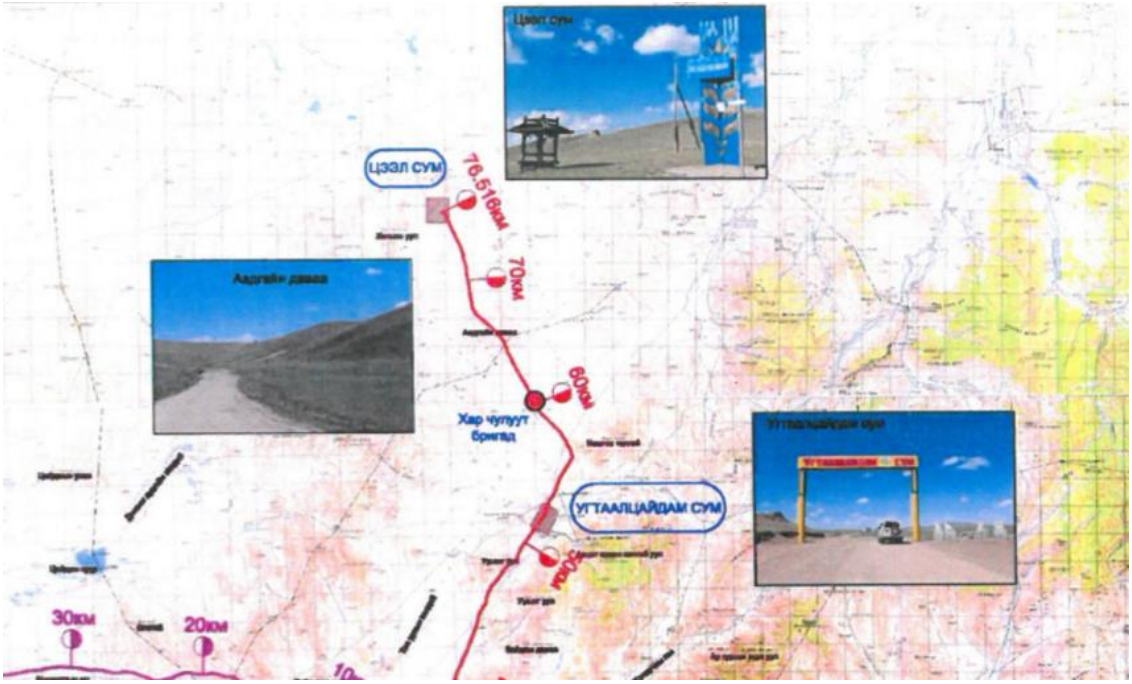


Figure 11 Source: Detailed Design Drawing Report by MCPC Page 4 (2018) Photo of Äadgain Davaa (left) Tseel Soum (middle) and Ugtailtsaidam soum (right

[3] Archeological survey report (in Mongolian language) is attached to this ESMP.

3. LEGAL, POLICY FRAMEWORK AND REGULATORY REQUIREMENTS

World Bank's Environmental and Social Framework

The World Bank's ESF is applicable to this project, under which the relevance of environmental and social standards in the context of this project is summarized in Table 1.

Table 8 Project ESSs relevance

No.	Environmental and social standard	Relevancy	Analysis
1	ESS1. Assessment and management of environmental and social risks and impacts	Relevant	As per this standard, Ministry of Road and Transport Development (MRTD) is required of assessing, managing and monitoring environmental and social risks associated with the project.
2	ESS2. Labor and working conditions	Relevant	ESS2 is deemed relevant considering that the project involves a large number of locally sourced construction workers for road building and rehabilitation.
3	ESS3. Resource efficiency and pollution prevention	Relevant	The construction and rehabilitation of roads will have moderate impact on local environment. Direct impacts are consumption of resources, waste generation, emissions during construction phase, and moderate impact on fauna during operation phase.
4	ESS4. Community health and safety	Relevant	This standard aims to anticipate and avoid adverse impacts on the health and safety of local communities during the project implementation. Given the scale and nature of earth or road works, the project will not bring significant construction nuisance to nearby communities or affect any ecosystem services. The temporary and localized impacts of noise, dust, waste generation and traffic disturbance during the road construction and rehabilitation period could be mitigated by incorporating good civil works management practices. However, impact from material sourcing will be further assessed at implementation stage before bidding process commences. In the times of covid-19 pandemic, preventive measures shall take place during project implementation to ensure local communities are not affected by any diseases caused by labor influx associated with road construction and rehabilitation.
5	ESS5. Land acquisition, restrictions on land use and involuntary resettlement	Relevant	Land acquisition for the last mile connectivity roads is not expected. Temporary land use and land for material sourcing will be managed to minimize and mitigate negative impacts to local communities. The SEP prepared laid out procedures and steps for stakeholder identification and engagement to ensure livelihoods impact from last mile roads is minimized.
6	ESS6. Biodiversity conservation and sustainable management of living natural resources	Relevant	This standard aims to protect and conserve biodiversity and habitats, and promote sustainable management of living natural resources. According to this standard, MRTD is required to ensure that project activities do not significantly harm biodiversity and block local people's access to and use of ecosystem services.
7	ESS7. Indigenous peoples/Sub-Saharan	Relevant	This standard deems relevant since ethnic minorities are likely to be living in provinces such as Uvs who

No.	Environmental and social standard	Relevancy	Analysis
	African historically underserved traditional local communities		need to be consulted about the project in culturally appropriate manner prior to project appraisal.
8	ESS8. Cultural heritage	Relevant	This standard is considered relevant based on the available information and project design during preparation. The project shall employ chance find procedure to ensure no cultural heritages are destroyed during road construction and rehabilitation.
9	ESS9. Financial intermediaries	Not relevant	This standard is not relevant to the anticipated project, as MRDT will implement the project. No financial intermediaries will be involved.
10	ESS10. Stakeholder engagement and information disclosure	Relevant	MoRTD recognizes the importance of transparent and meaningful engagement with project stakeholders since it can improve the environmental and social sustainability of the project and enhance its acceptance. As per this standard, the MoRTD has developed a Stakeholder Engagement Plan (SEP) with the objective to establish a systematic approach to stakeholders' engagement, which will guide the identification of stakeholders and project affected parties, as well as building and maintaining constructive relationships throughout the project implementation.

In addition, the following EHS guidelines of the World Bank Group are considered applicable to the project, namely:

- World Bank EHS General Guidelines
- World Bank EHS Guidelines for Toll Roads
- World Bank ESF Good Practice Note (GPN) on Road Safety
- applicable World Bank Industry Sector EHS Guidelines
- Bank's ESF/Safeguards Interim Note and WHO health guidance regarding COVID-19

Mongolian Laws, Regulations and Standards

Mongolian Environmental Regulatory and Policy Framework

Mongolia has enacted a comprehensive policy and legal framework for environmental assessment and management. It has policies, legislation and strategies in place to manage the protected estate, to satisfy its international obligations, and to protect the quality of the environment for the health and well-being of its citizens. The hierarchy of policies and legislative provisions for environmental management in Mongolia comprises five layers ranging from the Constitution to international treaties, and to environment and resources protection laws1.

The main policy documents are the National Environmental Action Plan of 1995, the State Environmental Policy of 1997, the National Plan of Action to Combat Desertification, the Biodiversity Conservation Action Plan, and the National Plan of Action for Protected Areas, all developed under the Ministry of Environment and Tourism (MoET) auspices, as well as the Mongolian Action Program for the 21st Century. The National Environmental Action Plan was updated in 2000 and the National Action Plan for Climate Change was added in the same year. Several program documents (e.g. National Water Program, National Forestry Program, Program of Protection of Air, Environmental Education,

Special Protected Areas, and Protection of Ozone Layer) were also completed at the turn of the decade. State policy on Environmental Impact Assessment was in place in 1998. In addition, other guidance documents with important environmental repercussions were developed under the auspices of other ministries and these include the Roads Master Plan, the Power Sector Master Plan, the Tourism Master Plan, and the Renewable Energy Master Plan. Other documents, such as the annual Human Development Reports have increasingly incorporated environmental aspects. A fundamental principle of the Mongolian state environmental policy is that economic development must be in harmony with the extraction and utilization of natural resources and that air, water and soil pollution will be controlled. In April 1996, Mongolia's National Council for Sustainable Development was established to manage and organize activities related to sustainable development in the country. The country's strategy is designed for environmentally friendly, economically stable and socially wealthy development, which emphasizes people as the determining factor for long-term sustainable development.

The Government of Mongolia undertook a major environmental law reform in 1990 and 2012 including the law of land, protected areas, water, forest, wildlife, and native flora resources. The legislation base is extensive as evidenced by the following table of key environmental legislation as shown in Table 1.

Table 9 Key environmental legislation

No.	Regulation	Requirement	Project relevancy
1	Law on Environmental Impact Assessment (2012)	Road building, maintenance and infrastructure establishment projects may have environmental impact assessment done.	Relevant
2	Law on Environmental Protection (1995)	Socio-economic development may be balanced with environmental protection.	Relevant
3	Law on Protected Areas (1994)	Only certain activities are allowed in protected areas and their protection zones.	Relevant
4	Law on Cultural Heritage (2014)	Tangible and intangible cultural heritages must be explored and protected before any large-scale earth work takes place as part of infrastructure or development projects.	Relevant
5	Law on Waste (2017)	Impacts and risks from potential waste generation shall be identified, mitigated, minimized and managed.	Relevant
6	Law on Water (2012)	Water resources shall be effectively used and managed.	Relevant
7	Law on Labor (1999)	Rights and responsibilities of employees shall be respected and workers shall be provided with safe and healthy working environment.	Relevant
8	Law on Occupational Health and Safety (2008)	This law and its requirements must be strictly followed at all work environment.	Relevant
9	Law on Promotion of Gender Equality (2011)	Both women and men shall be provided with equal opportunities.	Relevant
10	Law on Road (2017)	Road building and maintenance activities shall not have negative impacts on the environment.	Relevant
11	The Constitution of Mongolia (Amended 2019) (Article 14.2)	No person shall be discriminated against on the basis of ethnic origin, language, race, age, sex, social origin and status, property, occupation and position, religion, opinion and education. Every one shall be a person before the law.	Relevant
12	Law on Allocation of Land to Private Citizens, Articles 32 and 37	Invoking eminent domain is only legally recognized when taking back land for special	Relevant

13	Law on land	needs of the State including, lines and networks and other objects of national scale	
14	The Civil Code of Mongolia is the legal basis for contractual agreements on the transfer of land in the ROW from affected entities to the government (Chapter 15, Articles 1, 6, 7, 8, 109 and112, among others)	Negotiated settlement regulations	Relevant
15	Law on Culture (Article 1.3, 19.2)	Protection of culture, discrimination and harassment of ethnic culture is prohibited.	Relevant
16	Law on Labor (Article 7.1)	Guarantee equality among ethnic group	Relevant
17	Criminal Code of Mongolia (Article 2.14, 14.1)	2.14.for a motive of ideological, racial, national, ethnical, religious, or by reason hatred based on sexual orientation discrimination shall be punishable by imprisonment for a term from twelve to twenty two years or by life-term imprisonment. 14.1. Discrimination persons or restriction of human rights and freedoms on the basis of ethnic origin, language, race, age, sex, social origin or status, property, occupation or post, religion, opinion, or education, sexual orientation, gender, health condition shall be punishable by a fine equal to from four hundred and fifty to five thousand four hundred units of amount, or from two hundred forty to seven hundred and twenty hours of community service, or a penalty of limitation of free travel right for a term from one month to one year.	Relevant

The environmental impact assessment (EIA) requirements of Mongolia are regulated by the Law on Environmental Impact Assessment (2012). The purpose of this law is to protect the environment, prevent ecological imbalance, ensure minimal adverse impacts on the environment from the use of natural resources, and regulate relations that may arise in connection with the assessment of environmental impacts of and approval decisions on regional and sectorial policies, development programs and plans and projects. The DEIA can only be conducted by an entity with licensed from the Ministry of Environment and Tourism. List of licensed entities are listed on the MET's website.

There are two types of EIAs defined in the EIA law:

(i) General EIA (screening) - to initiate a General EIA, the project implementer submits to Ministry of Environment and Tourism (MET) (or Aimag government) a brief description of the project including feasibility study, technical details, drawings, and other information. The General EIA may lead to one of four conclusions: (i) no detailed EIA is necessary, (ii) the project may be completed pursuant to specific conditions, (iii) a Detailed EIA is necessary, or (iv) project cancellation. The General EIA is free and usually takes up to 14 working days.

