MINISTRY OF ROAD AND TRANSPORT OF MONGOLIA

Mongolian Transport Connectivity and Logistics Improvement Project (MTCLIP) -P174806

PROJECT ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Package 3: Undurkhaan–Choibalsan 50 km Road Rehabilitation Work

State Road Network Route No. A0502 | between KM50+000 – KM100+000|

Bayankhutag Soum (Khentii Aimag) | Munkhkhaan Soum (Sukhbaatar Aimag)

Version: Final Draft

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Ministry of Road and Transport
Ulaanbaatar, Mongolia

World Bank Loan Agreement No. 9336-MN

CONTENTS

Abbreviations and Acronyms

Abbreviation	Description
AASHTO	American Association of State Highway and Transportation Officials
AC	Asphalt Concrete
ADT	Average Daily Traffic
BOQ	Bill of Quantities
BPRP	Borrow Pit Restoration Plan
C-ESMP	Contractor's Environmental and Social Management Plan
CBR	California Bearing Ratio
CLO	Community Liaison Officer
CoC	Code of Conduct
DDISH	Satellite TV service widespread in Mongolia
DEIA	Detailed Environmental Impact Assessment
DNP	Defects Notification Period
E&S	Environmental and Social
EHS	Environmental, Health and Safety
EHS Guidelines	Environmental, Health, and Safety Guidelines (WBG, 2007)
EHSG	Environmental, Health, and Safety Guidelines (WBG, 2007)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESF	Environmental and Social Framework (World Bank, 2016)
ESHS	Environmental, Social, Health and Safety
ESMP	Environmental and Social Management Plan
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standards
FIDIC	International Federation of Consulting Engineers
GBV	Gender-Based Violence
GEIA	General Environmental Impact Assessment

GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
IPC	Interim Payment Certificate
IPIU	Integrated Project Implementation Unit
IRI	International Roughness Index
LBPAR	Legacy Borrow Pit Assessment Report
LMP	Labor Management Procedures
MECC	Ministry of Environment and Climate Change
MNS	Mongolian National Standard
MRTD	Ministry of Road and Transport Development
MTCLIP	Mongolia Transport Connectivity and Logistics Improvement Project
OHS	Occupational Health and Safety
PA	Protected Area
PAP	Project Affected Person/People
PM	Particulate Matter (PM10, PM2.5)
PPE	Personal Protective Equipment
RPF	Resettlement Policy Framework
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
TMP	Traffic Management Plan
TLUA	Temporary Land Use Agreement
WB	World Bank
W-GRM	Worker Grievance Redress Mechanism

EXECUTIVE SUMMARY

This Environmental and Social Management Plan (ESMP) has been prepared by the Integrated Project Implementation Unit (IPIU) of the Ministry of Road and Transport (MRT) for the rehabilitation of a 50 km section of the state road network No. A0502 between Undurkhaan (Khentii aimag) and Choibalsan (Dornod aimag), corresponding to chainage KM50+000 to KM100+000. The project forms Package 3 of the Mongolia Transport Connectivity and Logistics Improvement Project (MTCLIP), financed by the World Bank (Loan No. 9336-MN). The road traverses Bayankhutag soum of Khentii aimag and Munkhkhaan soum of Sukhbaatar aimag, a sparsely populated steppe region whose economy is almost entirely dependent on pastoral herding. The proposed works include pavement rehabilitation, base repair, drainage improvement (including 40 culverts), installation of road safety features, and the elimination of multiple informal dirt tracks that have formed alongside the road due to its deteriorated condition. The road construction works are planned to be implemented during the 2026 and 2027 construction seasons (from May to October), with an average of 219 workers engaged at peak periods.

The project aims to address critical deficiencies in road infrastructure. Although the road was constructed between 2013 and 2015, it was not formally handed over and has not received required maintenance for many years. As a result, the condition of the road has become unsafe, leading road users to create alternative tracks and causing degradation of surrounding pastureland. In addition, several borrow pits from the original construction remain along the corridor, posing risks to traffic while also serving as informal watering points for local herders.

By improving road safety, reducing travel time, and enhancing market access, the project will deliver tangible benefits to local communities. These outcomes are particularly important in the aftermath of recent dzud events, which caused severe livestock losses—especially in Sukhbaatar aimag—and left many households economically vulnerable, with poverty levels above the national average. In this fragile context, communities are more sensitive to potential project-related disruptions, making the anticipated benefits even more critical.

Based on the Detailed Environmental Impact Assessment (DEIA, 2026) and this ESMP analysis, the project is classified as Substantial Risk under the World Bank Environmental and Social Framework (ESF). Key risks include road safety during construction, dust and air quality impacts, community health and safety concerns, management of legacy borrow pits, labour influx and associated GBV/SEA risks, and occupational health and safety. The project is expected to deliver a significant net positive land-use outcome by consolidating traffic onto a single paved carriageway and enabling the recovery of approximately 6,900 hectares of degraded pasture currently occupied by informal tracks. Legacy borrow pits, although not created by the current project, remain within the project area and therefore require appropriate management to ensure community safety and environmental compliance.

To date, two focus groups have been convened, involving seven participants and representatives from the local administration. Given the sparsely populated project impact area and the timing of surveys, this consultation was deemed sufficient for ESMP development. Additional consultations are scheduled during the C-ESMP development phase, aligned with World Bank ESF requirements. These will include at least one community meeting and a woman-only focus group in each soum, a survey targeting no fewer than 30 households, and consultations with both affected businesses and vulnerable households. Furthermore, C-ESMP must be translated and made available in every citizen hall in soums where project will take place, prior to the commencement of construction activities.

Several critical environmental and social considerations require focused management. Legacy borrow pits must be addressed in a manner that balances their safety risks with their current function as informal water sources for livestock. Seasonal livelihood sensitivity is also a key issue, as major economic activities such as fodder preparation, roadside trade, and tourism occur during the same period as the planned construction works. Due to the timing of field surveys, these impacts are only partially understood and cannot be fully quantified at this stage. As such, they must be addressed through an adaptive management approach within the Contractor's ESMP (C-ESMP), including pre-construction verification of seasonal land use and close coordination with local authorities and communities during implementation. In particular, fodder reserve areas represent high-value seasonal land use and require careful identification, consultation, and avoidance-based planning to prevent disruption to herder livelihoods during critical periods.

1. PROJECT OVERVIEW AND TECHNICAL SOLUTIONS

1.1 General Project Information

This Environmental and Social Management Plan (P-ESMP) covers the rehabilitation of the 50 km section of the state road network No. A0502 between Undurkhaan (Chinggis City, Khentii aimag) and Choibalsan (Dornod aimag), corresponding to chainage KM50+000 to KM100+000. The project is part of the Mongolia Transport Connectivity and Logistics Improvement Project (MTCLIP, World Bank Loan No. 9336-MN), implemented by the Ministry of Roads and Transport (MRT) through the Integrated Project Implementation Unit (IPIU).

The road traverses Bayankhutag soum of Khentii aimag and Munkhkhaan soum of Sukhbaatar aimag across the eastern Mongolian steppe — a sparsely populated landscape whose economy is almost entirely dependent on pastoral herding. Construction is planned within two working seasons (2026–2027) by Shandong Luqiao Group Co., Ltd (SDLG Mongolia LLC) under a FIDIC contract arrangement, with supervision provided by Soosung Engineering Co., Ltd and Dasan Co., Ltd Joint Venture, in association with Geo Zuraglal LLC.

Table 1-1. Key Project Parameters

Parameter	Description
Project Name	Package 3. A0502 Undurkhaan-Choibalsan 50 km road rehabilitation work
Parent Programme	Mongolia Transport Connectivity and Logistics Improvement Project (MTCLIP), P174806
World Bank Loan No.	9336-MN
Client / Employer	Ministry of Roads and Transport (MRT), through the Integrated Project Implementation Unit (IPIU)
Construction Supervision Consultant	Soosung Engineering Co., Ltd and Dasan Co., Ltd Joint Venture, in association with Geo Zuraglal LLC
Contractor	Shandong Luqiao Group Co., Ltd
DEIA Prepared by	Sencou Solutions LLC (Сенкоу Сольюшн ХХК), 2026
Road network No.	State Road network - A0502
Road Class	Class 1В (ЗЗБНбД 22-004-2016: 1Б-ГЗ-3ХГ-2-90)
Design Speed	80 km/h
Road Length	50 km (KM50+000 to KM100+000)
Administrative Coverage	Bayankhutag soum (Khentii aimag); Munkhkhaan soum (Sukhbaatar aimag)
Construction Period	Two working seasons: 2026-2027
Financing	World Bank (IDA), Loan No. 9336-MN
ESF Risk Classification	Substantial Risk
Corridor	Corridor: Eastern Steppe, from Undurkhaan (Chinggis City, Khentii) to Choibalsan (Dornod)

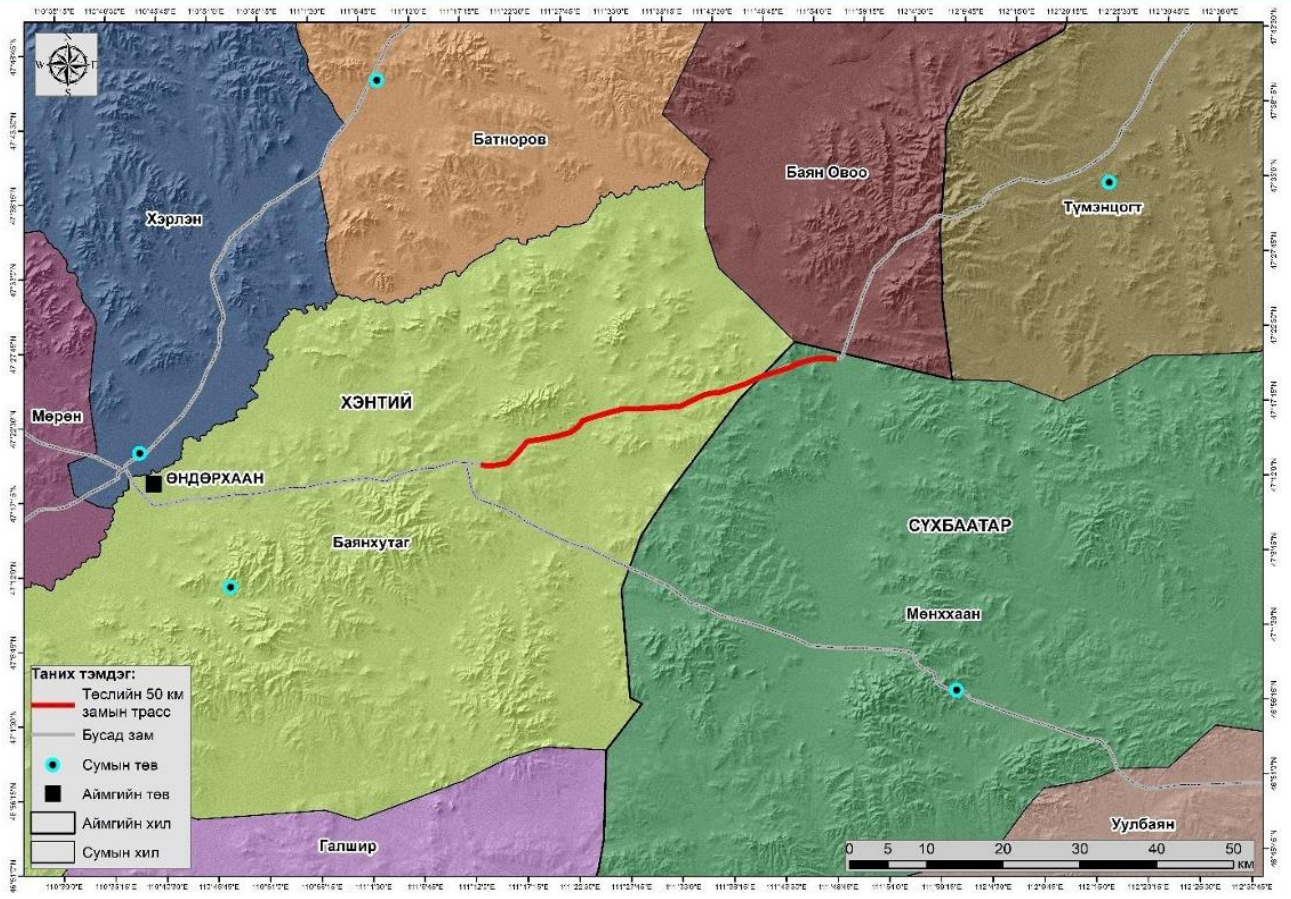
1.2 Project Location

The project road runs generally east–west across the eastern Mongolian steppe, traversing the following administrative units:

- Bayankhutag soum, Khentii aimag — western section of the alignment, steppe plateau terrain
- Munkhkhaan soum, Sukhbaatar aimag — eastern section, Bayantsagaan bag, approaching the Sukhbaatar aimag flatlands

The road corridor lies in the Undur-Kherlen physiographic region — a broad rolling plain (fluvio-denudational) with elevations ranging from approximately 940 m to 1,182 m along the 50 km alignment. The elevation differential across the full project length is approximately 148 m. The terrain is characterised by gentle to moderate slopes with no major escarpments intersecting the road. The region falls within Mongolia's IV physiographic major zone (Eastern steppe zone), sub-zone IV.1 (Khalkha middle and Dariganga plateau region).

Figure 1-1. Road Alignment Administrative Coverage



1.3 Technical Characteristics and Road Classification

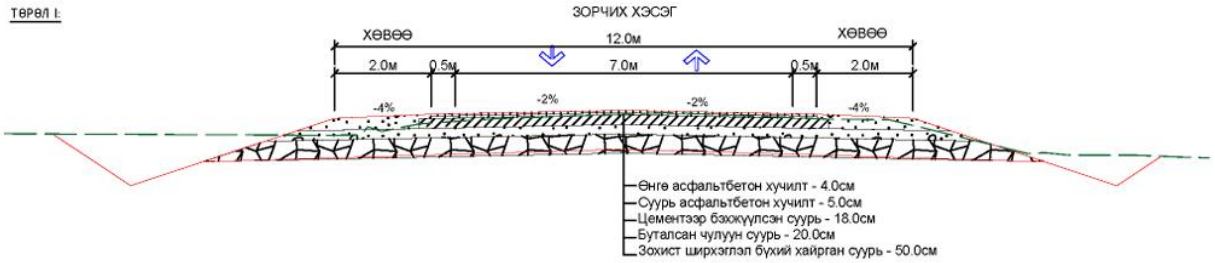
The road is designed and rehabilitated to Class 1B standard (1Б-Г3-3ХГ-2-90) in accordance with the Mongolian Road Design Norm ЗЗБНбД 22-004-2016 ("Collector Road in the central network: undivided, 2-lane, design speed 80 km/h"). This is the highest rural road class in Mongolia's national network. The classification determines all geometric parameters: minimum horizontal curve radii, vertical curve radii, cross-section dimensions, sight distance requirements, and pavement design standards.

The climatic zone classification for pavement design is Road Climate Zone II-B (Dry steppe, cold-continental sub-zone). This zone is characterized by deep seasonal frost penetration (soil frost depth >1 m in severe winters), significant frost-heave risk in low-lying areas, and susceptibility to spring thaw-weakening of subgrades. The pavement structure must be rated to withstand extreme temperatures ranging from –40°C in winter to +39°C in summer.

1.4 Road Cross-Section and Formation

The standard cross-section provides for a two-lane undivided carriageway of 7.0 m total width, with 0.5 m paved shoulders and 1.5 m gravel shoulders on each side. The total formation (embankment) width is 12.0 m. The cross-section was designed in accordance with Section 3 (Cross-Section Elements) of ЗЗБНбД 22-004-2016 and verified through geotechnical investigation at 101 borehole locations along the alignment.

Figure 1-2. Standard Cross-Section Dimensions



1.5 Pavement Structure and Design

The pavement structure was designed based on: (i) geotechnical investigation results from 101 borings along the alignment; (ii) CBR (California Bearing Ratio) and plasticity index results from quarry and subgrade samples; (iii) traffic loading analysis; and (iv) the Road Climate Zone II-B requirements for frost protection under Mongolian norms.

The existing deteriorated pavement is to be fully stripped by cold milling. The new pavement structure will be constructed from subgrade preparation upward. Where the existing embankment subgrade material does not meet the specification for the upper embankment layer (CBR ≥20%, plasticity index <7, material passing 0.075 mm sieve <15%, swell <2%), replacement with compliant material in layers of minimum 150 mm is required.

Pavement Structure and Material Sources:

- Asphalt concrete wearing course (top layer): Dense-graded AC, rated for −40°C to +39°C temperature range.
- Asphalt concrete binder course: Structural AC layer bonded with tack coat between layers.
- Crushed aggregate base course: Compacted crushed stone base, CBR ≥80%.
- Crushed aggregate subbase course / frost protection layer: Selected granular material; CBR ≥30%; designed to prevent frost heave penetration to structural layers.
- Prepared subgrade: Compacted native or imported fill to CBR ≥20%; unsuitable material replaced in 150 mm compacted layers.

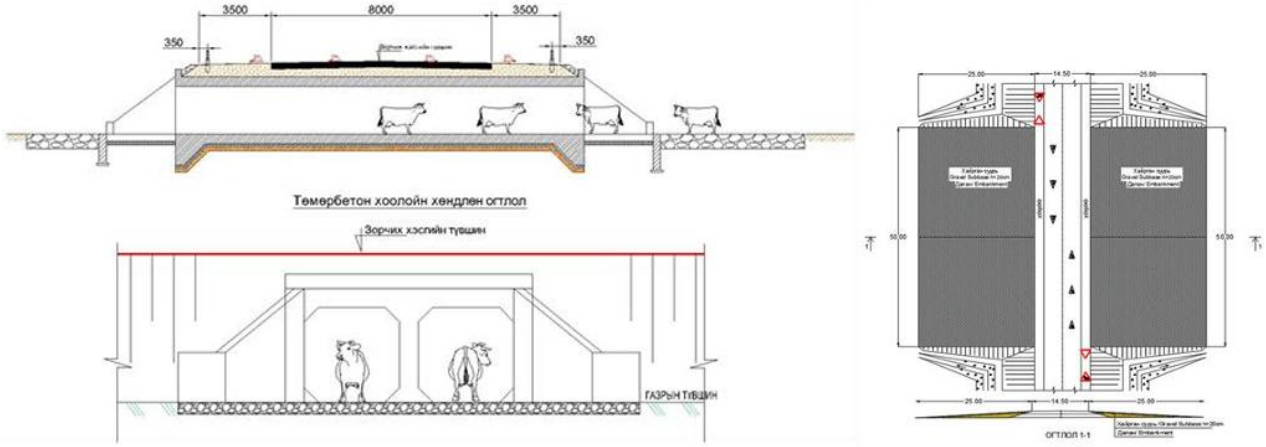
Of the 16 quarry sites tested for material properties:

- 12 quarry sites meet the specification for embankment fill material (CBR meets requirements, plasticity acceptable).
- 2 quarry sites (K18+970 and K26+700) yield material suitable for the frost protection layer (high CBR, well-graded).
- 1 quarry site (K39+200) yields material suitable for cement concrete aggregate.
- 4 quarry sites (K1+500, K13+900, K15+200, K18+400) do not meet the specification for embankment fill and will require material from other approved sources

1.6 Livestock and Wildlife Crossings

In accordance with Mongolian standard MNS 6515:2015 (Wildlife Crossing for Road Infrastructure), wildlife and livestock crossing structures are incorporated into the road design at locations identified through consultation with local herder communities, bag governors, and local environmental authorities. The locations of crossing structures were coordinated with the existing railway underpass network in the corridor.

Figure 1-3. Livestock crossing design



The project provides 5 underpass-type crossings using RC box culverts of minimum 2.0 × 2.5 m internal dimensions, and 1 at-grade (single-level) crossing. Box culverts at crossing points are designed with smooth concrete inverts and have been dimensioned to allow passage of cattle, horses, camels, and medium-sized wildlife (gazelle, fox, wolf) simultaneously.

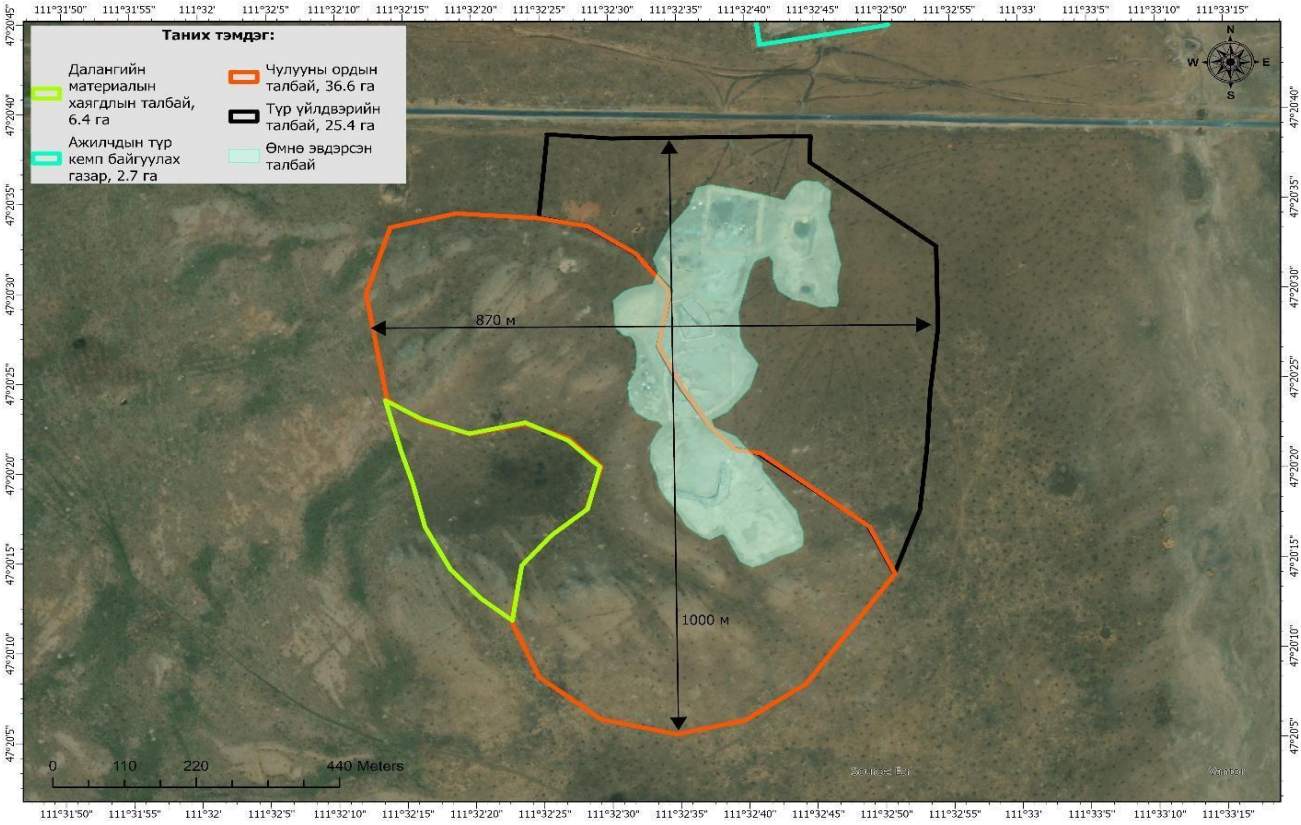
Table 1-2. Livestock and Wildlife Crossing Structures

No.	Chainage	Crossing Structure	Purpose
1	KM16+436.90	2.0×2.5 m × 2	Livestock + wildlife passage
2	KM16+904.40	2.0×2.5 m × 2	Livestock + wildlife passage
3	KM24+030.00	2.0×2.5 m × 2	Livestock + wildlife passage
4	KM39+250.00	2.0×2.5 m × 2	Livestock + wildlife passage
5	KM48+907.10	2.0×2.5 m × 3	Livestock + wildlife passage (largest)
6	KM33+440–33+530	At-grade passage	Single-level livestock crossing

The precise location and number of wildlife crossings will be confirmed during C-ESMP development based on the results of the pre-construction wildlife survey (required as a pre-construction condition per Section 5 of this ESMP and per WB reviewer comments). Where survey results identify additional migration corridors, the Contractor shall propose additional crossing locations to the Supervision Engineer and IPIU for approval before earthworks in that section commence.

1.7 Material Sources, Quarries, and Haulage Arrangements

Within the scope of the Project, a total of 16 material source areas (quarries and borrow sites) are designated along both sides of the 50 km alignment. This arrangement is intended to minimize haul distances, reduce traffic pressure on the public road network, and limit new land disturbance. The total material requirement is approximately 1,674,624 m³, to be extracted from a combined quarry footprint of 83.7 ha. A state-issued extraction permit shall be obtained for each quarry prior to commencement of material extraction.



A dedicated quarry and industrial compound have been established at KM23+000 (right side, south of the alignment), covering approximately 36.6 ha for the rock aggregate source and 25.4 ha for the asphalt mixing plant, crushing plant, and aggregate storage. This compound is located on a pre-disturbed footprint originating from the original 2013–2015 construction works.

Table 1-3. Quarry Site Summary — (7 Locations)

Type of fields	Duration of usage month	Coordinates №	Long			lat			Quarry area (m²)	Location
Quarry - 1	19	1	111°	32′	33.601"	47°	20′	26.912″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	34.473"	47°	20′	29.943″		
		3	111°	32′	16.133"	47°	20′	22.871″		
		4	111°	32′	19.710"	47°	20′	22.091″		
		5	111°	32′	23.830"	47°	20′	22.633″		
Quarry - 2	19	1	111°	32′	48.932"	47°	20′	16.800″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	39.130"	47°	20′	21.113″		
		3	111°	32′	29.300"	47°	20′	20.222″		
		4	111°	32′	28.210"	47°	20′	17.802″		
		5	111°	32′	25.766"	47°	20′	16.467″		
Quarry - 3	19	1	111°	32′	48.932"	47°	20′	16.803″	45508.38	
		2	111°	32′	25.763"	47°	20′	16.466″		

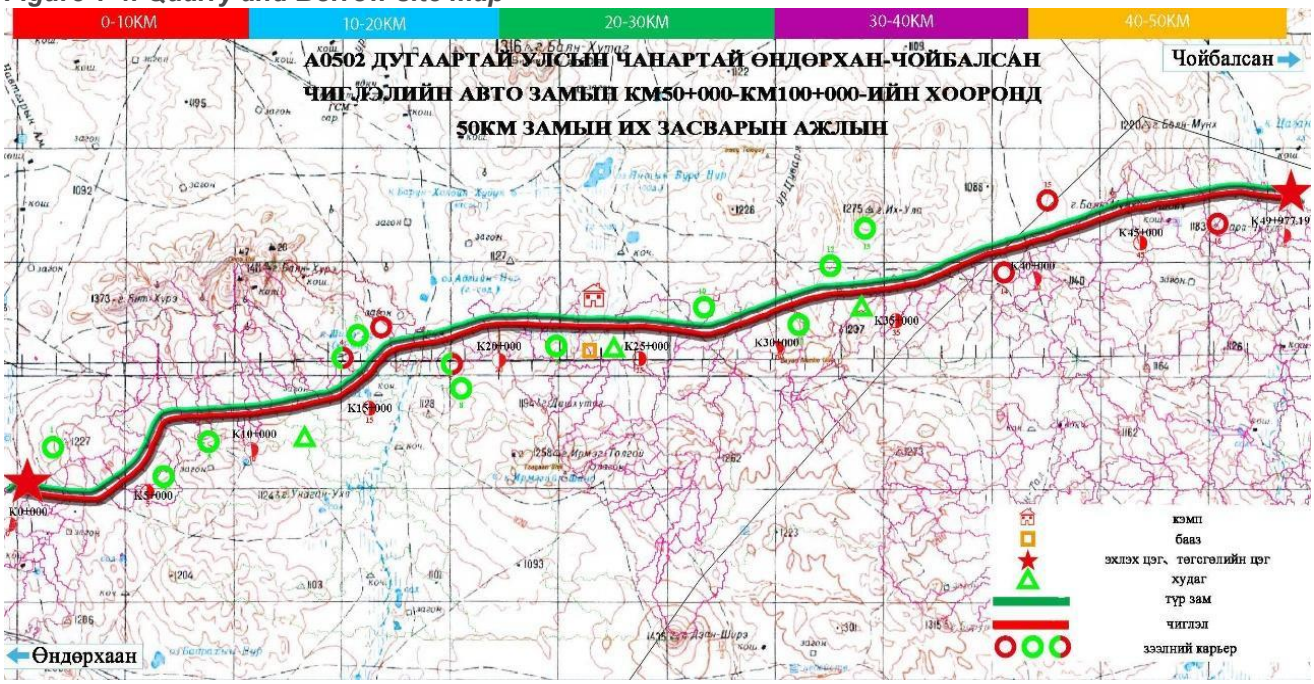
		3	111°	32′	23.491"	47°	20′	14.753″		Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		4	111°	32′	22.712"	47°	20′	11.651″		
Quarry - 4	19	1	111°	32′	48.932"	47°	20′	16.803″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	25.763"	47°	20′	16.466″		
		3	111°	32′	23.491"	47°	20′	14.753″		
		4	111°	32′	22.712"	47°	20′	11.651″		
Quarry - 5	19	1	111°	32′	20.803"	47°	20′	14.188″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	48.931"	47°	20′	16.803″		
		3	111°	32′	22.412"	47°	20′	09.351″		
		4	111°	32′	24.671"	47°	20′	08.537″		
Quarry - 6	19	1	111°	32′	50.804"	47°	20′	14.178″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	24.155"	47°	20′	09.352″		
		3	111°	32′	29.112"	47°	20′	06.161″		
Quarry - 7	19	1	111°	32′	50.807"	47°	20′	14.185″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	29.118"	47°	20′	06.163″		
		3	111°	32′	34.690"	47°	20′	05.311″		
		4	111°	32′	39.712"	47°	20′	06.044″		
		5	111°	32′	44.181"	47°	20′	08.083″		

Table 1-3. Borrow Site Summary — (All 13 Locations)

Type of fields	Duration of usage months	Coordinates							Borrow area (m²)	Location
		№	Long			lat				
Borrow pit -1	19	1	111°	20′	11.310"	47°	18′	13.577"	39987.778	Khentii–Choibalsan Road Rehabilitation Bayankhutag Soum KM40+500 From road route: 772 m
		2	111°	20′	23.133"	47°	18′	03.948"		
		3	111°	20′	18.369"	47°	18′	07.828"		
		4	111°	20′	11.205"	47°	18′	03.231"		
Borrow pit -2	19	1	111°	20′	11.310"	47°	18′	13.577"	45508.382	Choibalsan Road Rehabilitation Bayankhutag Soum KM4+500 From road route: 772m
		2	111°	20′	26.526"	47°	18′	13.060"		
		3	111°	20′	18.369"	47°	18′	07.828"		
		4	111°	20′	23.133"	47°	18′	03.948"		
Borrow pit -3	19	1	111°	21′	14.777"	47°	18′	48.184"	48440.236	Choibalsan Road Rehabilitation Bayankhutag Soum KM8+00 From road route: 488 m
		2	111°	21′	14.591"	47°	18′	39.446"		
		3	111°	21′	31.863"	47°	18′	47.230"		
		4	111°	21′	23.248"	47°	18′	43.348"		
Borrow pit -4	19	1	111°	21′	14.591"	47°	18′	39.446"	48440.236	Choibalsan Road Rehabilitation Bayankhutag Soum KM14+400 From road route: 488 m
		2	111°	21′	29.815"	47°	18′	39.598"		
		3	111°	21′	31.863"	47°	18′	47.230"		
		4	111°	21′	23.248"	47°	18′	`43.348"		
Borrow pit -5	19	1	111°	25′	55.006"	47°	19′	40.382"	28646.573	Choibalsan Road Rehabilitation Bayankhutag Soum KM14+400 From road route: 157 m
		2	111°	25′	52.533"	47°	19′	44.773"		
		3	111°	26′	01.230"	47°	19′	47.605"		
		4	111°	26′	04.026"	47°	19′	43.903"		
Borrow pit -6	19	1	111°	29′	15.712"	47°	20′	04.718"	42560	Choibalsan Road Rehabilitation
		2	111°	29′	23.287"	47°	20′	01.246"		

		3	111°	29′	30.109"	47°	20′	04.409"		Bayankhutag Soum KM19+000 From road route: 832 m
		4	111°	29′	23.416"	47°	20′	10.364"		
Borrow pit -7	19	1	111°	31′	57.840"	47°	20′	35.875"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM22+400 From road route: 148 m
		2	111°	31′	55.050"	47°	20′	32.700"		
		3	111°	32′	02.550"	47°	20′	32.700"		
		4	111°	32′	04.850"	47°	20′	35.570"		
		5	111°	32′	00.270"	47°	20′	34.230"		
Borrow pit -8	19	1	111°	35′	31.849"	47°	21′	02.642"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM26-700 From road route: 1183 m
		2	111°	35′	28.374"	47°	21′	08.371"		
		3	111°	35′	38.435"	47°	21′	10.396"		
		4	111°	35′	41.430"	47°	21′	05.553"		
		5	111°	35′	35.423"	47°	21′	06.849"		
Borrow pit -9	19	1	111°	38′	42.576"	47°	20′	56.710"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM23+000 From road route:371 m
		2	111°	38′	48.327"	47°	20′	59.442"		
		3	111°	38′	55.240"	47°	20′	52.024"		
		4	111°	38′	51.327"	47°	20′	49.980"		
		5	111°	38′	50.073"	47°	20′	53.936"		
Borrow pit -10	19	1	111°	40′	38.465"	47°	21′	19.776"	45508.382	`Choibalsan Road Rehabilitation Bayankhutag KM31+100 From road route:158 m
		2	111°	40′	37.130"	47°	21′	23.543"		
		3	111°	40′	49.298"	47°	21′	26.483"		
		4	111°	40′	50.210"	47°	21′	21.353"		
Borrow pit -11	19	1	111°	41′	02.523"	47°	21′	46.755"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM34+400 From road route:1073 m
		2	111°	40′	49.151"	47°	21′	57.359"		
		3	111°	41′	12.794"	47°	22′	04.764"		
		4	111°	41′	06.763"	47°	21′	54.142"		
Borrow pit -12	19	1	111°	41′	02.523"	47°	21′	46.755"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM34+400 From road route:1073 m
		2	111°	41′	12.794"	47°	22′	04.764"		
		3	111°	41′	18.467"	47°	21′	51.989"		
		4	111°	41′	06.763"	47°	21′	54.142"		
Borrow pit -13	19	1	111°	44′	58.717"	47°	22′	00.993"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM39+200 From road route:168 m
		2	111°	44′	58.575"	47°	22′	55.820"		
		3	111°	44′	51.267"	47°	21′	54.609"		
		4	111°	44′	50.399"	47°	21′	59.505"		
		5	111°	44′	54.712"	47°	21′	57.561"		

Figure 1-4. Quarry and Borrow site map



1.8 Camps, Ancillary Facilities, and Temporary Land Use

The project requires temporary use of several areas outside the permanent road alignment for construction support facilities. All temporary land-use areas require authorization from the local government in accordance with applicable laws and regulations before use. Authorization for temporary land use was granted by Bayankhutag soum governor under Order A/118 (20 October 2025) covering four sites through end-2027.

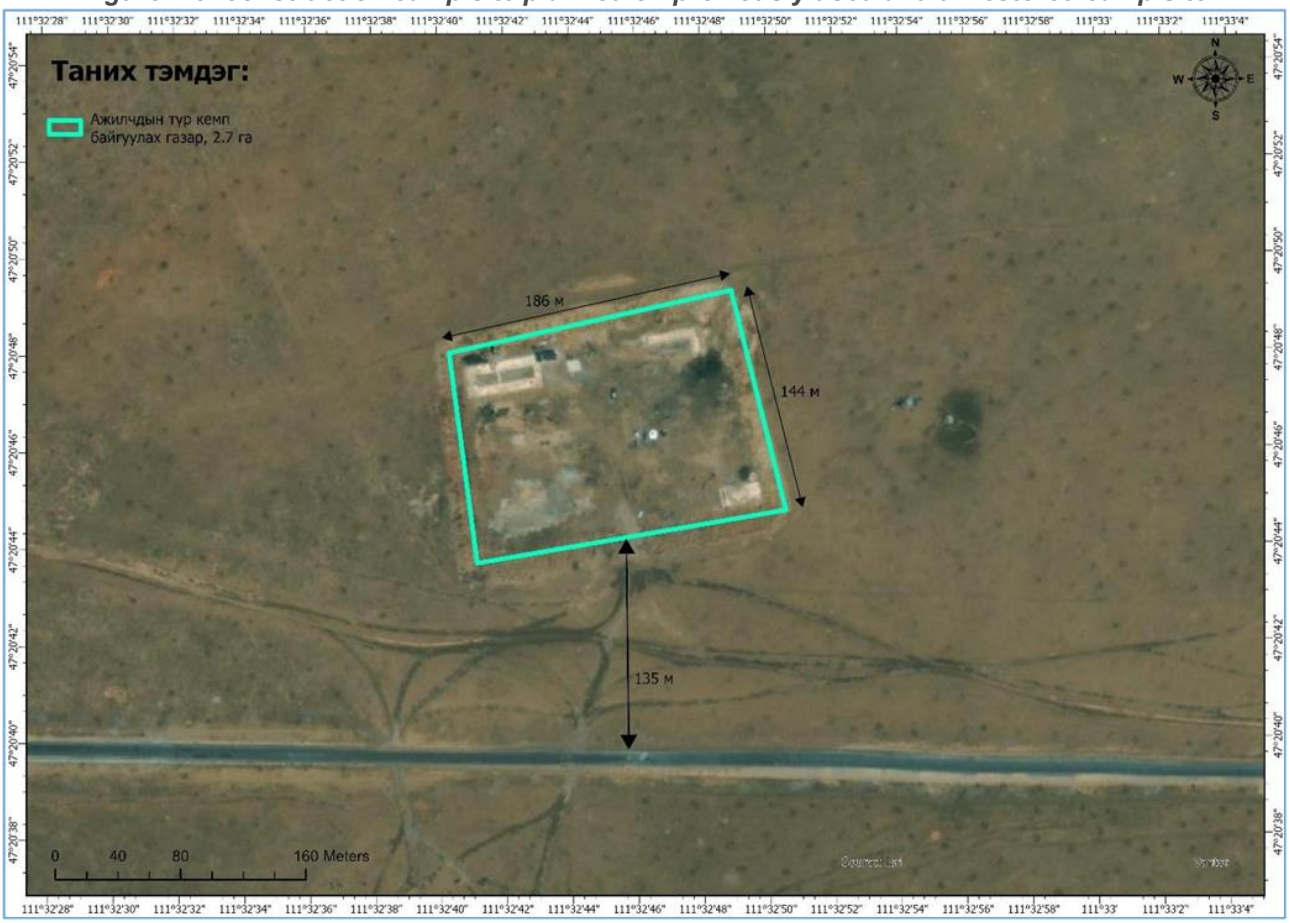
Table 1-4. Camp, Industrial Facilities, and Temporary Land Use Summary

Facility	Location	Area	Description and Environmental Considerations
Worker camp (temporary)	KM50+000 area (Bayankhutag soum), north of existing road, 135 m standoff	2.7 ha	61 container units (3 m × 6 m); project personnel, laboratory, supervision staff; pre-existing camp footprint from original 2013–2015 construction
Temporary industrial compound (asphalt plant + crusher)	Adjacent to quarry at KM23+000 (south of alignment)	25.4 ha	Asphalt mixing plant, crushing plant, aggregate storage; 6.9 ha previously disturbed; 18.5 ha newly disturbed
Main quarry / rock source	KM23+000 (right side, south of alignment)	36.6 ha	Primarily rock aggregate for base course; state-issued extraction permit; 5.1 ha previously disturbed; 31.5 ha new extraction area
Spoil / surplus material disposal areas	41 locations distributed along alignment, within road reserve or adjacent state land	Total: ~6.4 ha new disturbance	Surplus excavation material, old asphalt millings; graded, topsoiled, and revegetated after use; Engineer certifies each closure
Temporary roads / haul routes	Parallel to alignment along 50 km; quarry access tracks	~40 ha (8 m width × 50 km)	Traffic diversion during active pavement works; generally, follows existing informal tracks; temporary; restored post-construction
Soum governor approval	Bayankhutag soum governor approval A/118, 20 Oct 2025	All 4 temporary sites authorized to end-2027	Camp, industrial compound, quarry, spoil area all covered

The worker camp accommodates approximately 219 confirmed project workers (153 Chinese nationals and 66 Mongolian nationals) in 61 prefabricated container units (3 m × 6 m each). Container allocation: 38 units for construction contractor staff; 8 units for the field laboratory; 15 units for supervision consultant and employer representative staff. All workers including supervision staff

are accommodated in the same camp facility, which simplifies security management, water supply, waste handling, and emergency response.

Figure 1-5: construction camp site planned on previously used and unrestored camp site



1.9 Workforce Composition and Local Employment

Total project workforce is approximately 219 persons (153 Chinese nationals and 66 Mongolian nationals), allocated across eight functional departments. The workforce is deployed at peak during May–October 2026 (peak construction season) and during the April–July 2027 completion phase. A minimum local employment target of 30% of the workforce (≥66 workers) is sourced from Bayankhutag and Munkhkhaan soums, with priority given to unskilled and semi-skilled roles including camp services, drivers, and equipment operators.

Table 1-5. Workforce Allocation by Functional Unit

Functional Unit	Posts	Nationality	Role Description
Project management and design	6	Chinese nationals	Senior management, chief engineers, design team
Construction implementation	42	Chinese nationals	Section engineers, foremen, technical leads
Health, Safety and Environment	5	Chinese/Mongolian	EHS Officer (mandatory), environmental and social specialists
Camp services	14	Mongolian (local hire priority)	Cook, cleaners, logistics, security
Finance and administration	5	Chinese/Mongolian	Finance, HR, administration
Plant operations (asphalt, crushing)	22	Chinese nationals	Plant operators, batch plant technicians
Technical services (QC, survey, lab)	16	Chinese/Mongolian	Lab technicians, surveyors, QC inspectors

Drivers and equipment operators	56	Mongolian (local hire priority)	Dump truck drivers, grader, excavator, roller operators
TOTAL	166 posts (~153 foreign + 66 Mongolian = 219 confirmed)	—	Minimum 30% local employment target (≥66 workers from 2 project soums)

Worker nationality and local employment data will be reported monthly in the Contractor's E&S implementation report and verified through payroll audit by the Supervision Engineer. The 30% local employment commitment is contractually binding and tracked against the monthly disaggregated payroll records submitted to the IPIU.

1.10 Machinery and Equipment

A total of 84 units of construction machinery and equipment are deployed at peak construction. The equipment fleet is dominated by dump trucks (45 units, 54% of total), reflecting the intensive haulage requirements of moving approximately 1.67 million m³ of material between 16 quarry sites and the 50 km road alignment. The highest equipment utilization is expected during May–October 2026 and April–July 2027.

Table 1-6. Summary of Construction Machinery and Equipment (Peak Deployment)

Equipment Type	Quantity	Primary E&S Relevance
Motor grader	3	Subgrade preparation, shoulder grading
Excavator	5	Earthworks, drainage excavation, quarry stripping
Wheel loader	7	Material loading, stockpile management
Vibratory roller (compactor)	7	Subgrade, subbase, and base layer compaction
Dump truck (heavy)	45	Primary haul vehicle: quarry to workfront (50 km corridor); dust suppression risk
Recycler / milling machine	1	Cold milling of existing asphalt pavement
Paver (asphalt finisher)	2	AC surface course and binder course laying
Pneumatic tyre roller	2	AC compaction; finishing roller
Tandem vibratory roller	2	AC layer compaction
Bitumen distributor / sprayer	1	Tack coat and prime coat application
Water truck	5	Dust suppression on active sections and haul routes; compaction moisture
Service vehicle / support truck	1	Equipment maintenance, spare parts
Crane	1	Culvert installation, heavy lifts
Road marking machine	1	Thermoplastic road marking application
Guardrail post driver / installer	1	Safety barrier installation
TOTAL	**84 units**	**Peak deployment: May–October 2026 and April–July 2027**

All vehicles and equipment must comply with minimum emissions standards (Euro III or equivalent) as a pre-commencement condition. The final equipment register, fuel management arrangements, workshop maintenance procedures, spill prevention measures, and daily deployment schedule will be confirmed and submitted for Supervision Engineer approval before mobilization.

1.11 Construction Water Demand and Supply

Construction activities require approximately 436,132 m³ of water over the construction period, with the dominant demand (93%) arising from dust suppression on the active road surface, haul routes, and quarry access tracks. This is a substantial volume equivalent to approximately 1038,4 m³ per day over the 420-day construction season.

Table 1-7. Construction Water Demand Estimates

Water Use Category	Estimated Volume (m³)	Calculation Basis
Dust suppression (road surface, haul routes)	406,455	Spraying frequency × road length × frequency factor (Mongolian norm)
Embankment compaction (moisture conditioning)	28,270	Compaction norm × embankment volume
Asphalt concrete mixing	210	Mix design water/aggregate ratio
Worker camp domestic use (100 persons × 420 days × 20 L/day)	1,197	20 L/person/day standard; average occupancy ~100 persons/month depending on construction phase
TOTAL	~436,132 m³	Water abstraction permit required from River Basin Authority before construction commences

Water supply will be obtained from authorized sources under a permit from the River Basin Authority (Kherlen River Basin Administration), to be obtained before any construction commences. Deep groundwater wells (35–118 m depth) in the soum centres serve community drinking water and must not be compromised by construction water abstraction. Monthly groundwater level monitoring at community wells is required (see monitoring plan, Chapter 8).