(ii) Detailed EIA – the scope is defined by the General EIA. The Detailed EIA report must be produced by a Mongolian company which is authorized by the MET by means of a special procedure. The developer of the Detailed EIA should submit it to the MET (or Aimag government). An expert of the organization who was involved in conducting General EIA should make a review of the Detailed EIA within 18 days and present it to MET (or Aimag government). Based on the conclusion of the expert, the MET (or Aimag government) takes a decision about approval or disapproval of the project.

(iii) The Detailed EIA must contain the following chapters: (i) Environmental baseline data; (ii) Project alternatives; (iii) Recommendations for minimizing, mitigation and elimination of impacts; (iv) Analysis of extent and distribution of adverse impacts and their consequences; (v) Risk assessment; (vi) Environmental Protection Plan; (vii) Environmental Monitoring Program; and (viii) Opinions of residents on whether the project should be implemented.

The location, type and size of the planned activities define responsibility for the Ministry of Environment and Tourism (MET) or Aimag (provincial) government in making EIA. It is anticipated that activities planned in the Mongolia transport connectivity and logistics improvement project are likely to trigger these national law requirements.

A detailed environmental impact assessments [4] will be required for the construction of the Ugtaaltsaidam and Tseel soum new roads. A baseline environmental survey, feasibility study report, and other supplementary documents[5] are required for the Ministry of Environment and Tourism to conduct a general environmental impact assessment, which will likely to require a detailed environmental impact assessment.

The establishment of a baseline for environmental monitoring is to determine trends in the quality of ambient air, water, ambient noise and soil and how that quality is affected by the release of contaminants, other anthropogenic activities, and/or by waste treatment operations (impact monitoring). Environment monitoring needs to be carried out to estimate nutrient or pollutant fluxes discharged in atmosphere or ground waters or lakes or to the land across project and nearby areas. Monitoring is done to determine the quality of the ambient Environment before start of any kind of project related activities, as it provides a means of comparison with impact monitoring. It will be also used simply to check whether any unexpected change is occurring in otherwise pristine conditions. The National Agency for Meteorology, Hydrology and Environmental Monitoring (NAMHEM) is responsible for environmental monitoring of water, air, acid deposition, soil, environmental radiation, dust-deposition and Sulphur gases to control the environmental quality. The laboratories in main cities make permanent measurements on air, water, soil quality and radiation level, meanwhile, control waste sources of pollution from such power plants and vehicles; carries necessary monitoring activities on environmental assessment; control industry wastes in cooperation with other environmental controlling organizations.

Gap analysis between Mongolian laws and regulation and WB Environmental and Social Standards

There are some gaps identified between national and Bank's environmental and social requirements and key findings of analysis of gaps between Bank's and national requirements are presented in Table 2 highlighting gaps identified and measures through which the ESMF can close those gaps.

Table 10 Environmental and Social policy gap analysis

Topic	**Gaps identified (reference to World Bank ESF)**	**Gap-filling measures**
Scope of environmental assessment	Mongolian EIA law covers human health & environment only (WB ESF ESS1)	Environmental and social impacts assessment shall include all aspects as described in each ESS, including natural environment, labor conditions, human health & safety, resource efficiency and sustainable management, involuntary

[4] The DEIAs can only be conducted by a permitted entity listed on the MoET's website.
[5] The list of required documents for EIA can be accessed from e-Mongolia portal services. https://e-mongolia.mn/service/baigali-orchny-nuluulliin-yerunkhii-unelgeenii-dugnelt-

Topic	Gaps identified (reference to World Bank ESF)	Gap-filling measures
		resettlement, indigenous peoples, cultural heritage, and any trans boundary and global environmental aspects.
	Only certain types of activity in protected area buffer zones are subject to EIA (WB ESF ESS1)	All subprojects shall be appraised.
Labor conditions & OHS	Mongolian Labor Law (1999) and Law on Occupational Safety and Hygiene (2008) implement the ILO core labor standards, and establish rights and responsibilities for ensuring health and safety in the workplace. However, because national laws apply to all employers, there is no legal obligation to ensure that labor and OHS requirements are met by sub-contractors. Specific measures to mitigate OHS related risks are not set out in national law, although some are set out in national standards and regulations. (WB ESF ESS2)	The ESMF contain provisions to ensure that subcontractors are subject to the same labor and OHS requirements, and to ensure that appropriate mitigation options are designed in subproject ESMPs. Also, A Labor Management Procedure (LMP) has been prepared.
Resource efficiency and pollution control	Mongolian laws on Air, Water and Waste define general requirements related to these resources. However, they appear to lack on specifying pollution control and prevention measures related to any economic activity. (WB ESF ESS3) There are no legal obligation to ensure resource efficiency in national rules and regulation. (WB ESF ESS3)	The subproject environmental screening process will identify the key ESS3 related issues, and the ESMF has developed guidance on the management of resource efficiency and pollution, with reference to Good International Industry Practice (GIIP), including the applicable EHSGs of the World Bank Group
Community health and safety	There is no national law specific to community health and safety. (WB ESF ESS4)	The ESMF has provided guidance to prevent or minimize health, safety and security risks and impacts caused by project intervention to local communities and the spread of COVID-19 in the workplace or communities. The mitigation measures for public health impacts, such as pestis, the traffic and road safety and food safety outlined in this ESMF.
Involuntary Resettlement	Mongolia has no national law specific to land acquisition and resettlement. The Mongolian Law on Land defines ownership and possession rights to specific categories of land, and allows soum governors to sign land use contracts with herder groups. Soum Citizens' Representative Meeting holds the right to approve or decline soum annual land management plan that is submitted by soum governor, which reflects various requests to	The MoRTD has stated that the project will not fund any activities in relation to land acquisition and land rights change for road construction. However, livelihoods impact caused by restrictions to land access is expected from material sourcing and temporary land use during construction of the last mile connectivity roads. ESS5 of WBG's ESF will apply. A RPF has been prepared to guide the process of impact assessment and preparation and implementation of RAPs in case livelihoods impact cannot be avoided from land use.

Topic	Gaps identified (reference to World Bank ESF)	Gap-filling measures
	use local land for different purposes and this procedure shall be adhered during the project implementation. The vast majority of herders using pasture in protected areas or buffer zones have no formally titled land rights, although some may have contracts for limited-term use rights for winter-spring camps. Customary land use is recognized as a consideration in land management planning, but customary rights have no formal status in national law. Mongolia has no current law applicable to expropriation of land under customary use by the state. A draft Law on Land Acquisition for Unavoidable Public Need has been prepared in line with World Bank standards, but not yet been passed. If passed into law, the ESMF may need to be revised. (WB ESF ESS5)	
Biodiversity and sustainable resource management	Mongolia has no law on animal welfare and sustainable livestock sector. While there is a law on Protected areas, it does not specifically define modified, natural or critical biodiversity habitat. (WB ESF ESS6)	The ESMF has developed guidelines with reference to GIIP, including the applicable EHSs of the World Bank Group. In addition, exclusion criteria have been included in the ESMF to avoid any negative impacts on critical habitats or natural habitats.
Indigenous People	Mongolia's constitution states that "no person shall be discriminated against on the basis of ethnic origin, language, race, age, sex, social origin and status, property, occupation and position, religion, opinion and education". However, there is no other specific legislation on ethnic minorities. National education and language policies have generally tended to promote Mongolian language, and Khalkh Mongolian is the official language of government business. (WB ESF ESS7)	The project shall ensure inclusion of ethnic minorities in project activities through free and prior informed consent in areas where there are ethnic minority presence. Consultations with ethnic minority groups should be taken in an appropriate manner for ethnic minorities, for example in a language they feel most comfortable with.
Cultural heritage	Relevant laws include the Law on Protected Area and the Law on Cultural Heritage. The Law on Protected Area specifies permitted and prohibited activities in different zones in national protected areas of different status and the roles and responsibilities of different levels of government in granting permissions for land use. The Law on Cultural Heritage has initiated a	The project should support stakeholders' engagement in the identification, registration and protection of cultural heritage. Any activities that may cause adverse impacts on cultural heritage will be ineligible for project financing. Also, the ESMF includes chance-find procedure.

Topic	Gaps identified (reference to World Bank ESF)	Gap-filling measures
	process of registration of tangible culture and specifies roles and responsibilities for the protectionof tangible culture. (WB ESF ESS8)	
Public participation in ESIA	EIA Law does not require public participation in general EIAs (WB ESF ESS1, ESS10)	ESIA shall ensure key stakeholders are meaningfully consulted and their views have taken into account.
	Regulations on public participation in detailed EIAs give only general guidance on public participation (WB ESF ESS10)	ESIA shall ensure key stakeholders are meaningfully consulted and their views have taken into account.
Public notification and disclosure	EIA Law provisions on public notification and disclosure are incomplete (WB ESF ESS10)	ESMF and subprojects ESMP shall specify procedures for public notification and disclosure of project plans and ESIAs in line with international standards.
Reporting	EIA Law only requires reporting on EMPs pursuant to detailed EIAs (WB ESF ESS1, ESS10)	Status of all environmental and social documents and monitoring results shall be reported and disclosed to all stakeholders.

Applicable Mongolian Environmental Standards

MNS number	Name of Mongolian National Standard (MNS)
MNS 17.5.13. 1980.	Environmental Protection: Rehabilitation of eroded land, terms and definitions
MNS 5914:2008.	Environment. Land reclamation. Terms and definitions
MNS 5915:2008.	Environment classification of land destroyed due to mining activities
MNS 5916:2008.	Environment Requirements for fertile soil removing and its temporary storage during the earth excavation
MNS 5917:2008.	Environment. Reclamation of land destroyed due to mining activities. General technical requirements
MNS 5918:2008.	Environment. Re-vegetation of destroyed land. General technical requirements
MNS 4191:1993.	Environmental protection standard system. Baseline climate parameters of Mongolia
MNS 4585:2016.	Air quality. General technical requirements
MNS 4991:2000.	Occupational safety and health. Requirement for method of determination of toxic substances concentration in the air of working zone
MNS 5885:2008.	Acceptable concentration of air pollutant elements. General technical requirements
MNS 3384:1982.	The general and technical requirements for sampling of air quality test
MNS 6063:2010.	Air quality. Acceptable concentration of pollutant elements for atmospheric air in public area
MNS 5803:2007.	Occupational safety and health. General requirements for lead content in workplace air and the workplace
MNS 3383:1982.	Atmosphere. Terms and definitions of pollutant sources
MNS 17.2.1.01:1978.	Atmosphere. Terms and definitions of pollutant sources generated from internal combustion engine
MNS 3113:1981.	Atmosphere. General requirement for determining air pollutants
MNS 5013:2009.	Petrol engine vehicle – Maximum acceptable level and measuring method of exhaust emission
MNS 5014:2009.	Diesel engine vehicles – Maximum acceptable level and measuring methods of opacity
MNS 5010:2001.	General requirement for measuring dust concentration in the atmosphere of work area
MNS 17.1.1.10:1979.	Water. Water use and protection. Terms and definitions.
MNS 17.1.1.14:1980.	Hydrosphere. Classification of water use. General requirement
MNS 4047:1988.	Hydrosphere. Procedure for monitoring surface water quality
MNS 4586:1998.	Water quality. General requirements
MNS ISO 5667-14:2000.	Guidance on quality assurance of environmental water sampling and handling
MNS ISO 5667-3:1999.	Water quality. Sampling. Part 3: Guidance on processing and storage of samples
MNS 3342:1982.	General requirement for preventing from groundwater pollution
MNS ISO 5667-11:2000.	Water quality. Sampling. Part 4: Guidance on sampling of groundwater
MNS ISO 5667-4:2001.	Environment. Water quality. Part 4: Guidance on sampling from natural and man-made lakes