Water use efficiency measures include scheduling dust suppression during cooler morning and evening hours to reduce evaporation loss; recycling runoff from the compaction process where safe; and using treated camp greywater for non-contact dust suppression on access roads where this does not create public health risks.

1.12 Project Footprint and Land Disturbance Summary

The total direct disturbance footprint of the project is approximately 274.8 ha, of which approximately 80 ha is permanent (the road structure itself) and approximately 194.8 ha is temporary (subject to rehabilitation and restoration obligations). All temporary disturbance areas must be reinstated to pre-construction land use capability or better, verified through joint inspection with affected herder households and certified by the Supervision Engineer before the Performance Certificate is issued.

Table 1-8. Summary of Project Land Disturbance Footprint

Land Use Category	Area	Permanence and Restoration Obligation
Road structure (formation width 16 m × 50 km)	80 ha	Permanent; existing road corridor — no new corridor
Road reserve / ROW (100 m total width)	~250 ha	Permanent; road law reservation; no new land acquisition
Temporary roads / haul routes (8 m × 50 km)	~40 ha	Temporary; restored post-construction; follows existing tracks where possible
Quarries (16 sites)	83.7 ha	Temporary; full technical and biological rehabilitation required; 4 sites pre-used from original construction
Worker camp	2.7 ha	Temporary; pre-existing footprint; full restoration before demobilization
Asphalt plant + industrial compound	25.4 ha	Temporary; 6.9 ha pre-disturbed; 18.5 ha new disturbance
Quarry / rock source at KM23+000	36.6 ha	Temporary; 5.1 ha pre-disturbed; 31.5 ha new extraction; full restoration plan required
Spoil / surplus material areas (41 sites)	~6.4 ha	Temporary; graded and revegetated; certified closed by Engineer before handover
TOTAL direct disturbance footprint	~274.8 ha	Of which ~80 ha permanent road structure; remainder temporary and subject to restoration obligation

1.13 Basis for Preparation of this ESMP

This P-ESMP has been prepared based on the following principal documentation:

1. Detailed Environmental Impact Assessment (DEIA): "A0502 National Highway KM50+000–KM100+000, 50 km Major Rehabilitation Project" - prepared by Sencou Solutions LLC, 2026;
2. Social Impact Assessment (SIA), 2025;
3. Engineering Design Documentation: Horizontal and vertical alignment, cross-section, drainage, pavement structure, road safety features - prepared by the Postov LLC, 2022;
4. Geotechnical Investigation Report: 101 borehole locations, soil classification, CBR testing, groundwater data;
5. MTCLIP Environmental and Social Management Framework (ESMF, MRT, 2021);
6. World Bank Environmental and Social Framework (ESF, 2018) and applicable Environmental and Social Standards (ESS1–ESS10);
7. WBG EHS Guidelines: General Environmental, Health and Safety; Roads and Highways sector guidance;
8. Mongolian national legislation and standards as listed in Chapter 4 of this ESMP;
9. Stakeholder consultation records: FGD-01 (Bayankhutag, 22 Nov 2025); FGD-02 (Munkhkhaan, 23 Nov 2025); household survey (Oct–Nov 2025, 11 households across 2 project soums);
10. Bayankhutag Soum governor Order A/118 (20 October 2025) — temporary land use authorization

Some project information remains at planning level and requires pre-construction verification before civil works commence on any section. Items requiring confirmation include: final active quarry list and extraction sequence; confirmed haul route designations; final workforce deployment schedule; camp occupancy plan; confirmed water abstraction source and permit; equipment register and maintenance arrangements; final temporary land-use herder agreements; and site closure and reinstatement sequencing. These are captured as pre-commencement conditions in Chapter 6 (Table 6-1) of this ESMP.

2. ENVIRONMENTAL BASELINE CONDITIONS

The project area lies in the eastern Mongolian steppe zone, a transition between the Khangai-Khentii highland to the west and the Dornod flat steppe to the east. The following subsections summarize baseline conditions based on the Detailed Environmental Impact Assessment (DEIA) prepared by Sencou Solutions LLC (2026) and supplementary field surveys.

2.1 Climate and Air Quality

The project area experiences an extreme continental climate: hot summers, very cold winters, low precipitation, and large temperature fluctuations. Based on long-term records (1991–2020), mean annual temperature is approximately –0.25°C at Bayankhutag station, with January averaging –23.5°C and July +19.5°C. Extreme temperatures range from –40°C in winter to approximately +39°C in summer. Annual precipitation is 200–300 mm, falling predominantly in June–August. Prevailing spring winds are from the northwest; dust storms and high winds are common in April–May.

Table 2-1. Key Climate Parameters – Bayankhutag Station (1991–2020 average)

Parameter	Value
Mean annual temperature	–0.25°C
January mean temperature	–23.5°C
July mean temperature	+19.5°C
Absolute minimum temperature	–40°C (winter)
Absolute maximum temperature	+39°C (summer)
Annual precipitation	200–300 mm
Precipitation peak months	June–August
Prevailing wind direction (spring)	Northwest
Winter 3-month average	–15°C
Summer 3-month average	+16.7°C
Seismic hazard	Moderate – MSK intensity VII

Ambient air quality is generally good, with no industrial pollution sources. Baseline PM10/PM2.5 measurements along the corridor are within Mongolian standards, except at one location (T5) where localized dust slightly exceeded standards during a high-wind period. These climatic extremes impose constraints on road design (asphalt mix rated for –40°C) and on construction scheduling.

2.2 Topography, Geology, and Soils

The project lies in the Undur-Kherlen physiographic region — a broad rolling plain (fluvio-denudational) with elevations ranging from ~940 m to ~1,050 m along the alignment. The terrain has gentle slopes; no steep mountains or escarpments intersect the road. Geological substrate consists of Quaternary and Late Neogene alluvial and aeolian sands, silts, and gravels. A geotechnical investigation (101 boreholes) confirmed unconsolidated deposits with localized soft-soil pockets. No active seismic faults are mapped near the alignment; seismic hazard is moderate (MSK VII). No permafrost was found within the project footprint; however, isolated seasonal frost effects are relevant to pavement design.

Table 2-2. Soil Types Along Road Corridor (within 1 km buffer)

Soil Type	Area (ha)	Notes
Ordinary dark chestnut soil	~3,540 ha (~63%)	Dominant; moderate fertility, loamy texture
Sandy loam dark chestnut soil	~1,400 ha (~25%)	Prone to wind erosion when vegetation removed
Meadow saline soil	~680 ha (~12%)	Valley bottoms; shallow depressions

Humus-rich topsoil is approximately 20 cm thick. Soils are vulnerable to both water erosion (spring snowmelt) and wind erosion on exposed sandy soils. InVEST sediment modelling indicated moderate erosion potential on steeper slopes. No significant soil contamination was detected; heavy metals in roadside soils are within national standards.

2.3 Surface Water and Groundwater

There are no permanent rivers along the 50 km stretch. The corridor lies in the upper Kherlen River basin; only ephemeral streams and drainage ditches flow briefly during spring snowmelt or heavy summer rain. The Kherlen River (~30–40 km north) and Khar Yamaat lakes (~17 km northeast) are outside the direct impact zone. No Ramsar wetlands or UNESCO sites intersect the alignment.

Groundwater: Deep confined aquifers (>35 m) underlie the area. Soum center wells are 35–118 m deep. Water quality is generally good (fresh), recharged by precipitation and river seepage. No artesian springs are located on the road alignment.

Table 2-3. Construction Water Demand Estimates (Based on Mongolian Norms)

Use	Volume (m³)	Basis
Dust suppression (road surface)	406,455	Spraying frequency × road length
Embankment compaction	28,270	Compaction norm × volume
Asphalt mixing	210	Mix design requirement
Workers domestic use (average 100 persons × 420 days × 20 L/day)	1,197	20 L/person/day standard
TOTAL	**~436,132**	Water permit required from authorities

Note: All water withdrawals require a permit from the river basin authority. Water use efficiency measures must be implemented to avoid depleting community wells or aquifers (see Section 5.2 mitigation).

2.4 Ecosystems, Vegetation, and Habitat

The project area lies in the dry steppe ecological zone (central Khalkh steppe). The road corridor vegetation is steppe grassland with no natural forests. A vegetation survey was conducted at seven representative sites (VP-1 to VP-7) in September 2025; 69 vascular plant species belonging to approximately 50 genera in 22 families were recorded.

Average live vegetation cover is 75–80%, with peak cover (~90%) in a sedge swale near Bor Kholoi and lowest (~60%) at a disturbed roadside camp. NDVI (Sentinel-2, August 2025) ranges from 0.21 to 0.37 along the corridor. Dominant communities are: Wormwood–Feather Grass, Leymus–Achnatherum, Mixed Forb–Grass, and Sagebrush–Grass. No endemic or critically endangered plant species were identified along the alignment.

Table 2-4. Summary of Plant Species Families Recorded (DEIA Field Survey, September 2025)

Family	# Species	% of Total	Key Species / Notes
Poaceae (Grasses)	12	18%	Dominant forage grasses: *Stipa grandis, Stipa krylovii, Leymus chinensis, Cleistogenes squarrosa*
Asteraceae (Composites)	11	16%	Wormwoods (*Artemisia scoparia, A. frigida*); *Saussurea salsa*
Fabaceae (Legumes)	8	11%	*Astragalus spp., Caragana microphylla, Medicago spp.*
Chenopodiaceae (Goosefoots)	5	7%	Saltworts on saline patches: *Suaeda, Chenopodium spp.*
Rosaceae (Roses)	5	7%	*Potentilla* spp. (cinquefoils)
Liliaceae (Lilies)	4	5%	*Allium spp*. (wild onions)
Cyperaceae (Sedges)	3	4%	*Carex duriuscula*
Brassicaceae (Mustards)	3	4%	Common steppe species

Other families (14 families)	18	28%	Including *Lamiaceae, Urticaceae, Euphorbiaceae*, etc.
TOTAL	**69**	**100%**	22 families, ~50 genera

Full species list in Section 1.2.4 of the DEIA (Sencou Solutions LLC, 2026).

2.5 Fauna (Wildlife)

The field survey conducted to assess and identify the negative impacts on fauna and their habitats during the construction and operational phases of the project to renovate and upgrade a 50 km section of the state-priority road corridor connecting Khentii to Dornod provinces.

Wildlife Habitat and Ecological Impact Assessment

The most critical species distributed within the project implementation area and its zone of influence is the Mongolian Gazelle (*Procapra gutturosa*), which is well-documented (with approximately 40 scientific articles available). This section summarizes previous and recent national-level studies regarding the distribution, migration, and population of the Mongolian Gazelle.

In recent years, herds of Mongolian Gazelles searching for winter forage have been recorded reaching as far north as Ulaanbaatar and Batsumber soum in Tuv province, even entering forest zones. They have also been noted in forests and forest edges in certain soums of Khentii province. This phenomenon should be understood because of environmental and climatic factors, such as droughts or heavy snow (*dzud*), rather than an actual expansion of their natural range.

Regarding the population of Mongolian Gazelles in the project region (Dornod-Khentii provinces):

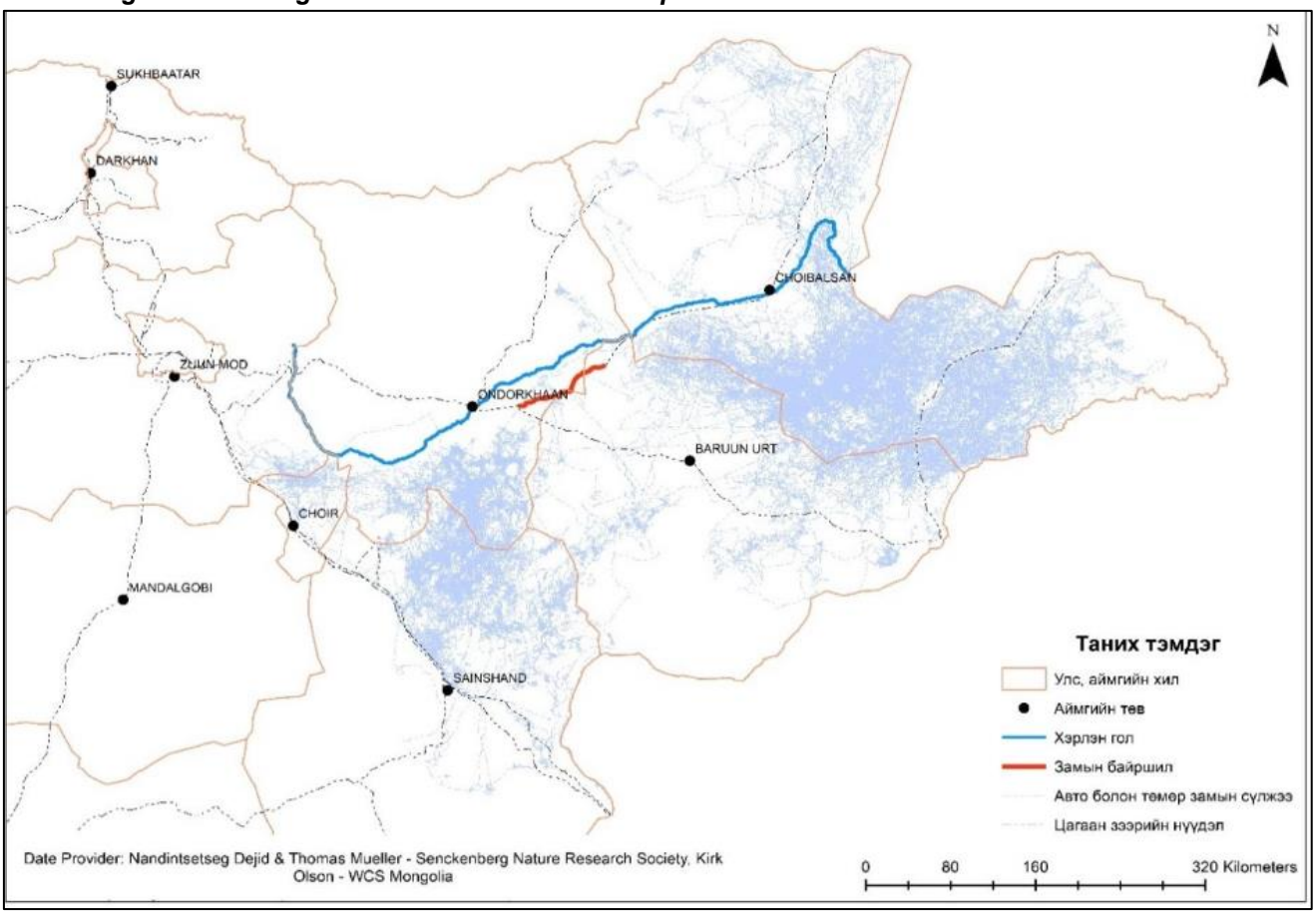
- 2009 Study: Estimated a population of 5 million.
- 2016 Game Resource Report: Recorded 699,715, indicating a seven-fold decrease.

In addition to distribution and population data, identifying calving grounds is a vital metric for developing conservation management strategies for this species. According to the most recent data published from a Summer 2020 survey:

- The population is estimated at 2.14 million.
- Approximately 30,000 reside within the territory of the Russian Federation.
- 99% of the global population is concentrated in Mongolia.

The nearest Argali Mountain sheep *(Ovis ammon)* population is ~40 km away at Bayankhutag Mountain. The Mongolian gazelle *(Procapra gutturosa)* migrates through eastern Mongolia; the project area lies south of the main migration corridor; seasonal movements may occur. Although Mongolian gazelles were not recorded during the field surveys, a review of baseline research materials indicates that they migrate into the area from autumn to spring. Their population numbers fluctuate significantly depending on the grazing conditions (vegetation growth) of that particular year.

Figure 2-1: Mongolian Gazelle movement map

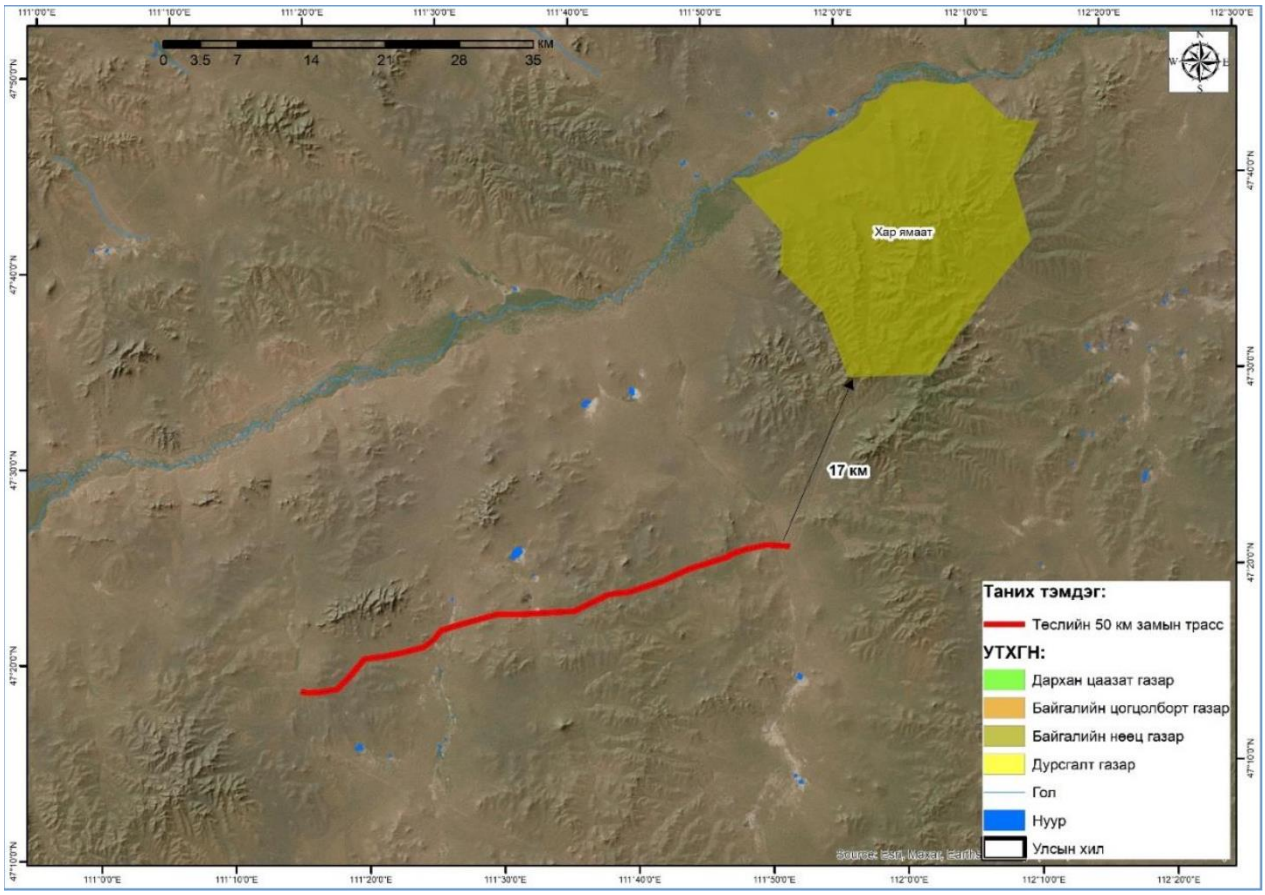


Source: GIUM report published 04 Sep 2024

Special Protected area

This area was designated as a "Nature Reserve" (NR) under State Special Protection by Resolution No. 28 of the State Great Khural of Mongolia on April 9, 1998. The objective was to protect its unique combination of biodiversity and landscape characteristics in harmony with traditional livestock husbandry, create conditions for the restoration of natural resources, and establish it as a center for scientific research. The Khar Yamaat Nature Reserve spans 50,691 hectares, straddling the territories of Bayan-Ovoo soum in Khentii province and Tumenstogt soum in Sukhbaatar province. The Khar yamaat NR located 17 km away from road alignment. Of this total area:

- 40,676 hectares are in Bayan-Ovoo soum.
- 10,015 hectares are in Tumenstogt soum.



Fauna and Biodiversity

The reserve is home to a diverse array of species across several classifications: Amphibians and Reptiles: Recorded species include the Mongolian Toad (*Bufo raddei*), Mongolian Racerunner (*Eremias argus*), Dione Ratsnake (*Elaphe dione*), and Halys Viper (*Gloydius halys*).

Birds: A total of 60 bird species from 11 orders have been documented. This includes species listed in the *Mongolian Red Book* and those classified internationally as Rare or Near Threatened, such as:

- Swan Goose (Anser cygnoides)
- Falcated Duck (Anas falcata)
- Saker Falcon (Falco cherrug)
- Lesser Kestrel (Falco naumanni)
- White-naped Crane (Antigone vipio)
- Asian Dowitcher (Limnodromus semipalmatus)
- Black-tailed Godwit (Limosa limosa)
- Black Stork (Ciconia nigra)
- Whooper Swan (Cygnus cygnus)

Mammals:

- Carnivores: Pallas's Cat (Otocolobus manul), Eurasian Lynx (Lynx lynx), Corsac Fox (Vulpes corsac), Red Fox (Vulpes vulpes), Gray Wolf (Canis lupus), and Asian Badger (Meles leucurus).

- Ungulates: Forest and steppe species such as the Siberian Roe Deer (Capreolus pygargus), Red Deer/Elk (Cervus elaphus), and Mongolian Gazelle (Procapra gutturosa).
- Small Mammals: Common mountain and forest-steppe species including the Daurian Pika (Ochotona dauurica), Striped Dwarf Hamster (Cricetulus barabensis), Korean Field Mouse (Apodemus peninsulae), Daurian Ground Squirrel (Spermophilus dauricus), Siberian Jerboa (Allactaga sibirica), Brandt's Vole (Lasiopodomys brandtii), Campbell's Desert Hamster (Phodopus campbelli), and Daurian Hedgehog (Mesechinus dauuricus).

Note: Since 2019, the Mongolian Marmot (*Marmota sibirica*) has been undergoing reintroduction within this Nature Reserve (*Source: Tal Nutgiin Khangai-Khar Yamaat Nature Reserve, 2023*).

Birds – *Avifauna*

The field survey period coincided with the tail end of the bird migration season; the recorded species richness is high. A total of 60 bird species belonging to 11 orders were documented.

Regarding their residency and ecological status:

- 10 species (26%) are sedentary (year-round residents).
- Approximately 75% are migratory species that visit the area for nesting and summering.

Conservation Status

Among the 60 recorded species, several are of international and regional conservation concern based on the IUCN Red List criteria and CITES appendices:

IUCN Red List Status:

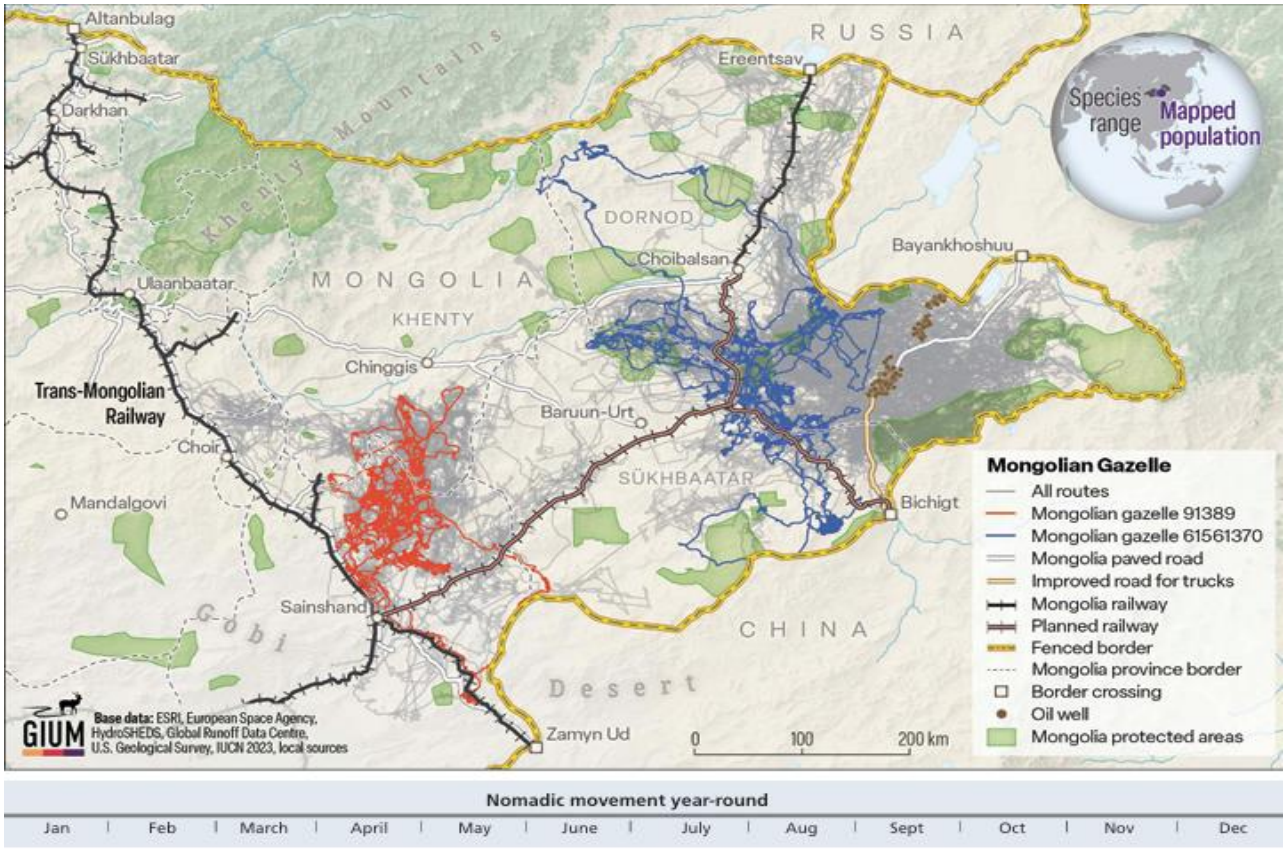
- Near Threatened (NT): Cinereous Vulture (*Aegypius monachus*) and Falcated Duck (*Mareca faclcata*)
- Vulnerable (VU): Swan Goose (*Anser cygnoides*) and Saker falcon (*Falco cherrug*)
- The remaining 56 species are classified as Least Concern (LC) with stable population levels.

CITES Appendix II: The following species are listed under CITES Appendix II, which regulates international trade to ensure their survival:

- Cinereous Vulture (*Aegypius monachus*)
- Steppe Eagle (*Aquila nipalensis*)
- Amur Falcon (*Falco amurensis*)
- Upland Buzzard (*Buteo hemilasius*)
- Hen Harrier (*Circus cyaneus*)
- Little Owl (*Athene noctua*)

Negative Impacts on Fauna

The project area is situated at the western edge of the grass steppes typical of eastern Mongolia. The project road alignment will not be overlapping and crossing critical habitats that includes Kherlen River basin, the Khar Yamaat Nature Reserve, and a network of Important Bird Areas (IBAs). In terms of biodiversity, the area supports over 60 bird species from 11 orders, 4 species of reptiles, and approximately 20 species of mammals.



The Mongolian gazelle remains the most thoroughly studied species in Eastern Mongolia; recent advancements using satellite GPS collars have enabled that migration route and connective areas not overlapping road alignment. While their primary habitat lies south of the Kherlen River, occasional migratory movements may record along the proposed road alignment.

Anticipated Impacts and Consequences

- Project activities are expected to result in the following impacts on wildlife:
- Habitat Disruption: Core construction activities will lead to habitat loss and a reduction in the population and species composition of soil-dwelling rodents, reptiles, and insects.
- Noise Disturbance: Noise generated by heavy machinery will cause limiting large mammals' movement.
- Direct Mortality: Small rodents are at high risk of being crushed by construction and transport vehicles.

Impacts on Birds and Wildlife

The primary negative factors affecting fauna, particularly birds, include:

- Habitat Fragmentation: The road may sever traditional routes used by livestock and wildlife to reach water sources.
- Traffic Hazards: During the operational phase of the paved road, vehicle movements pose a significant risk of livestock and wildlife collisions, leading to livestock and wildlife mortality and potential traffic accidents.
- Dust Displacement: Dust and particulate matter generated during earthworks and operational activities may drive wildlife away from the area.

Table 2-5. Key Wildlife Species of Conservation Concern

Common Name	Scientific Name	IUCN/Status	Relevance to Project
Saker Falcon	*Falco cherrug*	Endangered	Mongolian flagship raptor; hunts on corridor grasslands
Lesser Kestrel	*Falco naumanni*	Vulnerable	Migratory; recorded passing through project area
Steppe Eagle	*Aquila nipalensis*	Endangered	Resident/migratory raptor; nests in wider region
Pallas's Cat	*Otocolobus manul*	Near Threatened	Mongolian Red Book; rocky outcrops/shrub areas
Eurasian Lynx	*Lynx lynx*	Protected in MN	May traverse corridor while hunting
White-naped Crane	*Antigone vipio*	Vulnerable	Uses Kherlen wetlands 20–30 km north

2.6 Sensitive Habitats and Protected Areas

ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources: Habitat classification is a decision tool informing avoidance requirements and habitats are classified consistent with ESS6:

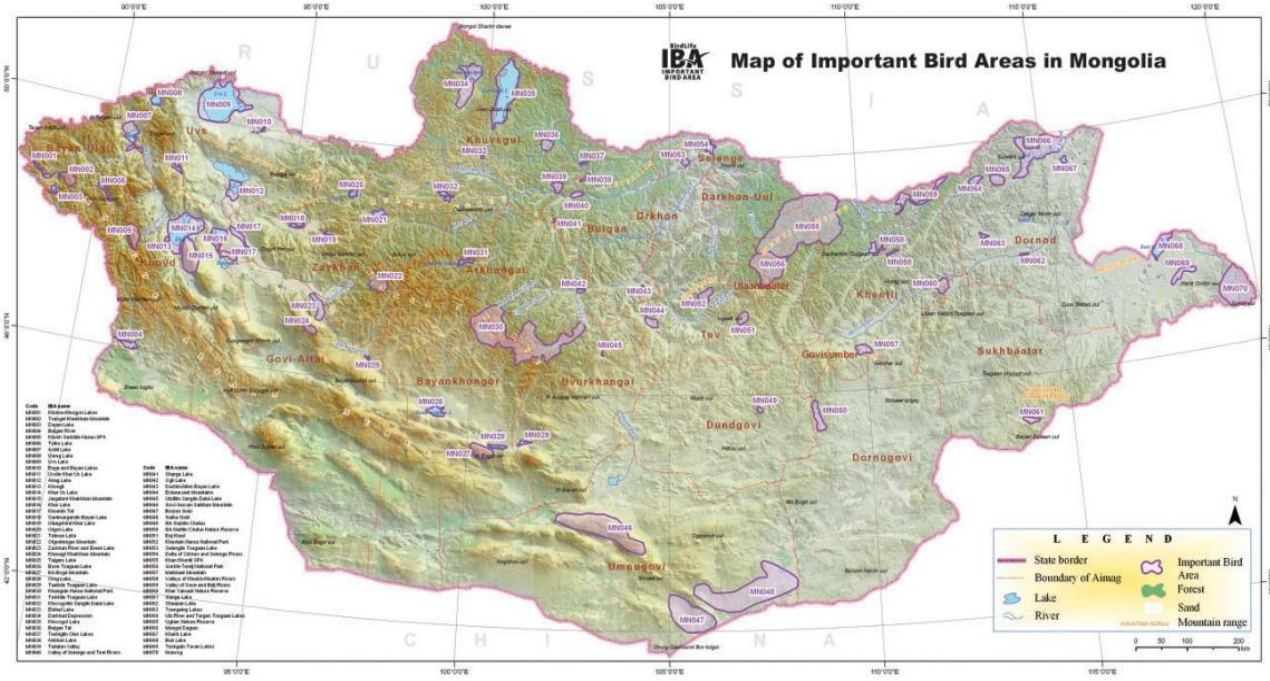
- Critical Habitat
- Natural Habitat
- Modified Habitat

Based on the field survey the project area is classified as MODIFIED HABITAT. In modified habitats, management focuses on preventing additional degradation, maintaining ecological function, and avoiding indirect effects on nearby sensitive areas. Improvement or restoration measures may be incorporated where practical. The road runs through an existing, already-disturbed corridor in steppe grassland that has been subject to long-term grazing.

The nearest strictly protected area is Khar Yamaat Nature Reserve (a steppe and wetland reserve important for cranes, bustards, and migratory birds), located approximately 17 km northeast of the eastern terminus of the project road. Construction activities will not encroach toward this reserve. No Ramsar wetlands, UNESCO World Heritage sites, or Important Bird Areas are directly crossed by the road.

The Kherlen River corridor (~30–40 km north) is ecologically significant for migratory birds and fish, but lies outside the direct impact zone. Given that the project follows an existing road alignment, impacts are expected to be localized and reversible with proper mitigation measures.

Figure 2-2. Map of important bird areas of Mongolia



3. SOCIO-ECONOMIC BASELINE

This section defines the direct and indirect areas of influence, characterizes the project-affected population in detail, addresses land-use conditions, documents livelihood systems and vulnerabilities, describes infrastructure and service access, and identifies sensitive receptors and vulnerable groups.

The Social Baseline study was conducted using a mixed methodology (qualitative and quantitative), employing the following main methods:

- Secondary Data Analysis: Analyzed official information from the national and provincial statistical offices, websites, and relevant studies and research conducted in the project area.
- Consultative meetings / focus group discussions: a focus group discussion with 7 participants (4 from Bayankhutag, 3 from Munkhkhaan). Meetings were held with representatives of local soum and bagh administrations, as well as public service organizations.
- Key informant interviews: Conducted individual interviews with local authorities, bagh governors, herders, and other relevant stakeholders.

To determine the socio-economic conditions of households in the local and project impact areas, the social impact assessment team conducted field research and stakeholder consultation activities during the following periods:

- November 2025
- April 2026

3.1 Area of Influence and Project Impact Area (PIA) Definition

The area of influence for the social baseline has been defined in two tiers consistent with the World Bank ESF guidance on ESS1:

- A corridor 500 meters wide on each side of the road centerline, totaling 1 km, was defined as the zone of direct impact from construction activities (see Figure 3-1)
- An extended area of influence covering the territory of two soums was included in the study, considering the seasonal migration patterns of herder households and the specific characteristics of pasture use.

Project impact area, especially during construction phase, has been determined to be 1km wide corridor along the project road, as well as area of similar width along technical, material haulage roads, quarry and borrow pit sites.

The road alignment traverses the three soums as follows: approximately 20 km of the 50 km section falls within Bayankhutag soum (Khentii); approximately 30 km within Munkhkhaan soum, specifically Bayantsagaan bag (Sukhbaatar). This proportional distribution of works must be taken into account when scheduling construction activities and managing community engagement.

3.1.1 Sensitive receptors and location summary

Following sensitive receptors were identified

Table 3-1. Sensitive receptor log

ID	Receptor	Type	Location	Management Measure
SR-1	Herder households within 1 km of alignment (summer)	Residential/pastoral	Distributed along 50 km corridor; permanent land allocations are concentrated in sections within Bayankhutag soum (Figure 3-5)	Advance notification; livestock crossing points; dust suppression; noise limits 08:00–20:00
SR-2	Community wells and watering holes (identified to date)	Water supply infrastructure	See Figure 3-2	200 m exclusion zone for camps/fuel; monthly groundwater monitoring
SR-3	Livestock crossing routes	Pastoral infrastructure	See Figure 3-6. Seasonal/additional locations to be identified and addressed at CESMP stage	Designated crossings with reflective signage; speed limits at crossing points
SR-4	Wildlife and avifauna, (Khar Yamaat Nature Reserve)	Ecological habitat	~17 km northeast of eastern alignment terminus	No construction activities within 15 km; biodiversity management plan)
SR-5	Serven Khaalga heritage inscription (state-protected)	Cultural heritage	Bayankhutag soum, ~60+ km from soum centre — outside direct impact zone	Chance Finds Procedure; no direct impact expected

3.1.2 Legacy Borrow Pits and Quarries from original construction (marked red) exist along the corridor:

During the original road construction in 2013–2015, numerous borrow pits and quarries were created but never rehabilitated. Based on informal information, their number is estimated at around 50, distributed along the road corridor across all two project soums.

Because the road was never formally accepted by the State Commission, and the contractor–client dispute resulted in no maintenance or closure budget being allocated, all site restoration obligations under the original contract lapsed without enforcement. As a result, the pits have remained abandoned for more than a decade.

Over time, many of these excavations have naturally collected rainwater and snowmelt, becoming informal livestock watering points used by herder households along the corridor. This represents a critical livelihood detail: what are legally unrestored environmental liabilities of the original contractor have, in practice, become informal water infrastructure that local herders depend on — particularly during the dry late-summer and autumn periods when natural surface water is scarce. Within the Project Influence Area (PIA), there are approximately 10 watering holes and wells, the exact numbers and locations of which must be recorded in the C-ESMP.

These legacies borrow pits from the 2013–2015 construction is not included in the disturbance figures of this project, as they pre-date it. However, the current project is responsible for conducting a pre-construction inventory of all legacy pits and implementing the Borrow Pit Restoration Plan (BPRP) as a pre-commencement condition. See Section 5 (Mitigation Plan) and the BPRP requirement in Section 6.

Before any works commence on the project and before the C-ESMP is finalised, a structured field assessment of all 50+ legacy borrow pits shall be conducted by the Contractor's Environmental Specialist and documented in a Legacy Borrow Pit Assessment Report (LBPAR) submitted to the Supervision Engineer and IPIU for review. The LBPAR shall address the following for each pit:

- Physical condition: GPS coordinates; dimensions (length, width, depth); slope stability; evidence of erosion or subsidence; presence of standing water (seasonal or permanent); water quality indicators (odour, colour, visible contamination)
- Current use by community: evidence of livestock watering (tracks, dung, worn edges); proximity to herder household or seasonal camp (distance in metres); any known household dependency confirmed through CLO household consultations.
- Ownership and land status: confirmation from soum land administration of the land category (state land; pastureland; registered herder title use-right area); whether any herder household holds a registered possession or use-right certificate (GEZ) over the pit footprint; whether the pit falls within a legally designated state reserve, protected buffer, or restricted zone.
- Proximity to sensitive receptors — assessed for each pit:
    - Watercourses: distance to nearest permanent or ephemeral watercourse, drainage line, or seasonal wetland; whether the pit drains toward a watercourse; contamination pathway assessment.
    - Communities: distance to nearest occupied ger or registered seasonal camp; distance to nearest school, health post, or public gathering point; whether the pit is visible from or accessible to children.
    - Wells and water points: distance to nearest registered or informal well; whether contamination from pit disturbance could reach the well within a credible groundwater pathway.
    - Safety hazards: vertical or unstable faces >1.5 m height; accessible to children or livestock without fencing; evidence of vehicle access or unauthorized use.
- Proposed disposition: one of four options: (a) retain and formalize as livestock water point (clear hazards, fence with escape ramp, hand over to soum); (b) partially rehabilitate and retain (reduce hazards, maintain water function); (c) full closure and restoration (backfill or reshape, topsoil, revegetate); or (d) integrate into project quarry or spoil management as a designated disposal site. Disposition agreed with affected herder households and soum administration before implementation.

Figure 3-2. Legacy borrows pits, watering holes, wells and households along the project section

3.2 Administrative and Demographic Profile

The project corridor traverses two soums across two aimags in the eastern steppe region of Mongolia. This region is classified within the Eastern Development Zone under Mongolia's Regional Development Concept, with economic development anchored on pastoral livestock production, tourism centred on Chinggis Khan heritage sites, and emerging inter-regional trade. Population density across the zone is extremely low, characteristic of nomadic pastoral landscapes.

The Khentii aimag has a population of 79,300 (2024, NSO), comprising 23,800 households across 18 soums and 89 bags. The aimag covers 80,300 km² of predominantly forest-steppe terrain. Sukhbaatar aimag has approximately 65,800 inhabitants across 13 soums and 66 bags in an area of 82,200 km², within the flat eastern steppe zone. Both aimags form part of the Eastern Development Zone that Mongolia's regional planning policy is developing as a tourism and pastoral production hub.

Table 3-2. Administrative and Demographic Profile of Project-Area Soums (2024)

Indicator	Bayankhutag Soum (Khentii)	Munkhkhaan Soum (Sukhbaatar)	Source / Notes
Area (km²)	6,029	7,415	SIA (2025); soum profiles
Number of bags	3	5	Soum administration data
Total population (2024)	2,379	4,920	NSO 2024;
Women	1,048	2,396	NSO 2024;
Number of households	905	1,515	NSO 2024;
Population density (persons/km²)	~0.39	~0.68	Calculated from area and population figures above
Total livestock in soum (heads)	232,000	250,100	NSO 2024;

Dominant ethnic group	Khalkh, Uriankhai, Durvud	Khalkh, Dariganga	No ESS7-qualifying Indigenous Peoples groups identified
Administrative centre distance to road	~12 km	~23km	SIA 2025;

Source: NSO, 2025;

3.3 Population within the PIA

The road corridor passes through sparsely populated steppe and semi-mountainous terrain. Based on the household survey conducted by the Social Impact Assessment team (October–November 2025) and the focus group discussions of November 2025, the following characterization of the population within the PIA applies:

- During winter and spring (October–April), the PIA is largely uninhabited. Herder households have relocated to their winter and spring camp (uvuljuu/khavarjaa) areas, which are located away from the road corridor, typically 5–30 km from the alignment.
- During summer and autumn (May–October), an estimated 20 or more herder households are present within 1–2 km of the road alignment. This is the period of highest construction activity, requiring careful management of livestock movements and dust suppression. The situation is alleviated by the fact that the project road has been in poor condition for quite some time and road users have established used over a dozen dirt roads, increasing dust in the PIA, forcing local herders to settle away from the road.
- Within the Bayantsagaan bag (Munkhkhaan soum), approximately 16 herder households are permanently registered as residing in the project area. The bag has a population of 927 (517 male, 410 female) and 27 persons with disabilities.
- No permanent residential structures, schools, health posts, or commercial facilities have been identified within the PIA other than the Davsan Badrakh structure noted in Section 3.1, which requires further investigation.
- All households within the PIA are herder households engaged in pastoral livestock raising. 100% of households surveyed own at least one motor vehicle (car, truck, or motorcycle), which they use for livestock management, transport of water and supplies, and access to soum services.

3.4 Land Use

Land use within the project corridor is governed by Mongolia's Land Law (2002, revised) and the Pastureland Law. The following land-use categories are present across all three project soums:

Table 3-3. Land use profiles of project soums (2024)

Land-Use Category	Bayankhutag	Munkhkhaan	Notes
Pastureland (year-round grazing)	✓	✓	Dominant land use; state-owned; herders hold free-use rights under pasture law
Winter/spring camps	✓	✓	Traditional seasonal camp areas; herders may hold possession rights over improvements (fences, shelters, wells)
Informal parallel dirt tracks (10+)	✓	✓	Key finding — see paragraph below
State-protected area buffer zone	✓	–	Khar Yamaat Nature Reserve ~17 km from eastern end; see environmental baseline
Mining / industrial land	–	–	No active mining in PIA
Cropland / irrigated agriculture	–	–	Not present along the alignment

Urban / settlement area	–	–	No soum centres within PIA

Source: SIA, 2025;

3.4.1 Land-Use Impact of Road Deterioration: The Multi-Track Problem

A defining feature of the current land-use situation, and a critical consideration for the project's net land-use assessment, is the proliferation of informal parallel dirt tracks along the A0502 corridor. Because the paved road has been in a severely deteriorated condition since construction (2013–2015) and has never been formally accepted by the State Commission due to a contractor-client payment dispute, drivers consistently avoid the paved surface and instead travel on 10 or more parallel informal dirt tracks alongside the road.

This multi-track situation has caused the following compounding land-use impacts, documented through field observations and community focus groups (November 2025, April 2026):

- Progressive soil erosion: Repeated vehicle passes on unimproved steppe soil strips topsoil, compacts subsoil, and creates ruts that channel runoff.
- Pasture degradation: Dust deposition from vehicle traffic on dirt tracks coats vegetation, reducing photosynthesis and palatability; the eroded track zones create persistent bare soil. Herders in both Bayankhutag and Munkhkhaan soums identified this as a serious livelihood concern.
- Extended footprint: The 10+ parallel tracks collectively occupy a significantly wider land envelope than the single 12 m paved road right-of-way, fragmenting herding territories and making it difficult for herders to cross the road safely with livestock.
- Dust: Community members described dust conditions as "extreme" during July and August when heavy vehicle traffic on the dirt tracks peaks, affecting both human health and livestock grazing.

Net land-use impact of project: Rehabilitation of the A0502 to a fully functional standard will enable the consolidation of all vehicle traffic back onto the single paved carriageway, eliminating the multiple parallel tracks and allowing natural revegetation of the affected pasture. This is a net positive outcome for land use and pastoral livelihoods that is not achievable without the project. The project's temporary land-use disturbances during construction (quarry, camp, spoil sites all within the existing road reserve or on state land) are outweighed by the permanent land-use benefit of eliminating approximately 6,900,000m2 (6900Ha) of degraded informal track area.

Figure 3-3. width of currently used dirt roads (330m, 1.6km, 150m respectively)

3.4.2 Legacy Borrow Pits and Quarries - Risk Considerations

Legacy borrows pits and quarries from the 2013–2015 construction remain scattered along the corridor within the PIA. Although abandoned for more than a decade, they continue to pose risks to local communities, road users, livestock, and wildlife.