MNS number	Name of Mongolian National Standard (MNS)
MNS ISO 5667-6:2001.	Environment. Water quality. Part 6: Guidance on sampling of rivers and streams
MNS 6148:2010.	Water quality. Maximum limit of substance contaminating the ground water
MNS 0900:2005.	Drinking Water. Hygienic requirements, and assessment of quality and safety
MNS ISO 5667-5:2001.	Environment. Water quality. Part 5: Guidance on sampling of drinking water and water for beverage production
MNS 2573:1978.	Hydrosphere. Water quality parameters
MNS 4943:2015.	Water quality. Effluent treated wastewater. General requirements
MNS ISO 5667-10:2001.	Environment. Water quality. Part 4: Guidance on sampling of waste waters
MNS 6230:2010.	Identification of wastewater discharge point. General requirements
MNS 5924:2015.	Pit latrine and sewage pit. Technical requirements
MNS 3474:2003.	Plant protection. Terms and definitions.
MNS 3475:2003.	Plant quarantine. Terms and definitions.
MNS ISO 11269-1:2002.	Soil quality. Methods to determine effects of the plant pollutants in soil. Part 1: Method to measure cease of plant root growth.
MNS ISO 11269-2:2013.	Soil quality. Determination of the effects of the plant pollutants in soil. Part 2: Germination of upper plants in polluted soil.
MNS 5850:2008.	Soil quality. Soil pollutants elements and substance
MNS 3297:1991.	Environment protection. Soil. The norm for sanitary condition of soil in town and residential areas.
MNS 3298:1991.	Soil. General requirements for sampling.
MNS 3985:1987.	Soil. Sanitation parameters.
MNS 2305:1994.	Soil. Procedure for sampling, packaging, transportation and storage.
MNS 5546:2005.	General requirements for assessment of soil erosion and degradation of vegetation cover in pasture lands.
MNS 4968:2000.	General requirements for production processes.
MNS 4930:2000.	Safety of machinery. General requirements.
MNS 4969:2000.	Organization of a training. Basic rules.
MNS 4643:1998.	Occupational safety. Color of safety signs.
MNS 4994:2000.	Occupational safety and health. Vibration. Requirement for general safety.
MNS 4994:2000.	General requirements for measuring vibration.
MNS 5029:2011.	Occupational safety and health. Label and marking of toxic and hazardous chemicals
MNS 5079:2001.	General safety requirements for loading and unloading.
MNS 5105:2001.	Occupational safety. Industrial hygiene. Hygiene protection areas norm, general requirements.
MNS 5146:2002.	Occupational safety. Industrial hygiene. Electric safety. Protective conductive earth, neutralling.
MNS 5150:2002.	Electric safety. General requirement.
MNS 5145:2002.	Electric safety. Maximum voltage and maximum level of current.
MNS 5149:2002.	Industrial hygiene. Power frequency electric fields. Permissible levels of field strength and requirements for control at workplaces.
MNS 0012.4.005:1985.	Device and method for protection from noise.
MNS 5003:2000.	General requirements for the measurements of noise.
MNS 5002:2000.	Occupational safety and health. Noise. Requirements for general safety.
MNS 12.1.016:1988.	Excessive noise. General safety requirements.
MNS 4990:2015.	Occupational safety and health. Occupational hygiene. Workplace environment. Requirement of hygiene.
MNS 4931:2000.	Personal protective equipment. Types and general requirements.
MNS 5621:2006.	Head protection equipment-Hard hat.
MNS 5388:2004.	Hearing protection equipment (ear plug, ear muff). General technical requirements.
MNS 5389:2004.	Eye protection equipment-Goggles.
MNS 5620:2006.	Respiratory protection equipment. (mask, respirator (filtering device), powered respirators).
MNS 5622:2011.	Safety gloves. General requirements.
MNS 5623:2006.	Foot protection equipment. Safety boots.
MNS 5566:2005.	Protection against fire. Fire protection instrument for building. Technical requirements.
MNS 4244:1994.	Fire safety. General requirements.
MNS 5390:2004.	Occupational safety and health. Fire safety of electricity. General requirements.
MNS 5344:2011.	General requirements for transportation of domestic waste.
MNS 5282:2003.	Fire safety of petroleum products. General requirements.
MNS 3629:1983.	Petroleum, petroleum product. Packaging, labelling and transportation.

MNS number	Name of Mongolian National Standard (MNS)
MNS 4628:2013.	Fuel station. General technical requirements.
MNS 4596:2014.	Use of road signage, traffic light, protective bracket, and direction signs.
MNS 5342:2007.	Parking lot. Classification and general requirements.
MNS 4597:2014.	Road signs. General technical requirements.
MNS 6515:2015.	Passages for wild ungulates along the highways and railways in steppe and gobi areas. General requirements.
MNS 5645:2006.	Transportation of construction materials in pieces and bulk. Classification, transportation condition. General requirements.
MNS 12.3.004:1983.	Technical service and maintenance of vehicles. General safety requirements.
MNS 4598:2011.	General requirement for technical condition of vehicles.
MNS 4601:2011.	Vehicle maintenance and repair system, definitions.

Mongolian National Standards (MNS) prescribe allowable ambient and discharge standards for ambient air, noise, water and soil quality, and industrial effluent, wastewater, boiler emissions, etc. Relevant MNS are discussed below.

Water

Following tables summaries Mongolian ambient water quality standards MNS 4585: 2007, Mongolian drinking water standards MNS 0900: 2005, and effluent wastewater quality standards MNS 4943: 2011. The EHS Guidelines recommend that discharges of process wastewater, sanitary wastewater, wastewater from utility operations or stormwater to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria. The MNS water and wastewater standards are adopted for use in this report, supported by the WHO Guidelines for Drinking-water Quality, Fourth Edition (2011).

Mongolian ambient water quality standards (MNS 4585: 2007).

Parameter	Unit	Standard
(pH)		6.5-8.5
Dissolved Oxygen (O2)	mgO/l	6&4 not less
BOD5	mgO/l	3
COD	mgO/l	10
NH4-N	mgN/l	0.5
NO2-N	mgN/l	0.02
NO3-N	mgN/l	9
PO4- P	mgP/l	0.1
Chloride Cl	mg/l	300
Fluoride F	mg/l	1.2
SO4	mg/l	100
Manganese Mn	mg/l	0.1
Nickel Ni	mg/l	0.01
Copper Cu	mg/l	0.01

Molybdenum Mo	mg/l	0.25
Cadmium Cd	mg/l	0.005
Cobalt Co	mg/l	0.01
Lead Pb	mg/l	0.01
Arsenic As	mg/l	0.01
Total Chromium Cr	mg/l	0.05
Hexavalent chromium (Cr6+)	mg/l	0.01
Zinc Zn	mg/l	0.01
Mercury Hg	mg/l	0.1
Mineral oil	mg/l	0.05
Phenol	mg/l	0.001

Source: Mongolian Standard MNS 4586:1998.

Mongolian Drinking Water Standards (MNS 0900: 2005).

Parameter	Unit	Standard
Physical Quality		
pH	mg/l (milligrams/liter)	6.5-8.5
Hardness	mg equivalent/l	7.0
Total Dissolved Solids (TDS)	mg/l	1000.0
Turbidity	mg/l	1.5
Taste	Score	2.0
Odor	Score	2.0
Color	Degree	20
Inorganic Quality		
Molybdenum (Mo)	mg/l	0.07
Barium (Ba)	mg/l	0.7
Boron (B)	mg/l	0.5
Copper (Cu)	mg/l	1.0
Calcium (Ca2+)	mg/l	100.0
Magnesium (Mg2+)	mg/l	30.0
Manganese (Mn)	mg/l	0.1
Sodium (Na)	mg/l	200.0
Phosphate (PO4-)	mg/l	3.5
Fluoride (F)	mg/l	0.7-1.5
Selenium (Se)	mg/l	0.01
Strontium (Sr)	mg/l	2.0
Sulfate (SO4-)	mg/l	500.0
Chloride (Cl)	mg/l	350.0
Arsenic (As)	mg/l	0.01
Hydrogen sulphide (H2S)	mg/l	0.1
Chromium (Cr)	mg/l	0.05
Dry residue	mg/l	1000.0
Uranium (U)	mg/l	0.015
Beryllium (Be)	mg/l	0.0002

Cadmium (Cd)	mg/l	0.003
Total mercury (Hg)	mg/l	0.001
Total cyanide (CN-)	mg/l	0.01
Ammonium ion, (NH4+)	mg/l	1.5
Nitrate ion, (NO3-)	mg/l	50.0
Nitrite ions (NO2-)	mg/l	1.0
Phosphate ions, (PO4-)	mg/l	3.5
Silver (Ag)	mg/l	0.1
Iodine (I2)	mg/l	1.0
Vinyl chloride	mg/l	0.0003
Nickel (Ni)	mg/l	0.02
Lead (Pb)	mg/l	0.01
Aluminum	mg/l	0.5
Antimony (Sb)	mg/l	0.02
Total iron (Fe)	mg/l	0.3
Zinc (Zn)	mg/l	5.0
Organic Quality		
Benzene	mg/l	0.01
Xylenes	mg/l	0.5
Nitrile 3 acetic acid	mg/l	0.2
2 chlorinated methane	mg/l	0.02
2 chlorinated ethane	mg/l	0.03
3 chlorinated ethane	mg/l	0.07
4 chlorinated ethane	mg/l	0.04
Phenolic compounds	mg/l	0.002
Styrene	mg/l	0.02
Toluene	mg/l	0.7
Ethyl benzene	mg/l	0.3
Pesticides		
Atrazine	mg/l	0.002
Carbofuran	mg/l	0.007
Lindane	mg/l	0.002
Molinat	mg/l	0.006
Endrin	mg/l	0.00006
Microbial Quality		
Total Coliform	Coli / ml	100 (at source) 20 (at supply)
E.Coli	E.Coli / 100 ml	E.Coli / 100 ml
Radiological Quality		
Total α radioactivity	Bq/l	0.1
Total β radioactivity	Bq/l	1.0

Source: Mongolian Standard MNS 0900: 2005.

Mongolian effluent wastewater discharge standard (MNS 4943: 2011).

Parameter	Unit	Standard
Water temperature	Co	20
pH	-	6-9
Odor	Sense	No smell

Total Suspended Solids (TSS)	mg/l	50
BOD5	mg O2/l	20
COD	mg O2/l	50
Permanganate oxidizing capacity	mg O2/l	20
Total Dissolved Solids (TDS)	mg/l	1,000 *
Ammonia Nitrogen (NH4)	mg N/l	6
Total Nitrogen (TN)	mg/l	15
Total phosphorous (TP)	mg/l	1.5
Organic phosphorous (DOP)	mg/l	0.2
Hydrogen sulphide (H2S)	mg/l	0.5
Total iron (Fe)	mg/l	1
Aluminum (Al)	mg/l	0.5
Manganese (Mn)	mg/l	0.5
Total Chromium (Cr)	mg/l	0.3
Hexavalent chromium (Cr6+)	mg/l	Absent
Total cyanide (CN)	mg/l	0.05
Free cyanide	mg/l	0.005
Copper (Cu)	mg/l	0.3
Boron (B)	mg/l	0.3
Lead (Pb)	mg/l	0.1
Zinc (Zn)	mg/l	1
Cadmium (Cd)	mg/l	0.03
Antimony (Sb)	mg/l	0.05
Mercury (Hg)	mg/l	0.001
Molybdenum (Mo)	mg/l	0.5
Total Arsenic (As)	mg/l	0.01
Nickel (Ni)	mg/l	0.2
Selenium (Se)	mg/l	0.02
Beryllium (Be)	mg/l	0.001
Cobalt (Co)	mg/l	0.02
Barium (Ba)	mg/l	1.5
Strontium (Sr)	mg/l	2

Vanadium (V)	mg/l	0.1
Uranium (U)	mg/l	0.05
Oil and grease	mg/l	1
Fat	mg/l	5
Surface active agents	mg/l	2.5
Phenol (C6H5OH)	mg/l	0.05
Trichloroethylene (C2HCl3)	mg/l	0.2
Tetrachloroethylene	mg/l	0.1
Chlorine remains (Cl)	mg/l	1
Bacteria triggering water-borne disease	-	Absent in 1 mg of water

Source: Mongolian Standard MNS 4943: 2011.

Groundwater

The Mongolian standard outlining the general requirements for protection of groundwater (MNS 3342: 1982) indicates that the contamination of groundwater with industrial raw materials, products and municipal wastes during transportation and storage is prohibited. Relevant requirements in the standard include:

a. Raw materials and products for industrial and municipal waste storage tanks with potential to contaminate groundwater resources should comply with following:
   - Geological - hydrogeological investigations of the storage tank construction, potential soil infiltration estimates of geological materials, groundwater protection measures to be developed based on the amount and characteristics of the chemicals stored.
   - Storage tanks to be tested for leakage prior to use.
   - For areas at the base of mountains, loops of rivers, river beds and highly fractured parts of geological sediments which are used for drinking water, storage tanks cannot be established in these regions.
b. In case of groundwater contamination due to accidents, the damaged area should be protected, spill gathered without further distribution, the prohibition of drinking water collection from this area, and quick organization and removal of traces of contamination.
c. In the event of groundwater pollution or when the contamination reaches dangerous levels, the method of observation and control will depend on the ground water quality, its intended use and the potential consequences of the pollution.

There is no equivalent standard recommended in the EHS Guidelines, and the MNS standard is adopted for use in this report.

Soil

Mongolian standards for heavy metals in soil are presented in MNS 5850: 2008.

Table 9: Mongolian heavy metals standard (MNS 5850: 2008).

Parameter	CR	Pb	Cd	Ni	Zn
Mongolian Standard (MNS 5850: 2008)	150	100	3	150	300

Source: MNS 5850: 2008.

There is no equivalent standard recommended in the EHS Guidelines, and the MNS standard is adopted for use in this report.