In addition, some pits have accumulated rainwater and snowmelt, functioning as informal watering points for herder households. While these features provide practical benefits, they also highlight the safety and environmental risks associated with unrestored excavations.

3.4.3 Fodder reserve

A critical and currently under-assessed land-use feature within the Project Influence Area (PIA) is the presence of fodder reserve areas located along and adjacent to the A0502 corridor. These areas are of high livelihood importance, as herder households rely on them for cutting and preparing winter fodder during the late summer and early autumn period (typically August–September), which coincides directly with the anticipated construction season.

Field observations and consultations indicate that:

- Extensive sections of land adjacent to the road are informally but consistently used for haymaking and fodder collection;
- These areas are not always formally demarcated but are well understood and locally managed by herder households;
- Fodder harvested during this short seasonal window constitutes a critical input for winter livestock survival, particularly in dzud-prone regions.

Construction activities during this period present several material risks to livelihoods, including:

- Physical disturbance or occupation of fodder areas by construction activities (e.g., temporary access routes, equipment movement, material storage);
- Reduced fodder yield and quality due to dust deposition from construction traffic and earthworks;
- Restricted access to fodder collection sites during peak harvesting periods;
- Unintentional damage to cut or stored hay (e.g., through vehicle movement or site encroachment).

Given the short and non-substitutable nature of the fodder preparation season, these impacts may have disproportionately high livelihood consequences, even if spatially limited.

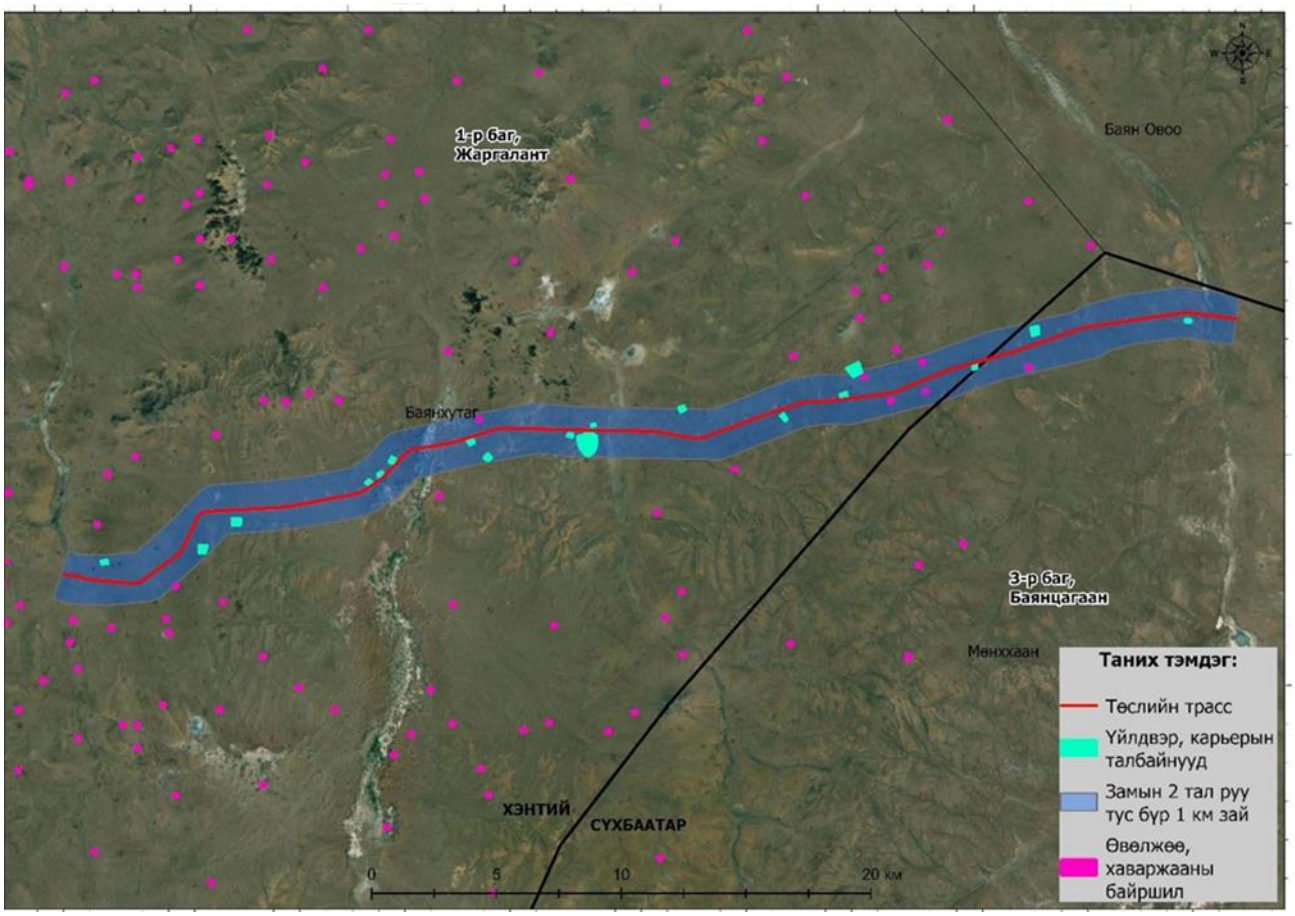
Due to the timing of field surveys (non-peak season), the full extent, boundaries, and intensity of fodder reserve use could not be comprehensively quantified. As such, these areas must be treated as “seasonally critical but partially unverified” land-use zones within the ESMP.

Figure 3-4. Fodder preparation land in the north of the project road

3.4.4 Household

Bayankhutag soum land allocation map shows 10 approved Uvuljuu/khavarkjaa land in the PIA. However, these locations were empty as of November 2025 survey. The contractor shall contact land owners in the PIA and conduct meaningful consultation prior to start of construction and as part of their C-ESMP development exercise.

Figure 3-5. Licensed Winter/spring settlement land



3.5 Livelihoods and Economic Activities

The economy of the project corridor is almost exclusively based on traditional pastoral livestock husbandry, supplemented by social transfers. There is no mining, agricultural, or manufacturing activities within the PIA.

3.5.1 Livestock Husbandry

All households within the project corridor are herder households. Livestock composition in the project soums reflects the eastern steppe environment: sheep and goats dominate (a combined 80% of total livestock count), with horses, cattle, and small numbers of camels. In Munkhkhaan soum, the 2024 livestock census recorded 250,134 head across the soum: horses 28,841 (11.5%); cattle 20,975 (8.3%); sheep 115,764 (46.3%); goats 84,286 (33.7%); camels 268 (0.1%). In Bayankhutag soum (Khentii), the soum recorded 231,879 head as of 2024.

Dzud vulnerability: The project area was among the worst-affected regions in Mongolia's 2023–2024 dzud disaster. Sukhbaatar aimag lost 47.2% of its total livestock and Khentii aimag lost 22.8% in 2024 alone, making them among the most severely affected aimags nationally (Centre for Policy Research, 2025). According to the FAO/UNDP Dzud Socio-Economic Impact Assessment (May 2025), 52.8% of herder households in Sukhbaatar aimag lost more than 50% of their livestock in 2024. This acute livelihood shock has significantly reduced the resilience of project-area herder households and increases the importance of ensuring that project-related temporary pasture or water access restrictions are minimized.

3.5.2 Household Income and Expenditure

Herder household income in the project area derives from: sale of livestock (meat, live animals); sale of livestock products (milk and dairy products, wool, cashmere, hides); occasional wage labour when available; and social protection transfers (social pensions, child allowances). Income is highly seasonal, concentrated in autumn (livestock sales, wool/cashmere marketing) and dependent on market access to soum or aimag centres, access that is directly conditional on road quality.

According to data collected during the November 2025 HHS, average annual household income from animal husbandry are milk and dairy income ~2.86 million MNT/year; wool and cashmere ~6.84 million MNT/year; meat sales ~5.6 million MNT/year; hides and skins ~500,000 MNT/year. These figures need to be further verified through extended survey and community discussions prior to construction.

Regional poverty context: The eastern region of Mongolia (Khentii, Sukhbaatar, Dornod aimags) has significantly higher poverty rates than the national average. Khentii aimag poverty rate is approximately 38% and Sukhbaatar aimag approximately 30.2%, compared to a national average of ~28.4% (WWF ESMF, 2020; NSO). The monthly average income per household in the eastern aimags is the lowest of Mongolia's five regions. Post-dzud, these figures are likely to have worsened significantly.

3.5.3 Roadside Commercial Activity

All consulted households' income from animal husbandry products. Although the SIA did not identify households operating a roadside service or dependent on road traffic for income generation, it is not indicative that such households are not present, given seasonality of such endeavors. Roadside income sources are directly dependent on traffic volumes and road usability and are therefore likely to be positively affected by road rehabilitation in the long term. However, temporary income disruption during construction, particularly during the tourism season (June–September), may occur. As such, this risk needs to be further studied through supplementary consultations prior to construction and, if present, must be proactively managed through scheduling and communication measures.

3.5.4 Employment

Formal employment within the project soums is minimal. In Bayantsagaan bag (Munkhkhaan), of 533 working-age employed residents, 21 works in government, 24 in private business, and 516 (96.8%) in livestock husbandry. This structure is typical of the project corridor as a whole. The project's commitment to engage a minimum of 30% local workers (66 of 219 total workers) represents a meaningful economic opportunity for local communities, and job vacancy information must be disseminated through soum and bag administrations as confirmed by community focus group participants.

3.6 Water Resources and Water Access

Water access is a critical livelihood parameter for herder households and livestock in the project area. The region relies entirely on groundwater: there are no permanent rivers along the 50 km alignment. Soum centre wells in Bayankhutag tap confined aquifers at 35–118 m depth. Community-level wells (hand-dug and drilled) are distributed across herding territories and registered under Mongolia's well passport system.

Community consultation revealed several important water access concerns:

- Herders in both Bayankhutag and Munkhkhaan soums reported that households located on the north side of the road access their drinking water and livestock watering wells on the south side (or vice versa). Construction activities that block road crossings therefore also disrupt access to drinking water, a public health and animal welfare issue requiring immediate mitigation through designated crossing points.
- A previous contractor was reported to have placed a culvert in the wrong location (not at the natural stream channel), disrupting drainage and water flow. Herders requested that the current contractor correct this error.
- Herders expressed concern that camp and equipment sites near wells could contaminate water sources. Contractor camps and fuel storage areas must be sited for a minimum of 200 m from any identified wells or water sources.

In addition to the above, over dozens of unrestored excavations from the 2013–2015 construction period has naturally filled with water and function as informal livestock watering holes distributed at intervals of approximately 1.6 - 6 km along the full 50 km corridor. Unlike the community wells discussed above (some of which also serve human drinking water needs), these pit water points serve primarily as livestock watering infrastructure and are particularly important during July–September when natural ephemeral streams are dry. They are not registered under the well passport system and carry no formal legal status, but their practical role in the local pastoral water supply system is real and must be treated as a sensitive receptor.

The project's large construction water demand (~436,132 m³ total, predominantly for dust suppression) must be managed to avoid drawdown of community aquifers. The water abstraction permit required from the basin authority must specify extraction points that do not compete with community wells, and groundwater monitoring at community wells nearest to construction sites must be conducted monthly (see Section 8 Monitoring plan).

3.7 Population Migration and Mobility

Migration statistics from 2023–2024 show divergent trends in the two project aimags:

Table 3-4. Migration in project soums

Migration Flow	2023	2024	Change	Notes
Out-migration from Khentii aimag	2,224	2,174	–2.2%	Decreasing trend
In-migration to Khentii aimag	1,252	1,454	+13.9%	Increasing trend
Net migration (Khentii)	–972	–720	Improving	Still net outflow
Out-migration from Sukhbaatar aimag	1,244	1,321	+5.8%	Increasing, likely dzud-driven
In-migration to Sukhbaatar aimag	578	569	–1.6%	Declining
Net migration (Sukhbaatar)	–666	–752	Worsening	Increased net outflow

Source: NSO Migration Statistics 2024 (1212.mn)

The increase in out-migration from Sukhbaatar aimag is attributable in significant part to the 2023–2024 dzud, which destroyed nearly half of the aimag's livestock and has driven affected herder families to relocate to aimag centres or Ulaanbaatar. This displacement context makes the socioeconomic recovery opportunity offered by road rehabilitation, through improved market access and local employment, particularly significant.

Seasonal nomadic movement within the project area is a key planning consideration. Herder households in Bayantsagaan bag (Munkhkhaan) practice seasonal mobility between summer and

winter camps. Summer (June–September) is the period when households are most likely to be present in the vicinity of the road. Construction scheduling should prioritise the most disruptive activities (earthworks, asphalt plant operations, quarry blasting) for periods outside peak herder presence, in consultation with soum and bag administrations.

3.8 Infrastructure and Services

3.8.1 Energy Supply

Bayankhutag soum is connected to the central electricity grid. Households in rural areas and along the road corridor rely primarily on solar panels and small wind-powered generators; DDISH satellite television is widely used. 100% of surveyed households use mobile phones; mobile internet access is available but coverage quality varies along the corridor (35% of consulted households rated coverage as good; 29% moderate; 35% poor).

3.8.2 Communications and Information Access

Surveyed households obtain information primarily through Facebook/social media (mobile internet), followed by television (DDISH and national channels including MNB, Mongolian TV, NTV, and Malchin TV), and soum/bag chat groups. This has direct implications for the project's disclosure and community engagement strategy: project information must be disseminated through Facebook/soum chat groups as well as official notice boards and in-person meetings. The focus group confirmed that mobile-based communication is significantly more reliable for reaching herder households than postal mail or newspaper.

3.8.3 Education

Bayankhutag soum has a general education school (primary to lower secondary) and a kindergarten serving the soum center and surrounding baghs. While access is generally adequate for residents in the center, children from herder households face seasonal and logistical challenges due to distance and mobility patterns, often relying on dormitory accommodation during the school year. Teacher availability is relatively stable, though shortages in specialized subjects and retention issues persist. School infrastructure is functional but may require upgrades, particularly in heating, sanitation, and learning resources. Munkhkhaan soum delivers education services through a soum-level school and kindergarten, supported by dormitory facilities for children from remote herder families. Access is generally stable, though challenges include teacher shortages in specialized subjects, limited digital infrastructure, and seasonal absenteeism linked to herding activities. School facilities are functional but uneven in quality, and students often need to relocate to larger centers such as Baruun-Urt to pursue upper secondary education.

3.8.4 Health Services

Healthcare services in Bayankhutag soum are provided through a soum health center offering primary care, maternal and child health services, and basic emergency response. The facility is staffed by general practitioners and nurses but lacks specialized services and advanced diagnostic capacity, requiring referrals to the aimag center for more complex cases. Access for herder households is constrained by distance and seasonal conditions, although outreach services are conducted periodically. Munkhkhaan soum provides healthcare through a soum health center that delivers primary care, preventive services, and limited emergency support. Staffing constraints and limited equipment affect service capacity, and access challenges are significant for remote herder households, particularly during extreme weather. More serious cases are referred to the Sukhbaatar

aimag hospital in Baruun-Urt, while outreach services such as vaccinations and maternal care are provided periodically but may not fully reach all dispersed populations.

The project rehabilitation will improve road conditions that directly affect access to health services, a significant public health benefit. A woman in labour, a child with an acute illness, or a herder injured in a livestock accident currently faces life-threatening delays due to the deteriorated road condition. The 32 fatalities and 44 serious injuries recorded on this road section between 2016 and 2022 (NSO accident data) demonstrate the severity of the current situation.

3.9 Vulnerable Groups and Gender

In accordance with ESS1 and ESS4, the following vulnerable groups have been identified within and adjacent to the project impact zone. Vulnerability is defined here as reduced capacity to cope with or benefit from the project, whether due to economic, physical, social, or cultural factors.

Table 3-5. Project Vulnerable group profile

Vulnerable Group	Presence / Numbers	Project-Related Risk	Proposed Response
Herder households with small herds (<200 head)	Nationally 48.7% of herder households fall in this category, project specific numbers must be verified in C-ESMP	Post-dzud, many households have very small herds. Any temporary pasture access restriction or livestock-vehicle collision causing further livestock loss could push households below subsistence threshold	Priority for livestock crossing designations; advance warning systems
Female-headed households	Project specific numbers must be verified in C-ESMP	May face greater barriers to accessing GRM, employment opportunities, and project information, particularly if language or mobility barriers exist	Female-accessible GRM channel; targeted outreach through soum social worker; women's voices in supplementary consultations
Persons with disabilities	Bayantsagaan bag: 27 persons with disabilities confirmed. Project specific numbers for remaining soums must be verified in C-ESMP	Physical mobility limitations may increase vulnerability to road safety risks during construction; may be unable to use standard GRM channels	Accessible GRM channels (phone, assisted submission); accessible crossing points; targeted engagement through bag governor
Elderly herders (65+)	Project specific numbers must be verified in C-ESMP	Greater health impacts from dust and noise; more difficult to relocate seasonal camps if needed; fixed income from pension	Advance notification of dusty operations; health risk communication; no-go zones near elderly-occupied camps
Children (under 18) along road corridor	Project specific numbers must be verified in C-ESMP	Road safety risk from increased heavy vehicle traffic and construction machinery; dust exposure	Speed limits enforced; construction zones fenced; community meetings at soum schools; Code of Conduct obligations for workers
Roadside business households	No confirmed households as economically dependent on road traffic income	Seasonal vendor households may be present in the PIA; Temporary income loss during construction phases; potential permanent loss if displaced	scheduling to avoid peak tourism season, i.e. peak income season; coordinate with local government to assign favorable roadside location for HH business

3.9.1 Gender

Mongolia's eastern aimags have a broadly balanced gender ratio (approximately 51% male, 49% female in the project-area bags). Women in herder households play a major role in livestock

husbandry (milking, dairy processing, caring for young animals) and in household economic decision-making. Among surveyed households, 57.9% of female household members are primarily engaged in livestock husbandry and 21.1% in trade. Budget decision-making is reported as wife-led in 73.7% of households.

Women's participation in formal community structures and in the project's consultation processes requires active facilitation. The focus group discussions (November 2025) involved 1 woman out of 7 participants — this is insufficient for a project with GBV/SEA risks associated with a predominantly male migrant workforce. The SEP and supplementary consultation plan must include women-only focus groups and ensure female representation in community monitoring bodies.

A dedicated GBV/SEA focal point (female) shall be appointed by the contractor before mobilization, and a confidential reporting channel must be established that is accessible to community women, not only to workers. This is required under ESS2 and ESS4.

3.10 ESS 7 Indigenous Peoples Screening

The population of the three project soums is predominantly Khalkh Mongol (dominant majority group in Mongolia), with minority ethnic representation from Uriankhai, Durvud, Buryad, Dariganga, and Khotgoid communities — all of which are constituent groups within the broader Mongolian ethnicity. Thus, ESS 7 is not relevant.

3.11 Cultural Heritage

The project soums are rich in historical and cultural heritage, with significant sites in Bayankhutag soum of Khentii aimag. Systematic heritage surveys conducted during DEIA preparation confirmed that no registered cultural heritage sites or archaeological features are present within the immediate 12 m road right-of-way along the project alignment. However, given the density of heritage features in Bayankhutag soum, a Chance Finds Procedure (CFP) is mandatory and has been incorporated into the ESMP (see Annex 5).

3.12 Road Condition, Safety Record, and Traffic

Understanding the current state of the road is an essential context for assessing both the project's social impacts and its social benefits.

3.12.1 History and Current Condition

The A0502 highway (Chinggis City–Choibalsan direction) was constructed in 2013–2015 under a state contract. Due to a payment dispute between the client and the original contractor, the road was never formally accepted by the State Commission. No maintenance budget has been allocated since construction, and the road has received no maintenance interventions in over a decade. The result is severe surface deterioration (potholes, pavement collapse, embankment failures, etc.) progressively worsening each seasonal frost-thaw cycle.

3.12.2 Safety Record

Between 2016 and 2022, the 50 km corridor recorded 103 emergency response calls, 32 fatalities, and 44 serious injuries, a per-kilometer fatality rate substantially exceeding the national average for inter-provincial roads. These figures, sourced from traffic police and emergency services records cited in the SIA (2025), represent a grave humanitarian case for the project’s urgency. The per-kilometer accident rate substantially exceeds the national average for inter-provincial roads.

Table 1-2. Recorded Road Accidents and Safety Incidents (2016–2022)

Year/Date	Road	Incident Type	Outcome
16 Mar 2020	Main road	Vehicle rollover	1 person injured
11 Aug 2020	Main road	Freight vehicle collision	No injuries
03 Nov 2021	Main road	2 private vehicles, rear-end collision	No injuries
02 Mar 2022	Main road	Vehicle rollover	1 person (leg fracture)
14 Aug 2021	Temporary bypass	Vehicle rollover	1 fatality
2016–2022 total	Full corridor	103 emergency incidents	32 fatalities; 44 serious injuries

In response to the unsafe paved surface, road users have created more than ten parallel informal dirt tracks alongside the road, leading to extreme dust conditions, degradation of approximately 6,900 hectares of pastureland, and destruction of traditional grazing areas. Rehabilitation is expected to consolidate all traffic back onto a single paved carriageway and enable natural recovery of that degraded pasture.

The project area is further characterized by heightened vulnerability following recent dzud events, which caused significant livestock losses particularly in Sukhbaatar aimag. Post-dzud poverty levels are above the national average, increasing both the sensitivity to construction disruptions and the importance of the project's anticipated connectivity and market-access benefits.

3.12.3 Traffic Volumes and Seasonal Pattern

The average daily traffic on national two-lane roads is generally 300-800 vehicles, and the Khentii-Choibalsan route is considered a medium-traffic corridor with 300-500 vehicles per day. Traffic volume increases by 2-3 times during national holidays and decreases by 30-40% in winter. Therefore, it is necessary to implement traffic management plans during construction to ensure the safety of vehicles and road users.

4. LEGAL, POLICY AND REGULATORY FRAMEWORK

4.1 Applicable World Bank Environmental and Social Standards

This ESMP has been prepared in accordance with the World Bank Environmental and Social Framework (ESF, 2016). The following table sets out the applicability of each Environmental and Social Standard (ESS) to this project and the key requirements addressed.