Noise

Mongolian noise standards are set out in the national standard MNS 4585: 2007 and are compared with relevant international guidelines from the WHO (as presented in the EHS Guidelines) in Table 10. WHO standards are more stringent than Mongolian standards for sensitive receptors. WHO standards will be applied if a subproject is close to sensitive receptors.

Table 10: Mongolian noise standard (MNS 4585: 2017) and WHO Guidelines.

Parameter	MNS Standard dB(A)		WHO Guideline dB(A)	
	Daytime 07:00 – 23:00	Night 23:00 – 07:00	Daytime 07:00 – 22:00	Night 22:00 – 07:00
Maximum Environmental Noise Exposure for the Public	60	45	WHO Class I - Residential, institutional, educational: 55	WHO Class I - Residential, institutional, educational: 45
			WHO Class II - industrial, commercial: 70	WHO Class II - Industrial, Commercial: 70

Source: MNS 4585: 2007 and WHO Noise Quality Guidelines (1999) in IFC EHS Guidelines (2007).

Other Relevant Standards

Since the last-mile road construction will involve civil works, other requirements from the World Bank EHS Guidelines, such as eliminating glare / reflections and flickering of lights, connection to road, and occupational noise exposure, etc., shall be followed during subproject implementation.

Special Protected Areas

The Law on Special Protected Areas (15 November 1994) is intended to protect the natural landscape, rare fauna and flora, historical and cultural sites and natural sightseeing sites.

The law classifies State special protected areas into four categories: i) strictly protected areas; ii) national conservation parks; iii) nature reserves; and iv) monuments. Strictly protected areas are further divided into three zones based on natural forms, features of soil, water, fauna, flora and its vulnerability to human activities: i) pristine zone; ii) conservation zone; and iii) limited use zone.

In the pristine zone, only protection activities conformant with the need to preserve original natural features may be conducted; research and investigation activities may be conducted only in the way of observation methods and without causing any damage to the natural features. All other activities are prohibited within this zone. In the conservation zone, biotechnological measures that use environmentally safe technologies may be implemented to enhance flora and fauna reproduction and to mitigate damages caused by natural disasters. The following activities may be conducted in the limited use zone using environmentally safe technologies and with appropriate licenses or permits:

- soil and plant cover restoration;
- forest maintenance and cleaning;
- animal inventories and activities to regulate animal population numbers, age, sex and structure, following an approved program and methods;
- use of mineral water and other treatment and sanitation resources;
- ecotourism organized following designated routes and areas, according to appropriate procedures;
- use of accommodations according to appropriate procedures and designated for temporary residence, camping, observation, research or investigation by travelers or other people with permission;
- taking photographs, making audio and video recordings and using them for commercial purposes;
- worshipping natural sacred sites and conducting other traditional ceremonies; and,
- collect and use the associated natural resources and medicinal and food plants, according to established regulations, for household needs.

None of the above four categories of special protected areas was involved in this subproject.

4. SUBPROJECT POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

4.1 Potential environmental impacts (construction and operation phase)

Environmental and Social Risks and Impacts provides an analysis of the potential impacts likely to emerge from implementation of project activities. It addresses potential impacts associated with the proposed road construction project and delivers measures for both mitigating (i.e. avoidance, reduction, or restoration of) negative impacts and enhancing (i.e. improving) the positive effects of the project. The major positive impacts of the anticipated project were mainly the economic and social benefits that can be acquired at the county and national levels. On the other hand, the major adverse impacts arise from generation of habitat alteration and fragmentation, stormwater, wastewater, waste, noise and air emissions Cost-effective and environmentally sustainable techniques that can mitigate the adverse impacts and enhance the positive effects are proposed. Emphasis is given in selection of best available techniques (BAT) and practices for preventing and reducing wastes to the environment. Special consideration is also given to the sustainability of the anticipated project through integration of best available pollution prevention technique e.g. reusing and recycling of process wastes and by-products without compromising the economic and social benefits of the project (Irshad et al 2015; Chatli et al. 2005).

The following anticipated positive and negative environmental impacts of the anticipated project is based on the Mongolia Transport Connectivity and Logistics project's PAD, and the ESMF. Further assessment and environmental baseline study shall be conducted with site visits and field surveys by environmental experts, and consultations with local communities.

The potential impacts of the project during different stages (pre-construction, construction, and operation) and proposed mitigation measures are discussed below.

4.1.1 Anticipated Pre-Construction phase Impacts and Mitigation Measures

Pre-construction phase negative impact are typically associated with permanent land acquisition and associated loss of land. As all activities will take place on government owned unoccupied land and there will be no land acquisition or associated impact, no mitigation measures are required.

Several environmental management measures will also be implemented in the pre-construction phase during detailed design, including comprehensive detailed impact assessment, and further environmental and social management plan as per all environmental and social documents guided in the ESMF. All the E&S documents and its requirements should be embedded in the technical specifications, contracts, and scope of TORs for detailed studies.

Mitigation measures and monitoring during detailed design

Water sampling and analysis

Water samples should be collected randomly in different locations within the 5km radius of the anticipated project site. The focus should be based on streams/rivers, ground water wells/water pans and other surface water in the vicinity of proposed site. In-situ water quality analysis shall be undertaken for all physiochemical parameters at each sampling site following standard analytical method (standards should be mentioned), and focused on the following parameters: pH, temperature, total dissolve solids (TDS), chloride (Cl), dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total solids, total suspended solids (TSS). Nutrient analyses shall be conducted in accredited laboratory, and focused majorly on eutrophication elements – nitrates, nitrite, ammonia, silicates, phosphorus, total phosphorus (TP) and total nitrogen (TN). If necessary, water microbiological sampling should be done at anticipated project site.

Soil sampling and analysis

Soil sampling should be done targeting vulnerable sites for potential pollution from the proposed road construction. Three composite samples each shall be collected from the sampling locations at a depth of 0 to 15cm. The samples should be placed in sterile polythene bags and transported to the laboratory for processing. Following parameters should be analyzed at accredited laboratory: Soil pH, Percentage organic carbon (OC), Organic matter (OM), Total nitrogen (N) Available phosphorus (P) sodium (Na) and potassium (K). If necessary, microbiological sampling for soil samples should be done at anticipated project site.

Detailed Environmental Impact Assessment

During the detailed EIA, comprehensive research and detailed survey of environmentally and socially sensitive within the project area of influence should be conducted through field investigation and consultation with local agencies and communities which is including: protected area, ecological sensitive area, natural habitat and physical culture resources in the project area of influence.

Biodiversity Field Investigation

According to the project exclusion list, any activities prohibited by Mongolian law and actions likely to significantly threaten protected areas or to jeopardize threatened & endangered species or adversely modify their habitat, culturally significant sites such as archaeological or paleontological sites and sacred mountains, conversion of forest to grazing lands, construction of dams or other water control structures that flood undegraded grassland or forests and construction, upgrading or maintenance of roads that pass through undegraded forests are avoided for project area. Especially, a biodiversity in-field investigation to the migratory path of the Red Deer and gazelles in Ugtaaltsaidam soum will be carried out and a biodiversity management plan with proposed mitigation measures for the protection of the Red Deer and gazelles will be prepared before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank if the impacts to the Red Deer and gazelles from the last-mile roads were identified and embed the requirements in the final design and the contract of the last-mile roads construction. A heritage survey will be conducted before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank. The route of the last-mile roads will be changed to avoid any heritage sites if the survey identifies any heritage sites and their protection areas on the last mile roads financed by World Bank.

4.1.2 Anticipated Construction Phase Impacts and Mitigation Measures

Positive Impacts

Positive Impacts During the construction period, there is a likelihood of having the following impacts:

Improved transport connectivity and logistics efficiency for the meat value chain in Mongolia.

Creation of employment opportunities

Many job opportunities will be available for construction workers during the construction phase of the project. Employment opportunities are a benefit both in economic and social sense. For the construction development non-skilled labor, from the local community, will be hired. Although only during the duration of the project, several workers including casual laborer's, masons, carpenters, joiners, electricians and plumbers are expected to work on the site during the construction.

Increased business opportunities with construction workers

The construction workers required will provide ready market for various goods and services, leading to several business opportunities for small-scale traders such as shop owners, accommodation providers, and food vendors near the project site.

Provision of market for supply of development materials

The project will require supply of large quantities of project materials some, of which will be sourced locally in the surrounding areas. For instance, the project shall provide ready market for construction material suppliers such as quarrying companies, hardware shops and individuals with such materials.

Increased revenue to suppliers of construction materials and utilities This will be an opportunity for the suppliers of construction materials and other utility suppliers to create market and sell their goods. In turn this will boost their profit margin which is an advantage to their businesses. Other small businesses will also be pulled by the construction activities such as small eating cafes.

Negative Impacts

The construction phase of the project involves clearing, land levelling, transportation of construction materials, erection of machineries, and installation of utility systems etc. Potential adverse impacts associated with the construction activities of the project are:

Impact on flora and fauna

Construction of the road construction and associated services will have impacts of different strengths on flora and fauna in the anticipated project site. Potential impacts on flora include those associated with the loss of vegetative habitats and increase in natural instability of plant communities. Similarly, physical site disturbance and noise from construction activities will cause temporary displacement of most fauna from the vicinity of the construction site and adjacent areas. A biodiversity in-field investigation to the migratory path of the Red Deer and gazelles in Ugtaaltsaidam soum will be carried out and a biodiversity management plan with proposed mitigation measures for the protection of the Red Deer and gazelles will be prepared before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank if the impacts to the Red Deer and gazelles from the last-mile roads were identified. With the mitigation measures implemented, the construction phase is expected to have minimum impact on flora and fauna.

Impact on landscape integrity and land use pattern

Land clearing and levelling as well as dumping of excavated material can be a cause for the alteration of landscape integrity in the project area. Although construction of the road construction and utility systems will cause landscape modification in the project area.

Air pollution prevention

Increased GHG emission, as number of road users are estimated to double.

The anticipated impacts on ambient air quality during the road construction are expected to be minor and short-term. While constructing road and building, dusts from earthwork at the project site, movements of vehicles, loading/unloading which can exceed the permissible maximum value for air quality for international and national standards which can negatively impact on population health, soil and vegetation cover. Exhaust gas and smoke from vehicles, techniques and machineries would have negative impact on air and soil pollutions.

Operation of construction equipment results in crankcase emissions, exhaust and fugitive dust being released. Construction equipment to be utilized by the project will also produce emissions of nitrogen oxides (NOx), hydrocarbons, and suspended particulates along with limited quantities of sulphur

dioxide (SO2), which will result from the use of diesel fuel. However, the contribution of their impacts on the air quality degradation is expected to be localized and insignificant.

Noise and vibrations

Construction of the road may cause temporary and localized increases in background ambient sound of different strengths with specific impact dependent on the method of construction and equipment used. The principal noise sources associated with the proposed road construction activities include heavy equipment such as bulldozers, scrapers, and trucks which will only have a temporary impact for the duration of the construction.

Soil degradation prevention

Removal of soil cover and excavation works associated with this project may lead to increased soil erosion at the project site and release of sediments into the drainage systems, especially if construction works are done during the rainy seasons. During the construction work, topsoil will be depredated, and dust amount will be increased. As well as the waste from the production process should be processed in proper way otherwise it will affect directly and indirectly on human and livestock's health.

Soil erosion may also pollute local streams/rivers from contaminants carried with or attached to soil particles and it may also negatively affect the soil fertility of the affected land. Appropriate and timely control measures will arrest and minimize soil loss and siltation as well as the sedimentation along the gentle slope and water courses.

Impacts on water quality and demand

Excavation and earth movement during construction and operation can cause pollution of surface and groundwater quality and alter hydrological conditions (i.e. World Bank 2003). The main source of pollution from these activities is increased surface runoff and soil erosion from exposed ground causing high turbidity (suspended solids) and sedimentation in water bodies. In addition to this, during the construction phase of the project foreign materials like oil, grease, fuel and residues of derbies can originate, which are potential threats for water quality degradation. Due to the construction phase, water environment can be contaminated by wastewater from the construction process and used materials. High consumption of drinking water could cause depletion of ground water level. Regular water monitoring should be done for drinking and industrial water to protect the health of local people and animals. According to the Long Name Law, any activities should be avoided for 50-200 meters from the water sources and forest areas. The law dedicated to protecting the water sources and land to be polluted and contaminated.

Solid wastes

Solid waste will be generated at the site during construction of the road construction and related infrastructure. The sources of this waste will be rejected materials, surplus materials, surplus spoil, excavated materials and deleterious material. Deleterious material may originate from aggregate screening, maintenance and, repair of machinery at the contractor's camp, workers domestic related waste as well as wastewater, paper bags, and empty cartons. At the end of the construction stage waste will be generated due to the demobilization of contractor's camps. The expected wastes from such demolitions shall include rejected materials, paper bags, and empty cartons, among others.

Liquid wastes

Different liquid wastes are expected during the construction phase. Among the key liquid wastes include machinery oils, paints, waste oil, bitumen and wastewater from sanitation, among others.

Poor maintenance and operation of heavy trucks and equipment might lead to oil and fuel spills at the construction site which may contaminate land and water resources in the area. Release of hydrocarbons to the environment has several impacts including sub-soil and groundwater contamination: air pollution, fire and effects on human health due to dermal contact, inhalation or ingestion.

Workers Occupational Health and Safety

Subproject construction may cause physical hazards to workers from electrical shocks, noise and vibration, dust, handling heavy materials and equipment, traffic, falls and falling objects, work on slippery surfaces, fire hazards, disease, and others. These health and safety hazards pose a risk that will be present throughout the construction period.

Community Health and Safety

Subproject construction has the potential to cause community disturbance such as traffic congestion or delays, and public safety risks from construction activities, heavy vehicles and machinery traffic, fires, spills of materials, and risk associated with unauthorized entry into work areas. In addition, workers camps and an influx of migrant workers may cause social conflict or even lead to the spread of disease. These potential impacts are low to in significance, and medium term in duration during the subproject construction period.

Physical Culture Resources

Based on field surveys there are no known PCRs at or near the subproject site. However, construction activities have the potential to disturb as yet unknown PCRs.

4.1.3 Anticipated Operational Phase Impacts and Mitigation Measures

Environmental problems include increasing of traffic noise as well as potential blocking natural movement of animals. Installation of necessary standard equipment and major functional units of the road construction as per "MNS 6735:2018: Passages for wild ungulates along the highways in mountainous areas. General requirements."

Positive impacts

During the operation phase the following positive impacts are foreseen:

The new road construction, with its associated access road will improve the aesthetics of the area, reduction of dust creation from road leading to improved condition.

Attraction of new investors to TUV province

The improvement in road connection at the proposed road construction will be a flashpoint translating to economic growth in the province and leading to attraction of more investors.

Direct and indirect employment opportunities

The project would be able to employ several staffs from the locality during the operation phase thereby contributing to the social and economic wellbeing of the community. For instance, the project is expected to create direct job opportunities who will be from the local people residing near by the project area.

Revenue to county government

Through payment of relevant taxes, rates and fees to the County Government, the project will contribute towards the County Government revenue earnings from those using the improved facilities, and any increase from economic activities brought about by the improved station.

Negative impacts

Traffic Noise

The operation of the last mile roads in Tseel and Ugtaaltsaidam are likely to increase traiffic noise because of this project with an increment of traffic vehicles movements including high heavy vehicles.

Socio-economics, community health and amenity impacts

Apart from many beneficial aspects, the main problems associated with road constructions are as follows: Land use conflicts and depreciation in land values.

The site selected by the Proponent has the potential to create amenity issues due to the presence of rural residences. If the Project is not carefully managed, there is a high risk that the amenity of the nearby residents and, potentially, stakeholders could be impacted. The potential impacts that this Project may have on the health and amenity of the community include noise and dust

Flora and fauna

Noise from vehicle traffic along the road may force mammals to alter their routine ecological and movement patterns. The anticipated project may attract specific scavenging birds and displace others, especially those most sensitive to habitat alterations. For instance, floodlights strongly shining upwards or covering a large area at night may interfere with birds' movements at night, particularly those migrating.

Ugtaaltsaidam soum has been recorded as a migratory path for Red Deer[6] (*Cervus Elaphus)* with population of 200 and Mongolian gazelle[7] (*Procapra gutturosa)* with population of 800. The mitigation measures to protect the Red Deer and gazelles in the biodiversity management plan should be well implemented and monitored.

Occupational Health and Safety are likely during the operation phase of the project. Some of these hazards could be risks of accidents and injuries for staff and fire risks.

4.1 Potential social impacts (construction and operation phase)

4.1.1 Potential social impacts during construction phase and mitigation measures

The main negative impacts from the last mile connectivity roads during construction include traffic safety and interference with daily traffic, influx of labor (including SEA/SH), and restrictions to land access caused by construction and material sourcing.

Traffic safety and interference with daily traffic

This is mainly caused by material sourcing vehicles and vehicles used by contractors paving the last mile roads. Necessary precautions should be taken to avoid traffic accidents by for example fencing off construction sites, putting up warning signs, and providing temporary alternative traffic paths etc.

Influx of labor (including SEA/SH)

[6] Red Deer (Cervus Elaphus) sighting in Ugtaaltsaidam: https://news.mn/r/2391650/
[7] Mongolian Gazelle *(Procapra gutturosa)* migration: https://mongolia.wcs.org/wildlife/mongolian-gazelle.aspx

Depending on the number of workers required for the last mile roads construction, and the need of setting up worker camps, the risk will be assessed in the sections considering proximity to local communities. Training to workers on COC will be provided by the contractors and this requirements will be included in the bidding documents.

Restrictions to land access

This is mainly caused by construction occupying land temporarily along last mile roads and material sourcing sites. Stakeholder identification will be carried out before construction activities commence to ensure full support from surrounding communities.

An SEP has been prepared by MoRTD to lay out detailed steps for stakeholder identification and engagement near the alignment of the last mile connectivity roads. All stakeholders along the last mile roads and near material sourcing sites in particular local herder households will be consulted about the impact of the project before any construction activities commence. Information of the project and consultation reports will be disclosed in manners that ensure best outreach and allow sufficient time for stakeholders to raise concerns.

4.1.2 Potential social impacts during operational phase and mitigation measures

The design speed of the last mile connectivity roads ranges from 50km/h to 80km/h. This will potentially cause traffic safety risks particularly in sections near vilages/communities. Traffic safety will be assessed and necessary traffic safety measures will be included as part of the road design, such as speed limit signs, and traffic safety education to local communities.

5. ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES AND PROTECTION ACTIVITIES

The potential impacts during pre-construction, construction and operation of Tseel, Ugtaaltsaidam roads have been identified and appropriate mitigation measured developed in accordance with the detailed design studies and ESMF of the project. Detailed impacts and mitigation measures are presented Table 2.

All mitigation measures will be incorporated into subproject detailed design, bidding documents, construction contracts and operation management. The effectiveness of these measures will be evaluated based on environmental inspection and monitoring to determine whether they should be continued, improvement or adjusted.

Table 11 Environmental and social mitigation measures

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
Pre-Construction/Design phase				
Feasibility study (FS) alternative assessment	- Design reasonable layout, pollution sources such as storage sites and noise machinery should be arranged with enough distance from facility borders; - Design and install road crossings, such as livestock crossing As per MNS 6735:2018. Passages for wild ungulates along the highways in mountainous areas. General requirements.. - Avoid sensitive cultural heritage sites; - Minimize livelihoods impact from restrictions to access to land; -	PMO	MRTD/WB	Budget under PMO
Bidding and contract management	- Incorporate ESMP mitigation measures in the bidding documents; - Environment mitigation measures included in the contractors contract;	PMO	MRTD/WB	Budget under PMO
Biodiversity in-field investigation and biodiversity management plan	- A biodiversity in-field investigation to the migratory path of the Red Deer and gazelles will be carried out and a biodiversity management plan with proposed mitigation measures for the protection of the Red Deer and gazelles will be prepared before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank if the impacts to the Red Deer and gazelles from the last-mile roads were identified and embed the requirements in the final design and the contract of the last-mile roads construction. MoRTD will prepare the ToR for the field investigation study and BMP incorporated reference to ESF in the TORs to ensure that activities and outputs are consistent with the requirements of ESS 6. The TOR will be cleared by the Bank prior to the field investigation study commence.	PMO	MRTD/WB	Budget under PMO
Restrictions to land use	- Stakeholder identification and consultation along roads alignment and near material sourcing sites to assess level of livelihoods impacts; - Minimize and mitigate impacts from temporary or permanent land use.	PMO	MoRTD	Budget under PMO