Table 4-1. World Bank ESF – ESS Relevancy Matrix

ESS	Standard	Status	Key Requirements and How Addressed
ESS1	Assessment and Management of E&S Risks and Impacts	**RELEVANT**	Core ESMP standard. Covers full E&S assessment, mitigation hierarchy (avoidance → minimization → mitigation → offset), monitoring, and disclosure. This entire ESMP is the ESS1 instrument.
ESS2	Labour and Working Conditions	**RELEVANT**	Applies to all ~219 workers (direct, contracted, and supply chain). Labour Management Procedures (LMP) integrated Annex 17. Covers: employment terms, OHS, Code of Conduct, GBV/SEA prevention, Worker GRM, and no child labour (<18 years).
ESS3	Resource Efficiency and Pollution Prevention	**RELEVANT**	Materials such as sand, gravel, and asphalt will be sourced from permitted sites. Resource efficiency standards will be applied to prevent overuse of water, fuel, and materials. Measures in Section 5.2
ESS4	Community Health and Safety	**RELEVANT**	Applies to temporary construction related labour influx, traffic safety, dust and noise exposure, safety and security, and GBV/SEA risk to local communities. Measures in Section 5.2.
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	**RELEVANT**	The project follows the existing road alignment; no permanent land acquisition, physical displacement, or involuntary resettlement is expected. Temporary land use and access restrictions may occur (quarry, camp, temporary roads). These will be on state land or via negotiated documented agreements with herder consent and compensation for any damages. If unforeseen temporary impacts arise, they will be managed under the RPF in Annex 16.
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	**RELEVANT**	The project corridor is classified as MODIFIED HABITAT. No critical habitats are present. Measures include habitat boundary enforcement, wildlife-friendly culverts, hunting prohibition, no-go zones near Khar Yamaat Reserve, and timing works to avoid breeding season (Apr–Jul). Annex 11.
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	**NOT RELEVANT**	No ethnic minority population resides in the proposed road corridor. Thus, this standard is not relevant.
ESS8	Cultural Heritage	**RELEVANT**	Known heritage sites (Hunnu graves, Serven Khad) are not within the project footprint. The project complies with ESS8 and Mongolian cultural heritage law. A Chance Finds Procedure is in place (Annex 5). All workers will be briefed.
ESS9	Financial Intermediaries	**NOT RELEVANT**	Direct investment project; no financial intermediaries involved.
ESS10	Stakeholder Engagement and Information Disclosure	**RELEVANT**	The Project includes procedures for community engagement and a grievance mechanism in accordance with ESS10 requirements. (SEP prepared (Annex 1). Community consultations conducted (Nov 2025, section 8). GRM established (Section 8, Annex 2). Disclosure at soum offices and MRT website). Ongoing engagement throughout construction.

4.1.1 World bank group EHS guidelines and Good International Industry Practice

The World Bank Group Environmental, Health, and Safety Guidelines are technical reference documents that define Good International Industry Practice for the management of environmental, occupational health and safety, and community health and safety issues. For this Project, the relevant EHS Guidelines shall be treated not merely as background reference material, but as technical compliance benchmarks for acceptable performance.

In practical terms, the EHS Guidelines inform the Project's performance expectations in relation to dust suppression, emissions from asphalt and crushing operations, noise and vibration control, fuel and hazardous materials handling, worker exposure to heat, dust, fumes, noise, and vibration, camp sanitation, drinking water quality, wastewater control, temporary traffic management, work-zone delineation, slope stability, lighting, emergency response readiness, incident investigation, and community exposure to construction hazards.

Table 4-2. Project-Level Application of the EHS Guidelines

Guideline Category	Main Issues Relevant to the Project
General EHS – Environment	Air emissions, dust, noise, vibration, waste, wastewater, hazardous materials
General EHS – Occupational Health and Safety	Hazard identification, PPE, exposure control, workplace conditions, incident management
General EHS – Community Health and Safety	Traffic, public exposure, emergency response, hazardous transport, disease prevention
Infrastructure / Transportation Guidance	Work-zone safety, temporary traffic arrangement, roadside hazards, drainage and stability

4.2 Mongolian National Legislation and Standards

Mongolia has adopted a comprehensive framework of environmental legislation covering land, water, forest, wildlife, and protected areas. The country is party to most major international environmental conventions and treaties, and has developed national strategies and action plans in cooperation with donors and NGOs. While significant reforms were undertaken in 1990 and 2012, challenges remain in terms of implementation capacity.

The key Mongolian laws and standards that apply to proposed subproject activities under MTCLIP. Environmental monitoring, stakeholder engagement and public participation in environmental decision making is ensured by Law on Environmental Protection (amended in 2002), and Law on Environmental Impact Assessment (amended in 2012).

Environmental and social safeguard of the proposed road rehabilitation project is regulated by Law on Environment and Law on Environmental Impact Assessment. Social baseline and impacts are assessed as part of Detailed EIA, herewith there is no stand- alone law on social impacts assessment in Mongolia.

The project shall comply with all applicable Mongolian legislation, including but not limited to:

Table 4-3. Applicable local legislation

Laws	Year	Description
Law on Land	2002, last amended in 2023	Identifies requirements for the various types of land depending on the use, and includes common requirements, sanitary requirements, pasture protection, protection of hayfields and cultivated areas. Specific requirements that apply to this project include the requirement to

		rehabilitate, or to “immediately restore eroded and damaged land”, and "Land users should “prevent adverse impacts to the environment and land due to use of the land”.
Law on Soil Protection and Prevention from Desertification	2012 last amended in 2022	This law includes measures to prevent desertification from the intensification of agriculture, mining, road construction, and urban land use as well as climate change. The law provides guidance to facilitate a safe and healthy environment for the population, and to prevent soil damage and lower soil fertility from overgrazing and desertification, and systems to prevent soil erosion. The law also contains measures to establish accountability in environmental protection along with more elaboration on soil degradation, desertification gradation criteria and soil assessment methodology.
Law on Subsoil	1988, last amended in 2023	The Law on Subsoil regulates the use and protection of subsoil in the interests of present and future generations.
Law on Water	2012, last amended in 2023	This Law makes provision with respect to the proper use, protection and restoration of water resources of Mongolia. The purpose of the Law is to govern relations concerning the protection and rational use and restoration of water resource and its basin.
Law on Environmental Protection	1995, last amended in 2024	The Law on Environmental Protection: regulates relations between the state, citizens, economic entities, and organizations to guarantee the human rights to live in healthy and safe environment, have ecologically sustainable social and economic development. It is an umbrella Law for protection of land and soil; natural and mineral resources and minerals (on and underground); water; plants; animal and air.
Law on Environmental Impact Assessment	2012, last amended in 2024	Environmental impact assessment in Mongolia is guided by the Law on Environmental Impact Assessment (2012) which is administered by the Ministry of Environment and Tourism (MET). The EIA protocol for all project interventions is two tiers defined initially by a general EIA (GEIA) - initial screening, followed by either a full detailed EIA (DEIA) or an Environmental Management Plan (EMP). The initial GEIA is generally conducted by the MET which identifies the required level of further impact assessment of a project. For major projects, GEIA prescribes the follow-up requirement of DEIA, whereas for minor impact projects, GEIA can prescribe only an environmental management plan (EMP) to be prepared for the project. DEIA (detailed environmental impact assessment) shall be conducted by the local organization that is authorized according to the Article 12 of the law. The authorized entity that is defined within the Article 8.2 of this law, shall prepare the report with the detailed environmental impact assessment and develop the environmental management plan. It is required to reflect the official feedback provided by the project implementer in detailed environmental impact assessment report. The environmental officer of the local area, the state environmental inspector, all Governors of every level, and the government agency in charge of geology and mining affairs shall monitor whether the project implementing citizen or the entity has conducted the environmental impact assessment.
Law on special protected areas	1994, last amended in 2023	The Law regulates the use and procurement of land for state protection, fosters scientific research, and preserves and conserves the land’s original condition in order to protect specific characteristics, unique formations, rare and endangered plants and animals, historic and cultural monuments, and natural beauty. The law establishes four protected area categories, each managing land for a different purpose under a separate management directive. These include Strictly Protected Areas (SPA), National Parks (NP), Nature Reserves (NR) and National Monuments (NM).
Law on Air	2012, last amended in 2023	This law prohibits the pollution of urban air with “toxic and infectious substances and wastes with offensive odors”, requires EIAs prior to engaging in commercial activities which discharge polluting substances, and further regulates five specific activities for air quality protection. These are discharge and burning of wastes, construction activities,

		equipment emitting air pollutants, discharge of greenhouse gases and activities affecting the ozone layer.
Law on natural plants	1995, last amended in 2023	It regulates the protection, proper use, and restoration of natural plants other than forests and cultivated plants.
Law on Waste	2017, last amended in 2023	This law regulates waste disposal and recycling, reward system for collected recyclable wastes, and an accountability system for individuals and organizations that violate waste disposal regulations.
Law on Hydrology, Meteorology and Environmental Monitoring	1997, last amended in 2022	This law regulates relationship relating to providing citizens, business entities and organizations with information on hydrology and meteorology.
Law on Protection of Cultural Heritage	2014, last amended in 2023	The law regulates the collection, registration, research, classification, evaluation, preservation, protection, promotion, restoration, possession and usage of cultural heritage including tangible and intangible heritage.
Law on Natural Resource Use Fees	2012, last amended in 2023	This law regulates relations concerning imposing fees for use of natural resources to citizens, economic entities and organizations and spending the fund from proceeds from use of natural resources for environmental protection and restoration of natural resources
Law on Energy Conservation	2015, last amended in 2022	This law regulates the relations arising from energy conservation and efficient use of the energy.
Laws relating to the labor, occupational safety and health		
Law on Labor	2021, last amended in 2024	It governs labor relations of entities between employees and employers, and their rights and duties and addresses, determines minimum wage level, maximum working hours regulations, collective employment agreements and resolutions of employment disputes. The law prohibits all types of discrimination, particularly employment discrimination on the grounds of social or property status, race, colour or nationality, sex, religion or political views, as are unwritten contracts of employment. The standard working day is set at 8 hours (subject to modification by mutual agreement) and the maximum working hours per week is 40 hours. Basic annual vacation for workers is 15 days, increased both for additional years of service and work under difficult conditions. Overtime is reimbursed at the rate of at least 1.5 times the standard rate of pay. Deductions from worker's pay, other than for income tax and child support are limited to 20% of gross monthly wages. It also regulates labor relation relating to employment of women, minors, disabled persons, dwarfs and elderly people. Mongolia ratified and in force all eight fundamental Conventions of International Labor Organization and they are: Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87), Right to Organize and Collective Bargaining Convention, 1949 (No. 98), Forced Labor Convention, 1930 (No. 29) (and its 2014 Protocol), Abolition of Forced Labor Convention, 1957 (No. 105), Minimum Age Convention, 1973 (No. 138), Worst Forms of Child Labor Convention, 1999 (No. 182), Equal Remuneration Convention, 1951 (No. 100), and Discrimination (Employment and Occupation) Convention, 1958 (No. 111)
Law on Occupational Safety and Health	2008, last amended in 2023	The Law on Occupational Safety and Health determines the state policy and principles on labor safety and hygiene, and to regulate relationship with respect to management and monitoring system of state organizations, to ensure fulfillment of requirements and standards for labor safety and hygiene at workplace and to create safe and hygienic work environment for employed citizens. The law includes the requirements and standards of labor safety and hygiene, rights and duties of citizens and employees to provide favorable working conditions, investigation and registration industrial accidents, occupational diseases and acute poisoning, organizational structures of Occupational safety and

		health at the entities, responsibilities and rights of the employer, management system, authority, funding of organization responsible for monitoring on the implementation of the OSH issues, monitoring system and liabilities for violation of the laws and legislations on occupational safety and health.
Law on Promotion of Gender Equality	2011, last amended in 2024	Article 5 has defined the principle of gender equality as "men and women shall have opportunities and conditions to enjoy and to equal participate in political, economic, social, cultural, family and other relations, and to equally participate in social life and equally access the benefits of development and social wealth.
Law on Fire Safety	2015, last amended in 2023	This law ensures fire safety, establishes the legal basis of the authority in charge of fire safety monitoring, defines the rights and duties of local administrative bodies, business entities and citizens for ensuring fire safety and governs relationships connected with the exercise of such rights and duties.
Law on Hygiene	2016, last amended in 2023	This law regulates relations relating to create healthy and safe environment to live, prevent from any actions and activities that has adverse impacts to human health and environment, reduce and eliminate those impacts.

4.3 International Conventions

Mongolia is a party to key international conventions relevant to road infrastructure projects. These include:

- Environmental and Climate Frameworks
  - United Nations Framework Convention on Climate Change (1994), Kyoto Protocol (2005), Paris Agreement (2016)
  - United Nations Convention to Combat Desertification (1996)
  - Convention on Biological Diversity (1993) and Cartagena Protocol on Biosafety (2003)
  - Ramsar Convention on Wetlands (1975)
  - Basel Convention on Hazardous Waste (1992)
  - Montreal Protocol (1989) and Vienna Convention (1988) on ozone layer protection
- Social and Labor Standards
  - ILO Conventions on Forced Labor (1930, 1957), Freedom of Association (1948), Collective Bargaining (1949), Equal Remuneration (1951), Discrimination (1958), Minimum Age (1973), Worst Forms of Child Labor (1999)
  - Convention on the Elimination of All Forms of Discrimination against Women (1981)
  - Convention on the Rights of the Child (1990)
  - Convention on the Rights of Persons with Disabilities (2009)

These conventions provide the framework for climate change mitigation, biodiversity protection, waste management, desertification control, and social safeguards such as labor rights, gender equality, and child protection. All are relevant to the project's environmental and social management obligations.

4.4 Required Permits and Approvals

The following permits and authorizations shall be obtained before the relevant works commence. The Contractor is responsible for obtaining all site-specific permits; the PIU and Supervision Engineer verify acquisition and maintain records.

Table 4-4. Required Permits and Approvals

Permit / Approval	Responsible Party	Timing	Approving Authority
ESMP approval	IPIU / MRT	Before procurement	No objection from World Bank
DEIA	IPIU/MRT	Before mobilization	Ministry of Environment and Climate Change (MECC); aimag Environmental department
C-ESMP approval	Contractor /Supervision Engineer	Before Mobilization	Ministry of Road and Transport
Water abstraction or utilization permit	Contractor/Supervision Engineer	Before any drilling or water use	River Basin Authority (Water Authority)
Quarry/borrow pit operating permit	Contractor/Supervision Engineer	Before quarry operations commence	Ministry of Industry and Mineral Resources, Department of Minerals and Petroleum, Aimag environmental department
Spoil disposal site approval	IPIU / Contractor/Supervision Engineer	Before earthworks begin	Aimag Environmental Agency; soum authorities
Camp siting (temporary land utilization) permission	Contractor/Supervision Engineer	Before camp construction	Soum Governor's Office; aimag Environmental Department of Land management
Asphalt plant / crusher siting (if on separate site)	Contractor/Supervision Engineer	Before installation	Aimag Environmental Agency; soum authorities
Waste collection/disposal contract	Contractor/Supervision Engineer	Before mobilization	Licensed waste management operator
Hazardous waste storage and disposal authorization	Contractor/Supervision Engineer	Before mobilization	Aimag Environmental Agency (under Waste Law Art. 22–23)
Road occupation / traffic management approval	Contractor/Supervision Engineer	Before any lane closure or diversion	Traffic Police; MRT
Temporary land use permission	IPIU / Contractor/Supervision Engineer	Before any use of land outside the ROW	Soum Governor (documented)
Cultural heritage notification	Contractor/Supervision Engineer	If chance find occurs	Aimag Culture Department; Institute of Archaeology
Worker foreign employment permits	Contractor/IPIU/MRT	Before foreign workers enter Mongolia	Ministry of Labour and Social Protection

Note: Evidence of each permit (copy of approval document) shall be retained in the project E&S file maintained by the IPIU. The Supervision Engineer shall verify permit acquisition before each phase of works commences.

5. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

5.1 Mitigation Hierarchy

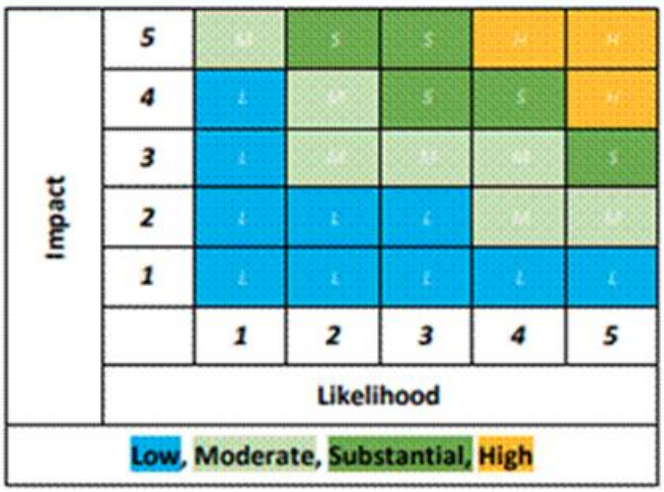
Environmental and social measures in this ESMP follow the internationally recognized mitigation hierarchy:

- AVOID: Design or planning decisions that avoid creating environmental and social impacts altogether (e.g. following existing alignment, avoiding clearing beyond the construction footprint, scheduling works outside wildlife breeding season).
- MINIMIZE: Measures that limit the extent, severity, or duration of impacts that cannot be fully avoided (e.g. restricting vehicle speeds in sensitive areas, minimizing land take at quarry and spoil sites, restricting construction hours near communities).
- MITIGATE / RESTORE: Measures that reduce residual impacts to acceptable levels (e.g. revegetation of disturbed areas, water treatment at camp, spill response, dust suppression).
- COMPENSATE / OFFSET: Where residual impacts cannot be fully mitigated, compensation or offsetting measures are applied (e.g. compensation to herders for demonstrated temporary loss of grazing or water access; replacement of water-holding legacy borrow pits serving as livestock watering holes before any such pit is backfilled).

5.2 Assessment Methodology

Potential environmental and social risks arising during project implementation were assessed by considering both likelihood and impact as per the table below.

Table 5-1. Risk legend (pre-mitigation)



Risk Level	Description
High	Substantial potential harm to people or communities if unmitigated; requires priority action and close monitoring.
Substantial	Moderate-to-high likelihood or severity; material risk that requires dedicated mitigation and monitoring.
Moderate	Manageable risk with standard mitigation measures; monitoring required to confirm effectiveness.
Low	Minor or unlikely impact; addressed through routine management controls.

5.3 Environmental and Social Mitigation Plan

Table 5-2. Environmental Mitigation Plan

No.	Risk / Impact	Description	Pre-Mit. Rating	Best Practice, EHSG	Project-Specific (A0502) Mitigation	Contractor	Engineer	IPIU / Employer	Timing
PHASE 1 — PRE-CONSTRUCTION									
1	**Impacts on wildlife (fauna, avifauna) habitat fragmentation and disruption of white-tailed gazelle migration**	Blockage wildlife movement and habitat fragmentation	**Substantial**	• Conduct pre-construction wildlife survey and seasonal migration mapping to identify corridors and connectivity areas	• Contractor environmental specialist to develop project specific Biodiversity management plan to determine calving areas, water points and crossing hotspots along the road alignment	Contractor (CLO) supports; attends	Supervision engineer and Contractor Env specialist to support implementation of BMP	IPIU Env specialist;	DEIA approval and C-ESMP development
2	**Road design**	Inadequate integration of wildlife corridor, connectivity and crossing measures in road design	**Substantial**	▪ Incorporate wildlife crossing (underpasses/culvert/overpass) at identified sensitive movement (corridors) locations based on field survey result ▪ Standards emphasize considering wildlife movement early in design and planning stage	Apply linear infrastructure standards, MNS 6515: 2015	Contractor (Env. Specialist): survey, design and drawing engineers, IPIU	Supervision engineer: reviews; approves before earthworks; inspects each pit closure	MRT Department of roads, MECC and IPIU env specialist	Before design expertise review and approval
PHASE 2 — CONSTRUCTION									
1	**Soil Erosion & degradation**	Vegetation clearing and excavation cause soil erosion, loss of topsoil, gullying at culvert outlets and steep slopes	**Substantial**	• Prepare and implement a site-specific restoration plan •Effective permanent surface stabilization •Use local native perennial grass for restoration	• Restoration plan prepared by Contractor, reviewed by Engineer, (C-ESMP) • Topsoil stripping and preparation of embankment foundation; quarry extraction and material production; • Compaction from repeated machinery movement; establishment of temporary roads and material storage areas	Contractor; EHS Officer; Site Manager	Supervision Engineer: reviews restoration plan; compliance with national standard:	IPIU, env specialist, Aimag and soums state environmental inspectors Compliance of restoration plan implementation	After construction. Monitoring during restoration work.
2	**Vehicle-wildlife collision in sensitive sections**	Blockage of wildlife movement and connective areas and habitat fragmentation.	**Substantial**	• Designate and maintain wildlife (corridors) crossing points in consultation with local environment department and research institutions • Speed limits at crossing points and during night movement of herds	• Warning signage • MNS 6515:2015 wildlife crossing standard	Contractor; Site Manager)	Engineer: reviews crossing point design; monthly livestock safety inspection; monitors GRM livestock complaints	PIU Env Specialist: livestock incident register; reports to WB	Before commencement and throughout construction
3	**Air quality, Increased dust generation. (PM10/PM2.5)**	Dust from earthworks, haul and temporary roads and quarry	**Moderate**	• Advance notification of particularly dusty or noisy activities (min 72 hours)	• Water truck assigned to dust suppression on active construction sections and temporary and assess roads.	Contractor (CLO; EHS Officer; site nurse and water truck driver	Engineer: reviews complaints log monthly; triggers corrective action for	IPIU Env and Social Specialists: ensures vulnerable groups (elderly, disabled) are	Throughout construction

		crash machinery and construction.		• Dust suppression (watering) on all access and temporary roads and haul routes	• Cover trucks hauling loose materials with tarpaulins. Enforce ≤30 km/h on unpaved and community roads. • Locate batch plants / crushers downwind of communities and equip with dust collectors. • Monitor dust visually; measure PM10/PM2.5 if plumes cross site boundaries or complaints arise. • Law on Air; MNS 4585:2025 Air Quality – General Technical Requirements; • MNS ILO OSH 1:2003		unresolved health complaints	specifically included in health monitoring	
4	**Noise, and Vibration**	Use of construction machinery such as excavators, bulldozers, and rollers; operation of asphalt pavers and paving equipment; movement of vehicles transporting construction materials	**Moderate**	• Fence temporary construction zones for concrete batching plants, crushers, and asphalt plants; • operate only during daytime, except for material transport if necessary; if night works are unavoidable, notify nearby residents in advance;	• Restrict high-noise operations to 08:00–19:00 within 500 m of gers • Vibration monitoring at nearest ger structure and well within 200 m of compaction works; if >5 mm/s PPV, reduce roller pass energy or increase standoff distance • Occupational Safety and Health – Noise Exposure Measurement and General Requirements for Hearing Protection; MNS 4597:2014 • provide workers in high-noise areas with hearing protection such as earplugs; • equip the site environmental specialist with a noise meter capable of measuring temperature, humidity, wind speed, and lighting.	Contractor (CLO; EHS Officer; site nurse)	Engineer: reviews complaints log monthly; triggers corrective action for unresolved health complaints	IPIU Env and Specialists: ensures vulnerable groups (elderly, disabled) are specifically included in health monitoring	Throughout construction
5	**Groundwater Pollution**	Fuel and oil spills, sediment-laden runoff, and camp sewage contaminate ephemeral streams, wells, and groundwater draining to Kherlen River	**Moderate**	• No direct discharge of untreated runoff or wastewater into watercourses. • Monitor groundwater levels at community wells near the site; cease or reduce pumping if drawdown exceeds 1 m.	• Use sediment traps and retention ponds for site runoff. • Fueling only at designated bunded pads; fuel/lubricants in sealed containers on impermeable surfaces with secondary containment. • Maintain spill kits on site; immediate spill containment and cleanup; report any significant spill to IPIU and authorities. •Prohibit vehicle washing in streams. Camp sanitation: septic tanks or sealed holding tanks; no raw sewage discharge. • Comply with Water Law Art. 30.2.2 and MNS 4943:2015.	Contractor (EHS Officer; Camp Manager)	Engineer, Env specialist	IPIU Env Specialist: ensures waste management plan implementation, Aimag and soum state env inspectors, Local sanitation inspector	Before commencement and throughout construction
6	**Water Resource Management**	Large water demand (~436,132 m³) may deplete community wells or shallow aquifers	**Moderate**	Obtain water abstraction permit before any extraction.	• Schedule watering during cooler periods to minimize evaporation. • Reuse construction water where possible (e.g. recycled camp greywater for dust suppression where safe).	Contractor (EHS Officer; Camp Manager)	Engineer, Env specialist	IPIU Env Specialist: Aimag and soum state env inspectors, Local sanitation inspector	Before commencement and throughout construction