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
Heritage survey	- A heritage survey will be conducted before the bidding of the last-mile roads construction in Ugtaaltsaidam soum financed by World Bank. The route of the last-mile roads will be changed to avoid any heritage sites if the survey identifies any heritage sites and their protection areas on the last mile roads financed by World Bank.	PMO	MRTD/WB	Budget under PMO
Site-specific Environmental and Social Management Plan	Before any construction, contractors wining any bids are required to prepare and submit to the PMO and relevant authorities for approval their Site-Specific Environmental and Social Management Plan which should include environmental and safety arrangement/design based on the ECOP, ESMF, and ESMP and other E&S documents as spelled out below and in the Bidding Documents.	contractors	PMO/MoRTD	Budget under PMO
Public consultation and Site documentation	Prior construction, public consultation shall be conducted. Prior construction, project site shall be documented and monitored (refer to monitoring plan)	PMO/MRTD	WB	Budget under PMO
Construction Stage				
Site preparation	The construction area should be limited to pre-designated scope. Minimize water area usage; establish information board and hoardings; Construction site should be properly paved; After construction is completed, the construction site should be restored based on planed use.	Subproject contractor	PMO/MRTD	Contractor's budget
Flora and Fauna Potential impacts on vegetation include removal of native and cultivated vegetation during site clearing and mismanaged movements of tracks during and after construction. In addition, noise from the presence of workers and the operation of heavy machinery will likely pose a	- Limit clearing/soil disturbance around construction sites - Limit/control movement of machineries during construction. - Undertake selective vegetation clearing that allows regeneration. - Re-vegetate disturbed areas at the construction site. - Rehabilitation plans should incorporate measures to improve the ecological status of the site. - Project site shall be prevented from deterioration and loss of vegetation as much as possible. - Hence, grind down the site vegetation is avoided and mitigation measures to minimize impact from dust erased by vehicles heavy movement on site vegetation shall be carried out. Restoration of the deteriorated area through plantation and vegetating site is recommended.	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
disturbance to the wildlife species leading to their migration from the area. Human induced negative impacts such as Illegal hunting by construction workers may contribute to reduction of number of wildlife heads	- Construction activities may result in destruction of some habitat. construction near sensitive receptors, noise levels during night hours at operation shall be minimized to reduce disturbance to wildlife. - Care should be taken to minimize damage to wildlife habitat during excavation and other construction activity through adequate planning and execution. Hunting shall be extremely prohibited for workers and management shall take responsibility in complying the laws and regulations. - Mitigation measures proposed in the biodiversity management plan should be carried out, including restricting the duration and timing of construction activities in Ugtaaltsaidam soum to lower low periods, and avoiding the migration periods of the Red Deer and gazelles if the construction activities have impacts to their migration.			
Landscape integrity and land use pattern	- Undertake dumping of excavated material at selected and designated sites. - Minimize movement of vehicles/construction machineries outside the premise of the project site. - Incorporate existing habitat features into site design. - Create habitats to compensate for habitat losses and to improve ecological potential for the site.	Subproject contractor	PMO/MRTD	Contractor's budget
Water pollution of construction activities During site preparation, ground water resources may be polluted from the spills and leaks of hazardous substances such as fuel and oil because of improper storage and handling of these chemicals.	- Optimize water use and monitor consumption during construction. - Install construction water storage facilities at the site. - Minimize disposal wastewater disposal at the construction site - Utilize existing sewage treatment facilities in project area or plan a treatment facility. Where no such facilities are available, establish septic tank for sewage treatment; - The construction wastewater from cement mixing, surface runoff and cleansing wastewater are usually high in Suspended Solids. - Avoid machinery cleaning at the site to avoid oil containing wastewater. If such cleansing is necessary, collect the	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
Water resources can be depleted due to over using water with non-saving practice during construction and after construction.	wastewater and use oil-separation tank to remove the oil and reuse the water. - Subsurface pipes such as water intake pipelines should be adequately maintained so that leakage into surrounding natural ground is prevented. Possible leakages shall be monitored and regularly checked or place leakage control equipment on household waste pipes. - Waste removal points shall be maintained regularly. - If ground water is abstracted from a well for the project implementation, water obstruction is needed to be registered and toll metering shall be installed at a well. - Toll meters shall be installed on outlet of water container, well and wastewater outtake pipeline. - Water use permit and wastewater disposal permit shall be obtained and payment for water use and water pollution shall be paid on time.			
Air pollution from excavation, storage and exhaust gas emission of construction organizations Air quality can be temporarily degraded due to CO, SO_X, NO_X emissions from heavy trucks, generators and dust particles during site preparation, domestic waste points/ garbage bin and unleashed waste pipes. Due to chemical releases from improper storage of oil and petrol products, air	- For excavation and storage, sprinkle water on fresh construction soil to minimize dust emissions. - Provide personnel with Personal Protective Equipment & Clothing (PPE&C) such as dust masks. - Palliate stockpiles of earth generated with water regularly to suppress evolution of particles. - Maintain equipment and machinery in good condition to minimise unnecessary emissions. - No burning of materials should be permitted at the project site. - Limit traffic movement within the earmarked project areas. - Prepare and apply for relevant approval for spoil; - Temporary fences will be installed around the excavation site; - Suspend construction in heavy windy days; - Strengthen earth storage management, prepare covering and watering plans. The sites should be away from river with minimum distance 200 m. Spoil should be transported out in a timely manner; For transportation dust and exhaust emission	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
quality can be deteriorated.	- Sprinkle water regularly to suppress dust; treated effluent water could be used - Covers should be used during material transportation to avoid spill; no over-loading allowed; transportation routes and schedule should be well developed to avoid disturbance to residential area. - Reuse waste soil as much as possible, or timely disposal in landfill. 8. No burning of waste (construction material, waste oil, etc.) allowed. - Avoid using old aged trucks and generators or ensure routine maintenance. Comply with the requirements of law for exhaust emissions from equipment and vehicles. - Road signs to be in place in the project site and vehicle movements shall be kept to a minimum and hard cover areas for vehicle movements shall be used where possible. - In order to address dust in the project site, irrigation can be carried out regularly. - /irrigation for 800 000sq.m*2l/. Avoid using underground water for irrigation. - Waste shall be removed regularly to the central waste point before and during the construction. Avoid keeping construction wastes at the project site. - Domestic waste and waste from spare parts of trucks and engines shall be sorted out and stored in appropriate garbage bin. Recycling policy shall be implemented for all types of wasted where possible, Reusable wastes shall be transferred to the second hand-raw material retailing points and industries. - Consider purchasing patrols and gases from reliable supplier that have lowest CO2 emissions possible. Using euro 5 petrol is encouraged to minimize emitting air contaminants.			
Solid waste pollution from earthwork, transportation and disposal of waste soil, generation of living solid waste	- Encourage waste segregation at source into different wastes categories before disposal. - Contract licensed waste management firm for disposal of large quantities of solid wastes.	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	- Domestic solid wastes to be temporarily stored in refuse bins before disposal by licensed contractor. - Concrete, asphalt and other waste aggregate should be stored and reused where possible. - All reusable materials should be reused to minimize on quantity of solid waste generated. - Provide workers with appropriate and adequate sanitary facilities i.e. exhaustible mobile toilets (Liquid waste) - Effluent from mobile toilets should be disposed by a registered by waste handler. - Wastewater from concrete//aggregates to be disposed into sedimentation pools & reuse clean water - Designate specific areas for washing of cement trucks/equipment away from a water body. - Ensure no oil spills during machineries" fuelling with all vehicles re-fuelled at designated stations. - Non-useable waste should be shipped out in a timely manner to landfill. It is not allowed to be dumped to garbage transfer stations. - Spoil waste will be reused as backfill as much as possible, and additional waste will be sent to landfills assigned by local authorities. - Garbage should be collected at garbage bins arranged in the construction site and be cleaned and transferred to transfer stations in a timely manner. - Drilling/piling waste should be reused as much as possible.			
Noise	- Provide PPE to construction workers and persons visiting the site. - Ensure the machineries do not exceed acceptable noise limits. - Inform local residents when construction activities are likely to generate excessive noise. - Truck drivers to switch off engines during offloading materials & avoid unnecessary hooting.	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	- Use low-noise equipment will be adopted; avoid use of high-noise equipment, especially during nighttime; - Properly arrange schedule of construction to minimize noise impact on sensitive receptors;			
Soil erosion and ecological environment During construction, soil compaction as well as other soil works such as excavation and trenching will lead to topsoil erosion and vegetation loss. Accidental spill of chemicals, oil and petrol could result in soil contamination and in-fauna habitat's destruction. In addition, generation of waste material and latrine leakages and loss can also lead to soil degradation. Oil spill response measures are expected to be put in place by the contractor.	For terrestrial ecology - Allow minimal vegetation clearing and disturbance at the site. - Re-vegetate all cleared areas during construction with indigenous vegetation species. - Undertake proper planning of site clearing of natural vegetation during the construction works. - Encourage re-use of excavated materials for back-filling and landscaping activities. - Install proper and functional wastewater and storm water drainage channels. - Store land top soil for land restoration and landscaping use; - Construction area should be limited to acquired or designated lands to minimize the land acquisition and enhance protection to grass land and forest land. Concentrated construction camps should be established or utilizing local residential houses to avoid random camps; avoid random disposal of garbage. - Promote protection awareness of workers, forbidden hunting wild animals. - Strictly implement soil erosion control measures. - The bidding document and works contract should include requirements on environmental protection. - Organize technicians from construction unit, contractors and local professionals and experienced fisherman to monitor the activities of important fish species if it is located next to the water system. Once fish flock is spotted to approach construction sites, such construction activity can be temporarily halted to avoid damage of them and be resumed when the fish flock is driven away. Once damage of these important fishes is notices, urgent measures need to be taken to rescue the fish and report to local authority.	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	- All wastes should be collected for treatment/disposal. No random discharge into the water system is allowed. - To avoid degrading surface of non-construction areas, the road shall be constructed in accordance with the approved work-drawing. - In order to create green area during the construction process, nutritious topsoil from site cleaning shall be kept in prepared area. - Drop watering system shall be in place for humidifying the project site and maintaining vegetation cover. - Road signs shall be in place in the project area in order to avoid creating alternative dirt roads /unpaved/. Use hard cover areas for vehicle movements where possible. Limit vehicle movements to essential construction areas to limit unnecessary soil compaction. Develop temporary traffic management plan. - Municipal solid wastes /compostable and non-compostable/ generated during and after construction shall be collected - Regular technical check-ups shall be taken and scheduled maintenance for vehicles and tracks shall be carried out. Safe condition of parking sites /avoid cracks in the parking site/ shall be controlled regularly and prompt reaction to accidental spill of petrol products on the grounds shall be taken. Emergency response plan to the accidental spill shall be available on site. **Abiding rules, regulations and norms** Law on Land: Article 50-1.1, 1.2, 55-2,3,4,5 MNS 5918:2008 MN Law on domestic and industrial waste. Article: 10-1, 2, 3; 11; and 12- 2. Regulation on sorting, collecting, removing, temporarily placing, transferring, neutralizing and demolishing toxic and dangerous wastes, which was approved by the government resolution#135 of 2002. S5916:2008			
Physical resources	if any chance finds of PCRs are encountered:	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	- construction activities will be immediately suspended if any PCRs are encountered; - destroying, damaging, defacing, or concealing PCRs will be strictly prohibited in accordance with Mongolian regulations; - the local Cultural Heritage Bureau will be promptly informed and consulted; and, - construction activities will resume only after thorough investigation and with the permission of the local Cultural Heritage Bureau.			
Livelihoods impact from land use or restrictions to land access	Stakeholder identification and consultation, information disclosure and GRM. Stakeholder identification and consultation will be carried out when travel permits. All stakeholders in particular small herder households along the last mile road sections and material sourcing sites will be consulted with. Project information will be disclosed locally in format most accessible by local communities and allow sufficient time for feedback. In case livelihoods impact is unavoidable, follow guidance provided in the RPF prepared by MoRTD to prepare RAPs and carry out necessary compensation. -	Subproject contractor	PMO/MRTD	Contractor's budget
Occupational health and safety	- Ensure all equipment's are inspected before use for appropriate safeguards. - Ensure controlled working hours and that employees do not extend working hours unnecessarily. - Ensure appropriate road safety signages are strategically placed in and round the construction site. - Erect speed breaks where human and vehicular traffic have high interactions. - To minimize health and safety risks the subproject contractors will implement good practice Occupational Health and Safety (OHS) measures including the use of Personal Protective Equipment (PPE) and emergency response procedures,	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	developed in compliance with relevant GoM regulations, and HIV/AIDS orientation and training. - Contractors will prepare a health and safety (H&S) plan during preconstruction phase, which will be aligned with relevant government's regulations and guidelines on COVID-19 prevention and control, or with international good practice guidelines as updated in the future. The H&S plan shall be developed in consultation with relevant local public health inspectors, local medical officers, or other relevant health specialists. The Plan will include COVID-19 prevention and control measures, including disinfection/cleaning of construction sites, on-site temperature checks, social distancing measures, mandatory use of personal protective equipment such as facemasks, provision of handwashing stations and hand sanitizers etc., and procedures to be adopted in the event any worker is infected with COVID-19			
Community health and safety	- Provide necessary protection gears for workers, such as safety helmet and earplugs, etc. - Provide necessary trainings to workers to control outbreaks of contagious diseases; - Provide necessary trainings to workers and strengthen construction camp management to prevent HIV; - Strengthen sanitation management on construction camp, arrange garbage bins and designate cleaning personnel; - Carry out disinfection, deinsectization, mosquito eradication, etc. - Strengthen the electricity management, avoid random electricity usage; - Strengthen toilet management by regular cleaning and disinfection; - the subproject contractor will implement good community health and safety practices, including outreach to local communities to disseminate knowledge about safety at or near the construction sites, installation of site safety fencing and warning signs (in Mongolian language), and on site supervision personal (including night guards) as determined by the risk, to prevent unauthorized access to construction areas.	Subproject contractor	PMO/MRTD	Contractor's budget

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
	- With respect to the recruitment of workers, workers will be locally recruited to the extent practical, and will receive health examinations and education on sexually transmitted diseases. Worker camps will be avoided, and contractors will arrange for workers to stay in locally rented houses that are equipped with power, water supply, cooking facilities and adequate sanitation facilities (at minimum, pit latrines that are not located near wells or surface waters). - Implementation of Traffic Management Plan (ESMF Appendix 9)			
Road operation and traffic management	For traffic noise - Install acoustic shield for noise polluted areas; For traffic safety - Strengthen traffic management to ensure smooth traffic. - *Winter and severe weather maintenance* - gritting for extreme cold, activities to combat high winds, mudslides, and flooding. - *Reactive and emergency response* - repair of potholes, patching, clearing incidents and traffic management - *Routine maintenance* – cyclic maintenance including inspections for minor repairs, clearing drains, inventory management, fixing road signs and marking - *Planned renewals* – interventions to prevent water ingress, drainage improvement, resealing, and preservation of crash barriers.	Relevant local authority	MRTD	TBD
Waste management	Designate garbage point and arrange sanitation department to clean timely.	Relevant local authority	MRTD	TBD
Biodiversity management	- Mitigation requirements in the biodiversity management plan should be well implemented and monitored. - Undertake regular invasive species monitoring/implement remedial measures - Clear/remove invasive plant species immediately they are sighted	Relevant local authority	MRTD	TBD

Activities/Impacts	Mitigation/Prevention Measures	Implementation agency	Supervision agency	Cost/Budget
Storm and Snow	- Protect the personnel from slipper and freezing. Suspend construction in extreme conditions; - Under heavy storm and fog with poor visibility (<1km), the project should suspend transporting tracks approaching or departing procedures; - After large scale snow or frozen conditions, inspect structure integrity to avoid secondary hazards.	Relevant local authority	MRTD	TBD
Flood control	- Any activities next to the water body should avoided flooding seasons. Remove temporary blockages after construction is completed to minimize the impact on flood carrying capacity; - Prepare for flooding before its arrival: the project should suspend load/unload process and practice emergency response plans;	Relevant local authority	MRTD	TBD
Loading/unloading	- Moving machinery should have warning device with light and sound during operation. - Elevated platform should have protection rail and safety net. - Safety belt and anti-slippery shoes should be used when working 2 meters above or ground. - Equip safety devices for large machineries or dangerous positions; - Provide safety gears for all personnel; No overload is allowed.	Relevant local authority	MRTD	TBD
Parking and storing	- Access roads for personnel and vehicles are reasonably arranged and clearly marked. - Products should be arranged reasonably based on the nature of transportation and loading process.	Relevant local authority	MRTD	TBD

6. SUBPROJECT IMPLEMENTATION ARRANGEMENTS, RESPONSIBILITIES AND CAPACITY BUILDING

Construction phase implementation arrangement:

1. The Ministry of Road and Transport Development of Mongolia will be responsible for the overall project implementation and oversight.
2. A Project Steering Committee (PSC) will be established to coordinate and align cross-sectorial activities under the leadership of the Cabinet Secretariat, with representation from the MRTD, the Ministry of Food, Agriculture, and Light Industry (MoFALI), the National Development Agency (NDA), the Road and Transport Development Center, local governments from target *aimags*, and the Ministry of Finance (MOF).
3. A PMO will be established under the MRTD. The PMO director will be appointed by the Minister of Road and Transport Development. The PMO will be responsible for the overall day-to-day implementation of the project, including: (i) preparing annual work plans and budgets and periodical reports, (ii) processing procurement, financial management, environmental and social impact management including the implementation of a grievance redress mechanism, and biodiversity field investigation, BMP and (iii) monitoring and evaluation (M&E) of the project. The PMO will be staffed with a coordinator, specialists, and consultants hired for the sole purpose of coordinating the anticipated project, according to the MOF guidelines. [8]
4. Construction contractors will be responsible for implementing the mitigation measures during construction for each subproject and specific ESMPs and its updates. Contractors will be required to respond to the environmental specifications in the bidding documents in their proposals. Each contractor will also be required to develop a Construction Environmental Management Plan (CEMP) which outlines the way in which they will comply with the EMP, and will assign a person responsible for environment, health and safety.
5. Consultants will be responsible for supporting the PMO and the MRTD with technical assistances, further studies and reports on each subproject. The consultants shall assure all E&S documents' requirements are embedded in future studies, reports and bidding documents etc.