7	**Quarry and Spoil Site Management**	Uncontrolled borrow pits and quarrying causes landscape scarring, erosion, dust, and habitat damage; improper spoil disposal causes erosion and drainage blockage	**Moderate**	• Operate borrow pits and quarries under approved plan with utilization permission. • strip and stockpile topsoil for reuse; spray haul roads; fence perimeter. Blasting (if required): daytime only (midday window); formal notification to communities; secure explosives storage.	• Restrict haul routes to a single designated track between quarry and road works; no ad hoc track creation. • All vehicle maintenance at a single designated hard standing; no maintenance on open ground. • Spoil sites: strip topsoil before placement; deposit in controlled layers not exceeding design slope; install drainage ditches; grade and revegetate immediately after completion. • Engineer must inspect and certify closure of each spoil site.		Engineer, Env specialist	IPIU Env Specialist: restoration plan implementation, Aimag and soum state env inspectors,	Construction
8	**Waste Management**	Construction and camp waste (asphalt millings, metals, solid waste, hazardous liquids) causes soil and water contamination if not managed.	**Moderate**	• After completion of construction, organize removal of waste and coordinate with local waste management service providers; dispose of all waste in accordance with applicable regulations, including recyclable, hazardous, and organic waste streams. • Implement waste management plan • Hazardous waste (used oils, bitumen, batteries, vehicle parts solvents): store in sealed labeled drums on impermeable bunded area;	• Segregate wastes into: inert construction debris; • recyclable metal/wood; • general domestic waste; • hazardous waste (oils, batteries, oily rags). • Labeled bins at camp and sites. • No open dumping or burning. • Haul general waste to nearest licensed disposal facility; recycled materials to licensed collectors. • MNS 7084:2025 Waste Management – Manifest for Hazardous Waste – General Requirements; • MNS 7083:2025 Waste Management – General Principles for Classification of Solid Waste;	Contractor (EHS Officer; Camp Manager)	Engineer: reviews waste management plan and its compliance, waste log book monthly;	IPIU Env Specialist: ensures waste management plan implementation, Aimag and soum state env inspectors, Local sanitation inspector	Before commencement and throughout construction
PHASE 3 — POST-CONSTRUCTION AND OPERATIONAL									
1	**Wildlife and animal collusion**	Road mortality (livestock and wildlife collision)	**Substantial**	Implement post construction monitoring of wildlife crossing and roadkill	• Adjust mitigation measures (additional crossing, signage, or speed limit and control) based on monitoring results	Contractor: implements full BMP			

Table 5-3. Social Risk Mitigation Plan

No.	Risk / Impact	Description	Pre-Mit. Rating	Best Practice, EHSG	Project-Specific (A0502) Mitigation	Contractor	Engineer	PIU / Employer	Timing
PHASE 1 — PRE-CONSTRUCTION									
1	**Inadequate Pre-Construction Consultation & Disclosure**	Insufficient consultation coverage across 2 soums before construction—particularly herder households and vulnerable groups—may result in unaddressed concerns, loss of social licence, and delays.	**Substantial**	• Conduct broad representative consultations covering herders, vulnerable groups, local institutions • Use disaggregated attendance records: gender, occupation, location, issues raised • Ensure free, prior, and informed engagement; maintain auditable records • Establish and disclose SEP before construction commences	• Minimum 2 consultation events per soum (Bayankhutag, Munkhkhaan) before works; min 20 participants each; at least one women-only session per soum • Coordinate schedule with seasonal migration (April–May and September–October when herders are accessible) • Publish records in Mongolian on MRT website within 7 days of each event • CLO to be Mongolian-speaking — contractual requirement confirmed in sub-cl. 6.1	Contractor (CLO) supports; attends	Engineer verifies consultation records before issuing section-specific Notice to Commence (Sub-Cl.8.1)	IPIU leads; updates SEP; discloses to WB	Before NTC on each soum section; ongoing throughout project
2	Legacy borrow pits — community safety, road user safety, water quality, and access risks associated with construction-phase interaction	More than 50 unrestored borrow pits from the 2013–2015 road construction period are located approximately 10–150 m from the road corridor. These pits are outside the scope of the current contract, and the Contractor has no obligation or budget to restore them. **Construction-phase interaction risk:** Where legacy pits are located near active works, haul routes, temporary access roads, or construction traffic corridors, project activities may: (i) create safety risks to community members, livestock, road users, and	**Moderate**	• ESS4: Projects must identify and manage community health and safety risks arising from project activities, including interaction with existing hazards within the project's area of influence. • ESS5: Temporary disruption of access to livelihood resources, including informal water sources, requires mitigation regardless of ownership status. • World Bank Group EHSG #3.1 (Water Quality and Availability): Construction activities must avoid contamination or alteration of community water sources and drainage pathways. • World Bank Group EHSG #3.4 (Traffic Safety): Construction traffic risks to road users and workers, including reduced visibility and nighttime operations, must be assessed and managed. • EHSG #3.2 (Structural Safety): Pre-existing excavations near active works should be assessed for stability and access hazards prior to construction activities.	• **Legacy pit safety inventory (not a restoration plan):** Prior to mobilization, the Contractor's Environmental Specialist shall conduct a visual GPS-based inventory of all legacy pits located within 200 m of active works, haul routes, temporary roads, camp areas, or quarry access tracks. The inventory shall record: GPS coordinates, approximate dimensions, presence of standing water, visible instability, fencing status, distance to nearest household/well/watercourse, evidence of livestock use, and proximity to traffic movement or low-visibility construction areas. The inventory is for construction-phase risk management and safety planning only and does not create any restoration obligation. • **Construction-zone safety controls:** Any unfenced, unstable, water-holding, or steep-sided pit located within 50 m of active works or construction traffic routes shall be temporarily protected through appropriate measures such as fencing, reflective tape, warning signage, berms, lighting, or traffic control devices, particularly where nighttime operations, dust generation, or reduced visibility conditions are present. Measures	• Environmental Specialist conducts and submits legacy pit safety inventory prior to mobilization. • Implements temporary fencing, signage, visibility controls, dust suppression, and traffic safety measures near identified pits. • Integrates identified risks into TMP and toolbox briefings. • CLO consults affected herder households regarding water access impacts. • Reports and addresses any accidental disturbance or	• Verifies receipt and adequacy of legacy pit inventory prior to issuing commencement approval. • Reviews TMP integration and spot-checks safety controls during site inspections. • Verifies corrective actions following any reported incident. • Reviews restoration compliance for new borrow pits created under the contract.	• Receives inventory for information and construction-phase risk oversight only; no restoration approval required. • Coordinates with Soum authorities if community access or water use is affected. • Monitors ESMP compliance and reporting obligations. • Confirms restoration obligations for newly created pits are implemented in accordance with national requirements and World Bank ESF commitments.	• Legacy pit inventory: prior to mobilization. • Safety and traffic controls: prior to and throughout nearby construction activities. • Incident reporting: within 24 hours of occurrence. • Restoration of new pits: throughout construction and prior to demobilization.

		contractor drivers/operators due to dust generation, reduced visibility, unstable pit edges, nighttime operations, or accidental vehicle entry; (ii) disturb access to informal livestock water sources relied upon by herder households, potentially triggering temporary livelihood impacts under ESS5; or (iii) increase erosion, drainage, or contamination pathways toward nearby wells or watercourses. These risks arise from interaction between current project activities and pre-existing conditions and therefore require management under the current ESMP.			shall remain in place for the duration of nearby works. • **Traffic and visibility management:** The Contractor shall integrate identified legacy pits into the Traffic Management Plan (TMP), including speed restrictions, warning signage, spotters where required, nighttime lighting near hazardous locations, and dust suppression measures to reduce collision or accidental entry risks for road users and contractor drivers/operators. • **Livestock water access protection:** Where a legacy pit is actively used as a livestock water source and located within 200 m of works, the CLO shall consult affected herder households before works commence. If access may be temporarily restricted, alternative access arrangements or temporary protective measures shall be agreed prior to commencement of works in that area. • **Contamination prevention:** No fuel storage, hazardous material storage, waste disposal, or uncontrolled earthworks shall occur within 50 m of any water-holding legacy pit without Engineer approval. Where drainage toward a well or watercourse is identified, the Contractor's Environmental Specialist shall verify that project activities do not worsen erosion or contamination pathways. • **Incident reporting:** Any accidental disturbance, spill, erosion event, vehicle incident, or safety incident associated with a legacy pit during construction shall be documented and reported to the Engineer and IPIU within 24 hours, with immediate corrective action implemented. • **New borrow pits:** All pits, quarries, and excavations created under the current contract shall be restored in accordance with the approved C-ESMP and applicable Mongolian land restoration requirements. This obligation does not apply to pre-existing legacy pits.	incident within 24 hours. • Restores all new pits created under the contract.			
3	**Temporary Land Use — New Quarry, Spoil**	Use of land outside the road reserve (new quarry ~36.8	**Moderate**	• Map all temporary land requirements before construction	• GPS-map all temporary land needs against herder household locations within	Contractor (Land Liaison) identifies	Engineer verifies TLUAs signed and on file; conditions	IPIU Social Specialist approves each TLUA;	Before any temporary land use outside

	Sites, Camp, Detours Not Agreed	ha at KM23+000, 41 spoil sites, camp, detour roads) without documented agreements may cause disputes, uncompensated livelihood impacts, and project delays. Mongolian herders hold use rights—not title—over state land.		• Consult all affected land users and land title holders	500 m; confirm with soum land administration • Obtain documented Temporary Land Use Agreement (TLUA) from each affected herder before use; verified by PIU Social Specialist • Quarry (KM23+000, ~36.8 ha): confirm no ger or water point within buffer; soum Governor written authorisation before operations • Spoil sites: confirm no seasonal camp, well, or ceremonial feature within 50 m of each site before use • All TLUAs filed in PIU E&S file; Engineer verifies before issuing works commencement certificate for relevant section	users; negotiates with PIU oversight	works commencement on TLUA completion	maintains register; reports to WB	ROW; before quarry operations
\4	**GRM Not Established Before Construction**	A non-operational GRM at construction start means community concerns cannot be captured early, leading to unresolved grievances that escalate into conflicts. Under ESS10, GRM must be operational before works commence.	**Substantial**	• Establish multi-channel GRM before construction commences • Disclose GRM procedures in local language at soum offices and all work fronts • Ensure provisions for vulnerable groups • Conduct GRM awareness campaign before works on each section	• GRM operational (hotline, drop-boxes at soum offices, site boards) before any worker arrives on site • Separate confidential channel for GBV/SEA: managed by female focal point; not combined with general GRM • Bilingual (Mongolian/Chinese) boards at all active work fronts • PIU establishes central Grievance Register with unique ID, category, status, and resolution tracking from Day 1 • Worker GRM (W-GRM) maintained as separate system; reported alongside community GRM in monthly E&S report	Contractor (CLO): installs boards; operates site-level GRM; forwards complaints to PIU within 24 hours	Engineer: verifies GRM operational before issuing Commencement Notice (Sub-Cl.8.1); reviews monthly GRM log	PIU: manages central GRM register; discloses to WB; addresses systemic issues	Before mobilisation; ongoing throughout construction
PHASE 2 — CONSTRUCTION									
1	**Traffic Safety**	The A0502 remains open to public traffic throughout rehabilitation. Heavy construction equipment, lane closures, and temporary detours on a road that recorded 32 fatalities in 7 pre-project years create acute traffic safety risks for road users, workers, livestock,	**High**	• Prepare and implement a site-specific Traffic Management Plan (TMP) before any carriageway works • Deploy trained traffic flaggers at all active work fronts • Provide adequate advance warning signage (500 m, 200 m, 50 m from works) • Temporary detour roads to be compacted and safe; dust suppressed	• TMP prepared by Contractor, reviewed by Engineer, approved by Traffic Police before any lane closure, opening of temporary and detour roads; TMP updated before works advance to each new section • Speed limit 30 km/h through all active construction zones; enforced by traffic flaggers and signage; monitored weekly • Temporary roads: compacted and stable; watered 2×/day; max allowable lateral gradient 4%; reflective markers every 50 m • All livestock crossing points identified in pre-construction design review to remain operational 24 hours; minimum one-way flow passage always maintained	Contractor (Traffic Controllers; EHS Officer; Site Manager)	Supervision Engineer: reviews TMP; weekly traffic safety inspection; conditions payment on TMP compliance	PIU: coordinates with Traffic Police; reports traffic incidents to WB	TMP before any carriageway works; daily monitoring throughout

		and herder households with wells on the opposite side of the road.			• Night works: if unavoidable, additional signage with retroreflective sheeting; temporary lighting; traffic flaggers • Emergency vehicles: access maintained at all times; emergency access points at min 1/15 km of alignment • Accident at work zone: site shut down for investigation; notify Engineer and Traffic Police within 1 hour; PIU within 4 hours				
2	**Livestock and wildlife Safety — Vehicle Collision and Pasture Access Disruption**	The 200,000 head of livestock in the 2 project soums, severely reduced by the 2023–24 dzud, are at risk from construction vehicle collisions, which herders described as unresolved in previous project experience ('herders always bear the loss'). Temporary pasture and water access restrictions during construction compound the post-dzud livelihood crisis.	**Moderate**	• Designate and maintain livestock and wildlife (corridors) crossing points in consultation with herders and local environment department and research institutions • Speed limits at crossing points and during night movement of herds • Document and compensate any verified livestock loss caused by project activities • Minimise duration of any pasture or water access restriction; -MNS 6515:2015 wildlife crossing standard.	• Livestock crossing points: GPS-marked, 5 m minimum clear width, reflective posts at 200 m approaches, operational 24 hours and reflected in TMP as required • Warning signage in Mongolian at approaches: 'Livestock Crossing — Slow to 20 km/h' • Livestock incident procedure: any collision reported to CLO within 4 hours; CLO notifies PIU; joint assessment with herder and contractor within 48 hours; documented • Compensation: if project vehicle is responsible for livestock loss, Contractor compensates herder at current market value within 30 days; paid regardless of fault dispute pending investigation • Pasture access restriction announcements made in inclusive manner at least 14 days prior to impact • Legacy borrow pit water points: if a water-holding pit is within a construction zone, alternative water supply provided to affected herder within 24 hours before pit access is restricted	Contractor (CLO; Land Liaison; Site Manager)	Engineer: reviews crossing point design; monthly livestock safety inspection; monitors GRM livestock complaints	PIU Social Specialist: maintains SEP and information sharing logs, maintains livestock incident register; reports to WB	During construction
3	**Community Health — Dust, Noise, and Vibration at Ger Households**	Dust from construction and from the informal parallel tracks affects the health and daily lives of herder households along the corridor. Community consultation documented extreme dust conditions in July–August. Vibration from heavy rollers may affect poorly	**Moderate**	• Advance notification of particularly dusty or noisy activities (min 72 hours) • Restrict high-noise operations to 08:00–19:00 within 500 m of gers • Dust suppression on all access roads and haul routes near gers • GRM channel to receive and respond to health complaints within 48 hours	• Before works within 2 km of any ger, CLO visits household, explains schedule, provides contact number, and records visit • Water truck assigned to dust suppression on informal tracks between active construction and nearest ger (within 500 m) • If respiratory complaint received through GRM: site nurse visits household within 24 hours; medical referral arranged if needed; temporary relocation considered if dust exceeds action trigger • Vibration monitoring at nearest ger structure and well within 200 m of compaction works; if >5 mm/s PPV, reduce roller pass energy or increase standoff distance	Contractor (CLO; EHS Officer; site nurse)	Engineer: reviews complaints log monthly; triggers corrective action for unresolved health complaints	PIU Social Specialist: ensures vulnerable groups (elderly, disabled) are specifically included in health monitoring	Ongoing throughout construction; CLO visits before works in each new section

		built ger structures and well casings.							
4	**Labour Influx — Cultural Conflict, Resource Pressure**	Influx of ~153 Chinese workers into a sparsely populated pastoral community where no prior industrial workforce has been present creates risks of cultural friction, resource pressure (water, food supply, firewood), and community tension. The remote location increases the difficulty of providing external support.	**Moderate**	• Maximise local hiring (≥30% of unskilled/semi-skilled positions from local soums) • Enforce strict camp rules: curfews, designated rest areas, controlled visitor access • Mandatory cultural sensitivity training for all migrant workers before works commence • Workers must obtain explicit permission before visiting communities	• Job vacancies posted at 2 project soum offices and soum Facebook pages at least 30 days before works; in Mongolian • Cultural sensitivity induction: Mongolian herder lifestyle, customs (ovoo respect, ger etiquette, livestock sacred status), Code of Conduct, prohibited behaviours; delivered in Chinese with Mongolian interpreter; signed acknowledgement required • Camp self-sufficiency: food, water, and sanitation provided entirely within camp; workers not to source food or water from community without Camp Manager authorization • Camp visits by community members: by prior appointment only; accompanied by CLO • Workers purchasing cashmere, livestock products, or other goods from herders: only at soum market days; no direct purchase at ger	Contractor (HR Manager; Camp Manager; CLO)	Engineer: random unannounced camp inspections monthly; reviews community interaction log	PIU Social Specialist: reviews monthly social risk report; responds to escalated community concerns	Code of Conduct signed before any worker on site; camp rules enforced throughout
5	**GBV / Sexual Exploitation and Abuse / Sexual Harassment (SEA/SH)**	Predominantly male migrant workforce (~153 Chinese nationals, ~66 Mongolian nationals) in a remote, low-infrastructure community where women are often home alone during the day (while male herders are away with livestock) creates SEA/SH risk.	**Moderate**	• Zero-tolerance GBV/SEA/SH policy embedded in Code of Conduct and labour contracts • Dedicated female GBV Focal Point at contractor and PIU • Confidential GBV reporting channel (not combined with general GRM) • Mandatory GBV/SEA prevention training at commencement and quarterly • Any proven incident: immediate termination, removal from site, referral to law enforcement	• Female GBV Focal Point appointed before any worker arrives on site; name and phone number posted at soum offices and camp in Mongolian • Separate anonymous reporting channel (drop-box and dedicated phone number accessible to community women) • Worker induction: GBV/SEA definitions, prohibited behaviours, reporting pathways; delivered in Mongolian and Chinese; signed acknowledgement • Quarterly anonymous surveys of female community members (via soum social worker) to assess perceived safety; results reported to PIU • Medical, psychological, and legal support for survivors facilitated by PIU within 24 hours of incident report • Any GBV incident: reported to PIU within 24 hours; PIU reports to World Bank within 48 hours; survivor-centred approach throughout	Contractor (GBV Focal Point; HR Manager)	Engineer: verifies GBV channel is operational; reviews quarterly survey results	PIU (Social/GBV Specialist): manages GBV response protocol; reports to WB	Before mobilisation; training quarterly; channel operational throughout
6	**Herder Livelihood Disruption —**	Temporary occupation of state land for quarry, 41	**Moderate**	• Minimise area and duration of all temporary land take	• Before any temporary land use, CLO consults all affected herder households; TLUA signed	Contractor (Land Liaison; Env. Specialist; CLO)	Engineer: inspects spoil site restoration;	PIU Social Specialist: verifies herder consultation	Concurrent with construction;