Operation phase implementation arrangement:

The operation phase implementation arrangement shall be discussed with MRTD and the agreed arrangement shall be recorded here.

[8] Regulation on the Use, Implementation, Monitoring and Evaluation of Projects Financed by International Loan.

Capacity building and training

Training topics	Summary of training purpose and content	Recipients/Participants number	Frequency or target date	Estimated cost (USD)
Temporary traffic management HSE guidelines	Overview and step by step guidance on temporary traffic management, and E&S rules and regulations	All local residents and temporary road users, general public	Prior construction, and during construction	To include in construction cost/contractors
Induction to ESMP	Overview of ESMP including site information, pollution risks and controls, and programs. Preparation of site specific ESMPs and training on implementation to staff of construction company (s)	All PMO engineers / contractors	At beginning of project	
Review of ESMP, Refresher training on ESMP	Review of ESMP including new changes and updates to ESMP.	All PMO engineers / contractors	At beginning of project, upon update	
Project management and implementation	Implementation assessment the program. Principle of donor organizations' support to local beneficiaries.	All PMO Engineers /contractors	At beginning of project	
Training on specific pollution risks and controls				
Training topics	**Summary of training purpose and content**	**Recipients/Participants number**	**Frequency or target date**	**Estimated cost (USD)**
Resettlement Policy Framework and Resettlment Action Plan	Resettlment procedures	All PMO Engineers /contractors	During the project implementation	
Emergency response plan	To identify on-site "potential accident scenario" and how to plan potential emergency response actions.	All PMO Engineers /contractors	During the project implementation	To include in construction cost/contractors
Air Quality Monitoring	Ambient Air Quality, VOCs, Particulate Matter, Ozone Depleting Substances (ODS), Greenhouse Gases (GHG)	All PMO Engineers /contractors	During the project implementation	

Training topics	Summary of training purpose and content	Recipients/Participants number	Frequency or target date	Estimated cost (USD)
Water Conservation	Water Monitoring and Management, Process Water Reuse and Recycling	All PMO Engineers /contractors	During the project implementation	
Wastewater and Ambient Water Quality	Liquid Effluent Quality, Discharge to Surface Water, Discharge to Sanitary Sewer Systems, Land Application of Treated Effluent, Septic Systems, Wastewater Management	All PMO Engineers /contractors	During the project implementation	
Hazardous Materials Management	General Hazardous Materials Management, Hazard Assessment, Management Actions	All PMO Engineers /contractors	During the project implementation	
Fire safety	Fire, and Explosion Prevention, Control Measures,	All PMO Engineers /contractors	During the project implementation	
Occupational Safety, Health and Safety	Occupational Health and Safety Emergency Preparedness and Response, Community Involvement and Awareness	All PMO Engineers /contractors	During the project implementation	
Waste Management	General Waste Management, Waste Management Planning, Recycling and Reuse, Treatment and Disposal, Waste Storage, Transportation, Treatment and Disposal, Commercial or Government Waste Contractors, Health Care Wast	All PMO Engineers /contractors	During the project implementation	
Climate change and adaptation (applicable to eligible projects under the Program)	Climate change perspectives due to snow, flooding, dzuds in Mongolia and their impacts during construction and operations	All PMO Engineers /contractors	During the project implementation	

Training topics	Summary of training purpose and content	Recipients/Participants number	Frequency or target date	Estimated cost (USD)
Good engineering and construction practices as mitigation measures	Sound construction practices.	All PMO Engineers /contractors	During the project implementation	
Labor Management Framework	Step by step guidance on all acceptable practices and non-compliances	All PMO Engineers /contractors	During the project implementation	PMO training budget
Environmental Code of Practices	Step by step guidance on all acceptable practices and non-compliances	All PMO Engineers /contractors	During the project implementation	PMO training budget
Traffic Management Plan	Step by step guidance on all acceptable practices and non-compliances	All PMO Engineers /contractors	During the project implementation	PMO training budget

7. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

Stakeholder engagement should be carried out during both the preparation and implementation of ESMP. This would include stakeholder identification and analysis, disclosure of project information and draft ESMP, consultation on draft ESMP, how the comments and suggestions from stakeholders are considered and incorporated into the ESMP.

Initial consultation with Ugtaaltsaidam and Tseel soums' citizen's representatives were held virtually on on September 9th, 2021. Further meaningful consultation shall be organized prior project commencement in line with health and safety requirement.

Appendix 1 contains all issues, concerns, and requests raised by the attendees during the virtual meeting. Information disclosure and public consultation shall be in line with project's ESMF and SEP requirements.

8. GRIEVANCE REDRESS MECHANISM

The objective of grievance redress mechanism (GRM) is to address complaints if or when they arise. A GRM shall be established for each subproject, in accordance with relevant laws and Government practices.

In line with the ESS10, the borrower/MRTD is required to establish and implement a GRM to response to concern and grievance of project-affected parties related to the E&S performance of the project in a timely manner. The GRM may include the following: (a) Different ways in which users can submit their grievances, which may include submission in person, by phone, text messages, mail, email or via a web site; (b) A log where grievance are registered in writing and maintained as a database; (c) Publicly advertised procedure, setting out the length of time users can expected to wait for acknowledgement, response and resolution of their grievances; and (d) Transparency about the grievance procedures, governing structure and decision makers; and (e) An appealing process to which unsatisfied grievance may be referred when resolution of grievance has not been achieved. Also, a mediation option shall be offered where users are not satisfied with the project's resolution. As EES2's requirement, a GRM will be provided for all direct workers and contract workers to raise their workplace concerns. Such workers will be informed of the GRM at the time of recruitment and the measures put in place to protect them against any reprisal for its use and the application of occupational health and safety (OHS) measures to be designed and implemented.

PMO formulates the procedures for implementing the GRM, and it will be introduced during community consultations and publicly available in the Mongolian language to stakeholders throughout the project. In the event of a grievance issue, up to four stages will be implemented, as follows:

Stage 1: Resolution at Local Level and Access to GRM. The GRM system enables affected persons (residents, representatives of local business entities, workers of contractors) to issue a complaint and/or comments, choosing the most comfortable way out of several options. The affected person's complaint will directly be recorded in the internal central web server of MRTD, which is

linked to all feedback systems. The complaint record includes details such as the comments/grievance issue, the affected person's name, contact, and date of grievance.

Stage 2: Complaint Eligibility Assessment and Resolution by MRTD. Received complaint is assigned to the relevant personnel either in PMO or to the appropriate department/division/unit in MRTD. The PMO should take steps to investigate and resolve the issue. This may involve instructing the contractor to take corrective actions. The contractor should implement the redress solution and convey the outcome to the PMO and notify WB. Depending on the type and complexity of the grievance issue, PMO/MRTD can solve the issue between 1-30 days after receiving the comment/complaint.

Stage 3: Complaint Resolution by PMO Steering Committee. PMO investigates and organizes multi-stakeholder meetings within ten days of Stage 3 and then has ten days to implement a solution.

Stage 4: Higher Authority Resolution. If the complaint is not addressed, AP may seek legal redress through the court system.

Ministry of Road and Transport Development
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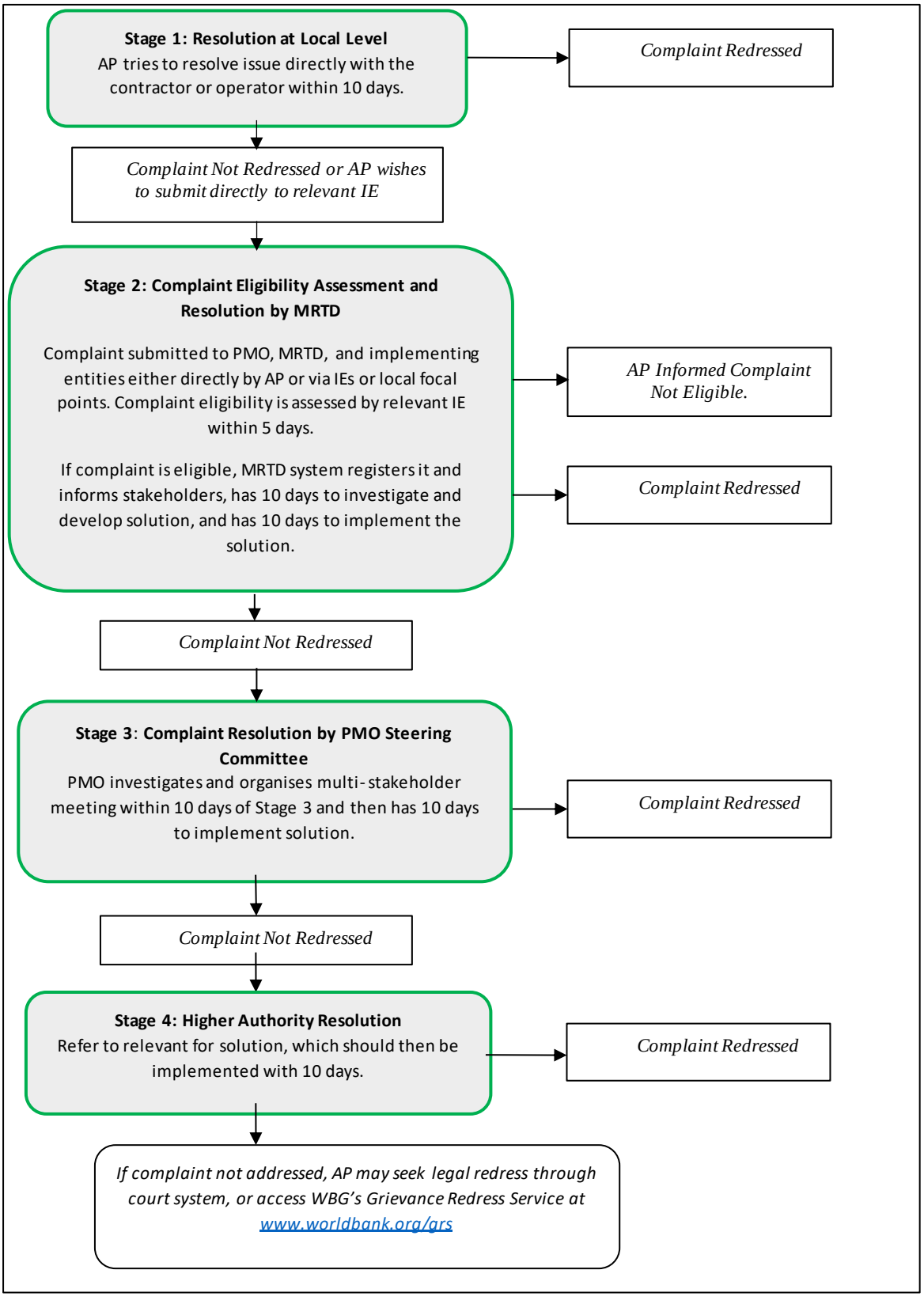
Stage 1: Resolution at Local Level
AP tries to resolve issue directly with the contractor or operator within 10 days.
Complaint Redressed
Complaint Not Redressed or AP wishes to submit directly to relevant IE
Stage 2: Complaint Eligibility Assessment and Resolution by MRTD
Complaint submitted to PMO, MRTD, and implementing entities either directly by AP or via IEs or local focal points. Complaint eligibility is assessed by relevant IE within 5 days.
If complaint is eligible, MRTD system registers it and informs stakeholders, has 10 days to investigate and develop solution, and has 10 days to implement the solution.
AP Informed Complaint Not Eligible.
Complaint Redressed
Complaint Not Redressed
Stage 3: Complaint Resolution by PMO Steering Committee
PMO investigates and organises multi-stakeholder meeting within 10 days of Stage 3 and then has 10 days to implement solution.
Complaint Redressed
Complaint Not Redressed
Stage 4: Higher Authority Resolution
Refer to relevant for solution, which should then be implemented with 10 days.
Complaint Redressed
If complaint not addressed, AP may seek legal redress through court system, or access WBG's Grievance Redress Service at www.worldbank.org/grs

9. SUPERVISION AND REPORTING AND ENVIRONMENTAL MONITORING

The reporting responsibility and requirements for the subproject implementation agency, supervision engineers, external monitors to the PMO to be included here

The PMO safeguard staff (environmental and social specialist/s) will continue to conduct stakeholder engagement in accordance with this SEP and will build upon the channels of communication and engagement already established with stakeholders. In particular, the PMO will seek feedback from stakeholders on the environmental and social performance of the Project, and the implementation of the mitigation measures in the Environmental and Social Commitment Plan.

Consultation and disclosure activities will also be summarized and reported in semi-annual project reports to the World Bank. A number of Key Performance Indicators (KPIs) will also be monitored by the PMO on a regular basis, including the following parameters:

- Number of consultation meetings and other public discussions/forums conducted within a reporting period (e.g. monthly, quarterly, or annually).
- Frequency of public engagement activities.
- Number of public grievances received within a reporting period (e.g. monthly, quarterly, or annually) and number of those resolved within the prescribed timeline.
- Type of public grievances received; and
- Number of press materials published/broadcasted in the national media.

Construction contractors will be responsible for implementing the mitigation measures for each subproject. Contractors will be required to respond to the environmental specifications in the bidding documents in their proposals. Each contractor will also be required to develop an Environmental Social Management Plan (ESMP) and will assign a person responsible for environment, health and safety. The assigned staff responsible for environment, health and safety shall submit ESMP implementation report to the PMO for review. The PMO and external qualified consultants will document the findings and inform the World Bank by developing the E&S monitoring reports semi-annually.

Regular monitoring of environmental aspects during the project construction and operation phases are important to assess the status of environment with respect to baseline conditions. The monitored data can serve as an indicator for any change in environmental quality due to the project activities, and further to take adequate mitigation measures to safeguard the environment. The monitoring plan should be updated where necessary.

The MRTD and PMO will ensure that the E&S documents including EMPs with a monitoring plan describing monitoring measures in detail, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions. The monitoring plan shall focus on the environment within each subproject's area of influence. The extent of monitoring activities during construction and operation shall be commensurate with the subprojects' risks and impacts.

Monitoring will involve compliance inspections in order to assess mitigation implementation against requirements specified in the EMP. Ambient monitoring of air, noise and surface water is optional and will be implemented.

Monitoring shall also cover significant events or issues encountered during construction; changes in project design and EMP, including corrective actions, if applicable; and compliance with the relevant provisions in the project legal agreement.

Table 12. Environmental monitoring plan

Subject	Indicators of monitoring	Location	Frequency	Implemented By	Performance Indicator
A. Preconstruction Phase					
Air Pollution	Dust particles	Construction sites	Once before construction commences Once upon complaint	Subproject Contractor and PMO	Environmental air quality standards of Mongolia (MNS 4585: 2007). MNS 4585-98 air quality indicators. General requirements MNS 5885: 2008 Tolerable level of air pollutants. General technical requirements
Noise	Noise level	Construction sites	Once before construction commences Once upon complaint		MNS 4585: 2017 Mongolian air quality standard - tolerable ambient noise. MNS 5002: 2000 Occupational safety and health. Noise norms and general safety requirements
Soil Pollution	Heavy metals	Construction sites	Once before construction commences		MNS 5850:2019 Soil Quality. Soil pollutants permissible value
B. Construction Phase					
Erosion and Spoil	Compliance inspection of soil erosion management measures	Construction sites, spoil disposal sites	Monthly during construction; and once after completion of spoil disposal	Subproject Contractor's environmental and social staff,	MNS 5916: 2008 Environment. Topsoil stripping and storage during earthworks. Mongolian heavy metal standard (MNS 5850: 2008)
Air Pollution	Compliance inspection of site maintenance measures.	Construction sites, spoil disposal sites	Monthly during construction; and once after completion of spoil disposal	Subproject Contractor's environmental and social staff,	Environmental air quality standards of Mongolia (MNS 4585: 2007). MNS 4585-98 air quality indicators. General requirements MNS 5885: 2008 Tolerable level of air pollutants. General technical requirements
Surface and Groundwater	Visual compliance inspection of wastewater mitigation measures	Construction sites	Monthly	Subproject Contractor's environmental and social staff,	Mongolian environmental water quality standard (MNS 4585: 2007). Mongolian Drinking Water Standard (MNS 0900: 2005). Mongolian wastewater quality standard (MNS 4943: 2011).

Solid Waste	Compliance inspection of domestic and construction waste collection and disposal	Waste collection and disposal sites	Monthly	Subproject Contractor's environmental and social staff,	
Hazardous and Polluting Materials	Compliance inspection of hazardous materials management and recycling	Storage facilities for fuels, oil, chemicals and other hazardous materials. Vehicle and equipment maintenance areas.	Monthly	Subproject Contractor's environmental and social staff,	Joint Resolution No. 263 of June 29, 2015 of the Prime Minister and the Minister of Nature and Environment on the classification of hazardous waste in Mongolia.
Socio-economic Impacts	Visual inspection of construction site to check construction site safety, community safety, implementation of GRM, accidents involving public and workers, public complaints, etc.	Working sites near sensitive receptors	Monthly	Subproject Contractor's environmental and social staff,	
	All near miss, no lost time, lost time and fatal accidents recorded and reported against a performance standard of zero incidents	Solar plant	Monthly	Subproject Contractor's environmental and social staff,	
	Compliance inspection to determine workers have appropriate PPE	All construction sites	Monthly	Subproject Contractor's environmental and social staff,	
	Implementation of COVID – 19 prevention plan, monitoring and reporting	All construction sites	Monthly	Subproject Contractor's environmental and social staff,	ESMF, sub-EMP National OSH regulations and standards Decisions, procedures and regulations issued by the State and Aimag Special Commissions related to the COVID-19 pandemic

1. APPENDIX 1 PUBLIC CONSULTATION NOTES

Ugtaaltsaidam and Tseel soums' citizen's representatives have attended a virtual public consultation on September 9th, 2021. Further meaningful consultation shall be organized prior project commencement in line with health and safety measures.

Tseel soum consultation

The consultation was held virtually. The participants were at the soum authority's meeting room. First, the safeguard specialists and technical specialist introduced the anticipated project, and intention of the consultation.

The key items raised during the discussion are listed below.

1. The soum has been submitting road development and funding request to the government of Mongolia for a long period, and in 2018 a detailed design and supplementary studies were conducted. The soum authorities, citizen's representative groups are aware of the detailed designs, but don't know the specific details.
2. The current design has may require two agricultural lands to be relocated.
3. During high precipitation in the winter season "Aadgain Davaa" is unsafe as the road slope is high.
4. In 1978 an improved unpaved road was constructed. The main use of the road is to support logistical connection for agricultural entities, and local residences. However it is critical to be connected for Orkhon-Tuul soum to establish an alternative route and saving 250 km travel distance for northern provinces and the Ulaanbaatar city. Thus Tseel soum road is strategically important to be developed.
5. The current unpaved road is in difficult condition due to rainfall and flood every rainfall seasons.
6. Majority of the citizens in the soum is supporting the development of the road.
7. Due to poor unpaved routes, multiple routes have been established and causing soil degradation and reduction in pastureland for families with livestock.
8. Dry land and heavy machinery, transportation trucks cause high dust and reduce visibility while covering the crops in adjacent agricultural lands with dusts.
9. Positive and negative impacts are observed. Positive impacts are reduction in vehicle malfunctions caused by unsafe and poor road conditions, socio-economic benefits for the entities along the roads. Negative impacts are traffic accidents, collision with livestock, causing issues for the herder families. During construction phase worker's camp should be monitored and managed properly without causing nuisance to the local residents.
10. Elsen Tsagaan route can be used as a temporary route.
11. During summer no "zuslan[9]", approximately six "uvuljuu[10]", one brigad, three agricultural land owned by private entities are along the road path.
12. During the road design stage we requested the road to be constructed on the east of the soum, not directly passing through the soum center.
13. "Aadgain Davaa ovoo[11]" was established in 1976 therefore the local commutnity expect the road to be constructed without taking down the "Aadgain Davaa ovoo".

[9] "Zuslan" is an area where herder families live during summer season, usually not owned and registered at the General Authority of State Registration of Mongolia. However, the local communities are aware of the claimed sites.

[10] Üvuljuu"is an area where herder families live during winter season. Also not owned and registered at the General Authority of State Registration of Mongolia. However, the local communities are aware of the claimed sites.

[11] "Ovoo" is a built up of a stone by people that are usually built at a higher altitude as part of a religious practices.

14. The Tseel soum has 490 registered vehicles. Normally heavy machinery, trucks are the main road user.
15. Tseel soum population is 2800, however during spring and autumn the population is reaches 8000. Tseel soum has the highest number of 210 hay production sites with total of 12000 hectares land. 36000 hectares land is owned by 150 citizens and 85 entities for agricultural purposes. Tseel soum solely provides 50% of hay production of Mongolia annually.
16. 76km unpaved road is travelled 3-4 hours by a passenger vehicle, large vehicle travels 6-7 hours.
17. Average speed is 20-30km/hour
18. In the last 2-3 year the number of transportation passing through the soum increased significantly traveling from Selenge, Erdenet, Khutul soums via Tseel soum due to Darkhan road construction.

Ugtaaltsaidam soum consultation

The consultation was held virtually. The participants were at the soum's citizen's conference room. First, the safeguard specialists and technical specialist introduced the anticipated project, and intention of the consultation.

The key items raised during the discussion are listed below.

1. 45km unpaved road until connected to paved road. Passenger vehicle travels 90 minutes, oversized vehicles spend at least two hours.
2. The soum authority is aware of detailed design development, but don't have the detailed information
3. Depending on the season the traffic varies, increases during spring and autumn season.
4. Approximately 20 km in length area is experiencing soil degradation, and desertification due to loss of plant species and reduced diversity.
5. Population of approximately 200 Red Deer *Cervus Elaphus Linnaeus* migration is present in Ugtaaltsaidam soum and few other soums in Tuv aimag. Therefore, road crossing to support migration is vital to support the increasing population.
6. During winter migration of Mongolian gazelle *Procapra gutturosa* migrates through the region and leaves during spring.
7. Riverbed near road located 20 km in distance experiences soil erosion
8. The agricultural fences are taken down after crop collection to facilitate grazing for herders as pastureland is limited in the region.
9. Due to agricultural activities, dust is created during spring on windy days.
10. Three resettlements are along the road. The existing road is directly passes by the soum center. Therefore, the road is preferred if it doesn't pass through the soum center for safety purposes.
11. Along the road there are multiple herder's "uvuljuu" and require livestock to safely pass through the road.
12. All the archeological sites are far from the road, mostly near the "Taliin Uul". No other sensitive areas are in the region.
13. We think there are no resettlements to construct the road.
14. Kazakh minority with population of 200, approximately 40 households are settled since 1970s in one of the baghs. The road passes throught their "uvuljuu" and "khavarjaa".
15. Passengers and logistical trucks from and to Erdenet, Bulgan, Selenge are passing frequently especially with Darkhan road is under construction.
16. 200-300 temporary residents increase during spring and autumn months.
17. Due to poor road condition we loss many opportunities especially the to develop the livestock production. Many people are interested to inhabit in Ugtaaltsaidam soum as air pollution and traffic issues increasing the capital city.
18. Heavy machinery frequently passes through the soum. Therefore, it would be vital to consider capacity of the road during design stage. The soil in Ugtaaltsaidam may be subject to erosion.

2. APPENDIX 2 COVER PAGE OF THE DETAILED DESIGN REPORT BY "MCPC$_{GR}$ LLC"

"ЭМ СИ ПИ СИ ЖИ АР"ХХК

ШИФР : 03/18

ТӨВ АЙМГИЙН УГТААЛЦАЙДАМ, ЦЭЭЛ, ЗААМАР СУМЫН ТӨВИЙН 122.399 КМ ХАТУУ ХУЧИЛТТАЙ АВТО ЗАМЫН ИНЖЕНЕРИЙН НАРИЙВЧИЛСАН ЗУРАГ ТӨСӨЛ

ТАЙЛБАР БИЧИГ

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ИНЖЕНЕР Д.ЧИНТҮШИГ

УЛААНБААТАР 2018

3. APPENDIX 3 DETAILED DESIGN ROUTE COORDINATES

ESMP Appendix
Detailed design coorc