	Temporary Land and Water Access Loss	spoil sites, camp, and detour roads may restrict herder access to grazing and water. Post-dzud context (Sukhbaatar aimag lost 47.2% of livestock in 2024) means even minor temporary restrictions can be disproportionately harmful.		• Document all agreements with signed herder acknowledgements • Restore all temporarily used land to equal or better condition before demobilization	• Legacy borrow pit water points serving as livestock water: maintained accessible throughout construction; if access blocked, alternative supply within 24 hours • Restoration of all 41 spoil sites: topsoil respread; native grass seed; drainage channels reinstated; Engineer certifies closure before departure from each site • Quarry (KM23+000): full restoration plan per BPRP; vegetation recovery monitored biannually in first 2 years after closure		conditions section completion on restoration certificates	logs, acceptance documents; reports to WB	restoration before section handover
7	**Occupational Health and Safety (OHS)**	Workers exposed to: heavy equipment hazards; hot bitumen (burns, fume inhalation); extreme temperatures (−30°C winter, +35°C summer); traffic interaction at active road sections; dust and noise. Multi-national workforce may have gaps in safety culture.	**Substantial**	• Site-specific OHS Management Plan aligned with Mongolian OHS Law and WBG EHS Guidelines • Job Hazard Analysis before all high-risk tasks • Pre-employment and annual medical examinations for all workers • Daily OHS toolbox talks; formal safety induction before any worker starts • Mandatory PPE (helmets, boots, hi-vis, gloves, eye/ear protection, respiratory protection for asphalt work)	• OHS Plan (Annex 4) approved by Engineer before Commencement Notice; updated for each new major work type • Permit-to-work system for: confined space entry; work within 2 m of live traffic; night works; hot bitumen handling; blasting • First aid: trained first aider in each work team; fully equipped first aid kit at each work front; emergency vehicle on standby at camp • Extreme cold provisions: work suspended if temperature <−25°C without wind; heated rest shelter within 500 m of all work fronts; no hot bitumen works below −15°C • All incidents and near-misses reported within 24 hours; root-cause investigation and corrective action required; fatality or serious incident: PIU and World Bank notified within 24 hours • PPE refusal: documented as serious violation in labour contract; two refusals = termination	Contractor (Safety Officer; Site Manager; Medical Staff)	Supervision Engineer (Safety Inspector): weekly OHS site inspections; reviews incident log; Labour Inspectorate; Annex 4	PIU OHS Officer: conducts periodic audits; reviews incident reports; enforces contractual obligations	Pre-employment medical before mobilisation; OHS plan before any works; daily monitoring throughout
8	**Labour and Working Conditions**	Risks of non-compliance with labour standards: delayed wages, excessive hours, inadequate contracts, poor accommodation, lack of accessible grievance mechanism. Both Chinese and Mongolian workers	**Moderate**	• Implement Labour Management Procedures (LMP) consistent with ESS2 • Provide written employment contracts, fair wages, regulated working hours • Establish accessible Worker GRM • Adequate worker accommodation, WASH facilities, and welfare conditions	• Mongolian workers: minimum wage per current Mongolian Labour Law + local loading; no wage deductions without written worker consent • Chinese workers: wage terms consistent with ILO Core Labour Standards; wages paid on time (monthly) to personal bank account • Maximum working hours: 60 per week (Mongolian Labour Law); overtime voluntary, documented, and compensated • No workers under 18 years on any part of this contract	Contractor (HR Manager; Camp Manager)	Engineer: quarterly payroll spot-check; audits camp conditions; verifies GRM operational	PIU: monitors ESF compliance; spot inspections; addresses systemic issues; reports to WB	Before mobilization (accommodation ready); throughout construction

		must be covered; Mongolian Labour Law and ESS2 apply to all.			• Worker GRM: hotline posted at camp and work fronts in Mongolian and Chinese; complaint acknowledged within 2 working days; resolved within 14 working days • Camp accommodation: minimum 4 m² per worker; heating for winter; potable water (tested monthly); segregated sanitation; waste collection daily				
9	**Cultural Heritage — Chance Finds**	Bayankhutag soum contains over 20 documented Xiongnu-era burial mounds; Earthworks and quarrying may encounter unrecorded features. The heritage-rich context demands heightened awareness.	**Moderate**	• Brief all workers on Chance Finds Procedure (CFP) during induction • If any archaeological or cultural item found: stop work immediately in that location; delineate and secure area; notify PIU and aimag Culture Department within 24 hours • Do not resume work until qualified archaeologist assesses and authorities grant written clearance • Consult local elders to identify known sacred sites; include in no-go zone map	• CFP (Annex 5 and Annex 11) provided to all workers in Mongolian and Chinese at induction; signed acknowledgement • Heritage awareness module (1 hour) in worker induction: key species of heritage in the area; what a burial mound, khirgsüür, or standing stone looks like; reporting pathway • Quarry site (KM23+000, 36.8 ha) and all 41 spoil sites: visual heritage screening report submitted before use; confirmed by Engineer • GIS layer of known heritage sites maintained by Env. Specialist; updated if new features identified; shared with Engineer	Contractor (all staff; Site Manager)	Supervision Engineer (E&S Specialist): confirms CFP awareness; coordinates with Culture Dept; Annex 5	PIU: notifies MNET and aimag Culture Department of any finds within 24 hours	Induction (before any earthworks); ongoing
PHASE 3 — POST-CONSTRUCTION AND OPERATIONAL									
1	**Unresolved Temporary Land Impacts at Project Closure**	Incomplete restoration of quarry (36.8 ha), 41 spoil sites, 50+ legacy borrow pits, camp, and detour roads would constitute residual livelihood impacts on herder households. Under ESS5, restoration to pre-project (or better) condition must be verified by affected parties before project closure.	**Substantial**	• Restore all temporarily used land to pre-project condition or better • Post-construction audit confirms restoration • Outstanding issues resolved prior to final project closure • Herder acceptance of restoration documented before Performance Certificate	• Each of the 41 new spoil sites: graded; topsoil respread; native grass seed applied; drainage channels reinstated; Engineer certifies closure before departure from each site • 50+ legacy borrow pits: all actions per BPRP completed; Borrow Pit Register closed; all Category A pits formally handed over to soum administration with written record • Quarry (KM23+000): full restoration plan implemented; vegetation recovery monitoring biannually in first 2 years; RMC notified of ongoing monitoring obligation • Camp area: full decommissioning and restoration before demobilisation; Engineer certifies site • For each herder household with a TLUA: joint post-restoration site inspection; signed herder acceptance document before Performance Certificate issued (Sub-Cl.11.9)	Contractor: implements full restoration before demobilisation; provides signed herder acceptance documents	Engineer: certifies each spoil site, quarry, legacy pit, and camp restoration; conditions Performance Certificate on all closures	PIU Social Specialist: verifies herder acceptance documents; reports restoration outcomes to WB	Concurrent with construction (spoil sites closed progressively); all before demobilization; certified before Performance Certificate

					• All informal parallel tracks within construction footprint: close and rehabilitate; signage directing traffic to paved road				
2	**Traffic Safety**	Improved road conditions are likely to increase traffic speeds and volumes. Without adequate operational safety infrastructure, the post-project accident rate could increase despite the improved surface quality, particularly at livestock crossings and soum gateway sections.	**Moderate**	• Conduct post-construction Road Safety Audit before Taking-Over Certificate is issued • Maintain speed limits and enforcement in settlement areas • Install speed calming measures at livestock crossings and soum entries • Maintain accident recording and implement 'black spot' improvements	• Road Safety Audit (RSA) commissioned by PIU and completed before Taking-Over Certificate (Sub-Cl.10.1); identified deficiencies remediated before handover • MRT Road Maintenance Centre (RMC) briefed on livestock crossing locations, legacy pit water point locations, and community water points before handover • Six-monthly road safety inspections at Bayankhutag, and Munkhkhaan soum sections for first 2 operational years • Speed enforcement: Traffic Police notified of all designated 40 km/h zones at soum entries and livestock crossings • GPS asset data (crossings, signs, drainage, crash-risk locations) transferred to MRT RAMS database at handover	Contractor: remedies defects during DNP; provides as-built documentation at handover	Engineer: conducts pre-handover inspection; issues Taking-Over Certificate and Performance Certificate after DNP; verifies defect remediation	PIU: coordinates handover to MRT/RMC; monitors maintenance performance; reports road safety conditions to WB annually for 3 years post-completion	At Taking-Over; throughout DNP; first 3 years of operation
3	**Multi-Track Elimination and Pasture Recovery**	Rehabilitation of the A0502 creates the opportunity to consolidate all vehicle traffic back onto the single paved carriageway, eliminating the 10+ parallel dirt tracks. This is a net positive land-use benefit, but it requires active management to realise. Without track closure, traffic may continue on informal routes alongside the new road.	**Substantial**	• Formally close all informal parallel tracks within the project zone before handover • Monitor vegetation recovery on closed tracks as a project benefit indicator • Coordinate with soum administrations on signage and enforcement of track closure	• All informal parallel tracks within 50 m of the rehabilitated carriageway: physically closed at both ends using earth bunding and 'Road Closed' signage in Mongolian before Taking-Over • Track surface scarified and native grass seed broadcast on closed tracks; documented with before/after photography • Signage at track entry points: 'Use Sealed Road — Parallel Track Closed for Rehabilitation'; • Vegetation recovery on closed tracks monitored biannually for 2 years after project completion; results included in PIU annual E&S report to WB • If traffic continues on closed tracks: soum traffic police notified for enforcement	Contractor: closes tracks before handover; local administration and road owner continues enforcement and rehabilitation	Engineer: verifies track closure and seeding before Taking-Over Certificate	PIU: monitors vegetation recovery; includes track recovery as benefit indicator in E&S reports to WB	Before Taking-Over; monitoring for 2 years post-completion
4	**Road Maintenance Failure — Reversion to Pre-Project Condition**	The A0502 corridor has experienced zero maintenance since 2013–2015 construction due to the State Commission acceptance dispute. Without a clear	**Substantial**	• Formal road maintenance agreement between MRT and RMC before project completion • Annual maintenance budget allocated and confirmed before handover • Defect notification period (DNP) of minimum 365 days	• As a condition of project completion, MRT to confirm in writing: (i) State Commission acceptance will be pursued for the rehabilitated road; (ii) annual maintenance budget line confirmed in MRT budget • RMC to develop a 5-year maintenance plan for the A0502 KM50–100 section before handover	Contractor: DNP obligations (Sub-Cl.11.1) Road owner	Engineer: annual condition survey for 3 years post-Taking-Over; issues Performance Certificate after DNP	PIU: secures MRT maintenance commitment before completion; monitors and reports to WB	Before Taking-Over; ongoing for 3 years post-completion

		maintenance agreement and budget allocation, the rehabilitated road risks reverting to the same deteriorated condition within 5–10 years, undoing all E&S benefits.		• Post-completion monitoring of road condition by road owner for 3 years • adequate and timely maintenance of the project road	• Contractor DNP: minimum 365 days after Taking-Over; all defects repaired within 30 days of notification • PIU commissions annual road condition survey for first 3 years post-completion; results reported to WB • Maintenance of legacy borrow pit water points (Category A): RMC responsibility after handover; access routes maintained; water quality monitored annually				

5.4 Positive Environmental and Social Impacts

The A0502 rehabilitation generates significant positive impacts that are a key part of the overall E&S assessment. These are not incidental benefits — they are the primary justification for the project and must be monitored and reported as project outcomes alongside the mitigation of adverse impacts.

Table 5-4. Positive impacts of the project

Impact Area	Description	Monitoring Indicator
Road safety: fatality reduction	The A0502 recorded 103 accidents, 32 fatalities, and 44 serious injuries (2016–2022) under severely deteriorated conditions. Rehabilitation to Class III standard, with proper signage, crossings, and drainage, is expected to reduce fatality rates substantially.	Annual accident statistics from Traffic Police (baseline: ~4–5 fatalities/year on this section); target: ≥50% reduction within 3 years of completion
Land use: elimination of multi-track degradation	Rehabilitation of the paved road enables consolidation of all traffic onto a single 12 m carriageway, eliminating 10+ parallel informal dirt tracks. This is a net positive land-use outcome returning degraded pastureland to pastoral use.	Satellite/drone imagery of track recovery at 6-month and 12-month post-construction; photographic documentation; herder feedback survey
Legacy borrow pit water points: formalization	Category A pits (water-holding, active livestock use) to be formally designated as community water points and handed over to soum administration. This converts a legacy environmental liability into a formal asset. Used Category B and C pits fully rehabilitated. Remaining pits logged and handed over to Road owner for further rehabilitation.	Number of Category A pits formally handed over to soum administration before project completion; soum governor acceptance document. Category B and C pits logged and handed over to Road owner for further rehabilitation
Livelihood: improved market access for herders	Reliable road access reduces time and vehicle operating cost for transporting livestock and products to market. Post-dzud recovery particularly depends on herders being able to sell surviving livestock at market prices.	Annual household income survey (PIU-commissioned) in 2 project soums for 3 years post-completion; disaggregated by gender
Access to health services	The road connects communities to Undurkhaan District Hospital and Choibalsan Regional Hospital. Emergency medical response times on the corridor were severely compromised by the deteriorated road surface.	Emergency response time data from soum health centres (before/after)
Reduced dust exposure	Consolidating traffic onto the paved road and eliminating vehicle movement on parallel tracks substantially reduces ambient dust levels near herder households — a direct health and welfare benefit.	PM10 monitoring at 3 representative receptor locations (within 500 m of road): before, during, and 6 months after project completion
Local employment	Minimum 30% of workforce (≥66 workers) to be sourced from local soums; skills transfer through on-the-job training.	Monthly payroll records disaggregated by nationality and soum of origin; cumulative local employment reported to WB quarterly

5.5. Cumulative Impacts

5.5.1. Framework and Scope

The World Bank ESF (ESS1) requires assessment of cumulative impacts: the combined effect of a project's activities together with other existing, planned, or reasonably foreseeable developments that affect the same receptors. Cumulative impacts may arise from: (i) multiple impact pathways within the same project acting on a single receptor simultaneously; and (ii) the project's impacts on a resource or community combined with those of other activities in the same zone of influence.

For this project, cumulative impact assessment is grounded in the specific conditions of the A0502 corridor (KM50+000–KM100+000) and focuses on receptors and impact pathways that are both material to the project context and supported by available evidence. Three valued environmental and social components (VECs) are assessed:

- Pastureland and land-use condition: the dominant land use in the project corridor, directly affected by the project's own footprint and by the pre-existing multi-track degradation problem that the project is designed to resolve
- Wildlife and ecological connectivity: eastern steppe fauna, including key species of conservation concern (Saker Falcon, Steppe Eagle, Mongolian Gazelle), whose movement and habitat are affected by road infrastructure across the wider corridor
- Herder livelihoods and community health: the socio-economic baseline of Bayankhutag and Munkhkhaan soums, where road-related impacts compound an already acute post-dzud vulnerability

A fourth pathway, greenhouse gas emissions, is addressed briefly given its relevance to the World Bank's climate commitments. Landscape and visual impacts are not assessed as a separate cumulative VEC because the project follows an existing corridor through modified steppe habitat with no critical or natural habitat and no cultural landscape designations within its zone of influence.

5.5.2 Spatial Zone of Influence

The cumulative impact zone of influence is defined at two scales:

- Local zone (direct cumulative effects): the 50 km A0502 corridor and a 5 km buffer on either side, encompassing the territory of Bayankhutag soum (Khentii aimag) and Munkhkhaan soum (Sukhbaatar aimag). This is the area within which construction activities, quarry operations, haul routes, and legacy borrow pit management interact directly with pastoral land use, community water sources, wildlife movement, and herder household livelihoods.
- Regional zone (indirect and in-combination effects): the eastern Mongolia road network within which the A0502 forms one element of a system of ongoing and planned national road rehabilitation investments. The A0501 (UB–Undurkhaan corridor, 77 km, MTCLIP) is the immediately adjacent project running parallel to and north of the A0502 corridor. Other MTCLIP components (A0301 UB–Arvaikheer, A0602 Kharkhorin–Tsetserleg) operate in different regions and share no zone of influence with the A0502.

No active mining license areas or major industrial developments have been identified within the 5 km buffer of the A0502 corridor based on available information. The cumulative context is therefore defined primarily by the combined effect of the project's own activities and the broader pattern of road investment in eastern Mongolia.

5.5.3 VEC 1 — Pastureland Condition and Land Use

Baseline and existing degradation

The most significant pre-existing land-use impact in the project corridor is the multi-track problem: because the A0502 paved surface has been in severely deteriorated condition since 2013–2015 construction and was never formally accepted, drivers have created 10 or more parallel informal dirt tracks alongside the road. These tracks collectively degrade approximately 6,900 ha of pastureland through soil compaction, topsoil loss, dust deposition on vegetation, and fragmentation of herding territories. This degradation is documented in field surveys and confirmed by community focus groups in both project soums (November 2025, April 2026). The multi-track problem is itself a cumulative land-use impact — the product of a decade of interaction between a failed road infrastructure and natural herder adaptive behaviour.

Project contributions — adverse

During construction, the project will temporarily disturb approximately 194.8 ha of land outside the permanent road formation through quarry operations (16 sites, 83.7 ha), the industrial compound (25.4 ha), the rock source at KM23+000 (36.6 ha), spoil sites (41 locations, ~6.4 ha), and haul routes (~40 ha). These temporary disturbances overlap with pastureland and herder use-right areas. During construction, quarry dust and haul-route vehicle movement will add a new dust impact pathway to the corridor, on top of the existing multi-track dust problem. This is the most material intra-project cumulative impact: construction activities and the legacy multi-track problem act simultaneously on the same receptor (pastureland and herder health) during the 2026 construction season.

Project contributions — positive (cumulative benefit)

The project's net cumulative land-use impact is strongly positive. Rehabilitation of the A0502 to a functional standard eliminates the need for informal parallel tracks. Traffic consolidates onto the 12 m paved carriageway. The approximately 6,900 ha of degraded parallel track area is progressively revegetated. This outcome is not achievable without the project and is not reversible through any measure other than road rehabilitation. The project's temporary land-use disturbances (194.8 ha) are substantially outweighed by the permanent land-use benefit (6,900 ha pasture recovery).

In-combination with A0501 (MTCLIP, adjacent corridor)

The A0501 corridor (UB–Undurkhaan, 77 km, MTCLIP) is the most directly adjacent co-occurring road project. It operates on a parallel corridor to the north. Construction of both projects may occur in the same season and their combined effects on regional road traffic, quarry material demand, and construction workforce presence in Khentii aimag constitute a cumulative load on the eastern steppe environment. However, the two projects have distinct spatial footprints with no overlapping zone of direct land disturbance, and their individual ESMP requirements are independently managed. The primary management response is coordination between the two IPIUs to avoid simultaneous peak-disturbance activities in the same regional season where feasible.

Table 5-5. Significance assessment of VEC 1

Cumulative impact	Direction	Magnitude	Duration	Significance
Temporary quarry + haul-route dust on pastureland (in-construction season, combined with existing multi-track dust)	Adverse	Moderate — additional but time-limited; haul routes follow existing informal tracks where possible	Short (2026 construction season only)	Moderate — mitigated by dust suppression on both active sections and informal tracks (per Table 5-2 Row 3)
Permanent elimination of 6,900 ha multi-track degradation through traffic consolidation on rehabilitated pavement	Positive	High — large-scale, landscape-level land-use benefit	Permanent (for road design life ≥20 years)	Significant positive — the defining cumulative benefit of the project
Legacy borrows pit rehabilitation + formalization as community water points	Positive	Moderate — resolves a decade-old land and safety liability	Permanent	Moderate positive — verifiable through soum administration handover records

5.5.4 VEC 2 — Wildlife and Ecological Connectivity

Baseline

The project corridor passes through the eastern steppe classified as Modified Habitat under ESS6. No critical habitat is present within the project footprint. Key species of conservation concern recorded or expected in the project area include the Saker Falcon (Endangered, IUCN; Mongolian Red Book), Steppe Eagle (Endangered, IUCN), Pallas's Cat (Near Threatened, Mongolian Red Book), and Lesser Kestrel (Vulnerable, IUCN). The Mongolian Gazelle (Procapra gutturosa) migrates through eastern Mongolia; the project area lies south of the main migration corridor, but seasonal movements may occur. The nearest protected area is Khar Yamaat Nature Reserve (~17 km northeast of the eastern terminus), important for cranes, bustards, and migratory birds. The Kherlen River corridor (~30–40 km north) supports migratory birds and fish but lies outside the direct impact zone.

Direct project impacts

The project's direct wildlife impacts are associated with temporary habitat disturbance at quarry sites and haul routes; vehicle collision risk during construction for both livestock and wildlife; and construction noise and activity near any sensitive movement corridors identified during the pre-construction wildlife survey. These are managed through the Table 5-2 pre-construction and construction mitigation measures (wildlife survey, C-ESMP Biodiversity Management Plan, wildlife crossings per MNS 6515:2015, hunting prohibition in CoC, speed restrictions at identified movement points).

Cumulative impacts with the wider road network

The broader MTCLIP investment programme rehabilitates approximately 1,284 km of national roads in Mongolia (including A0301, A0501, A0602, and planned components). Individually, each rehabilitation project follows an existing road alignment and generates localized and reversible habitat disturbance. The cumulative effect across the national network is: (i) improved road surfaces that may increase vehicle speeds and traffic volumes, incrementally increasing wildlife-vehicle collision rates on rehabilitated sections; and (ii) road network expansion in the longer term (planned

future projects in the western, northern, and eastern regions) that may contribute to habitat fragmentation for wide-ranging species including Mongolian Gazelle and Asiatic Wild Ass (Khulan).

For the A0502 specifically, the cumulative collision risk is moderated by two factors: first, the current heavily deteriorated surface already creates significant vehicle-wildlife interaction at low speeds on multiple parallel tracks — rehabilitation reduces the number of interaction zones to a single defined carriageway; second, the 50 km section is not located within the main Mongolian Gazelle migration corridor (the project area lies south of the primary route). The pre-construction wildlife survey required under Table 5-2 Row 1 will confirm the actual migration and movement patterns before works commence.

Table 5-6. Significance assessment of VEC 2

Cumulative impact	Direction	Magnitude	Duration	Significance
Vehicle-wildlife collision risk on rehabilitated pavement (higher speeds on consolidated single carriageway vs. current multi-track at low speeds)	Adverse	Low to Moderate — offset by reduction in total track surface and wildlife crossing provisions	Permanent (operational phase)	Low to Moderate — managed through wildlife crossings, speed signage, monitoring; pre-construction survey to confirm sensitive locations
Cumulative habitat fragmentation from regional MTCLIP road network rehabilitation	Adverse	Low for A0502 alone; moderate regionally across full MTCLIP network	Long-term	Low for this project — no critical habitat crossed; Khar Yamaat NR is 17 km from project terminus; managed through regional-level ESMF wildlife crossing standards
Reduction in total vehicle-wildlife interaction surface area through elimination of multi-track diffuse network	Positive	Moderate — concentrates interaction to one defined point but reduces total disturbed corridor width	Permanent	Moderate positive

5.5.5 VEC 3 — Herder Livelihoods and Community Health

Baseline vulnerability

The project area encompasses Bayankhutag soum (Khentii aimag) and Munkhkhaan soum (Sukhbaatar aimag). The 2023–2024 dzud disaster resulted in livestock losses of 47.2% in Sukhbaatar aimag and 22.8% in Khentii aimag — among the highest in Mongolia. Post-dzud, 52.8% of herder households in Sukhbaatar aimag lost more than 50% of their livestock. Regional poverty rates (Khentii: ~38%; Sukhbaatar: ~30.2%) are above the national average (~28.4%). This acute baseline vulnerability is the most important social context for the cumulative impact assessment: it means that temporary construction-related disruptions to pasture access, water points, road access, or market connectivity have a higher-than-normal livelihood consequence for affected households.

Cumulative social impacts during construction

During the 2026 construction season, herder households in the project area will face the combined effect of: (i) temporary access restrictions and dust from project construction activities; (ii) the pre-existing dust and track degradation from the multi-track problem (which continues until the road is

rehabilitated); and (iii) the ongoing livelihood fragility from post-dzud losses. These three factors interact on the same receptor — herder household welfare — and their combined effect is greater than any one factor alone. This is the most material cumulative social impact of the project.

The construction season (planned as a single 2026 season) coincides with: the fodder preparation period (August–September), when herder households cut and store winter feed in areas adjacent to the road; the late summer roadside trade season (July–September), when seasonal vendors and roadside businesses depend on passing traffic; and the post-dzud recovery period, when households have less financial resilience to absorb any additional disruption.

Mitigation of cumulative social impacts

The project-specific mitigation measures most relevant to cumulative social risk are:

- Construction scheduling: Table 5-3 Row 3 requires that fodder reserve areas be identified, and their seasonal boundaries confirmed with affected herder households through CLO consultation before the construction season. Construction activities that would disturb or occupy active fodder areas during August–September are to be avoided or minimized.
- Dust suppression on informal tracks: Table 5-2 Row 3 requires that dust suppression by water truck covers not only active construction sections but also the informal parallel tracks between active work fronts, acknowledging that both sources simultaneously affect the same herder receptors.
- Access continuity: Table 5-3 Row 2 (Traffic Safety/Access) requires that at least one passable lane remains open throughout construction and that livestock crossing points are maintained, preventing the project from compounding the pre-existing access difficulties herder households face on this corridor.
- Post-dzud sensitive engagement: The GRM, CLO outreach, and vulnerable household identification process in Table 5-3 are calibrated to the post-dzud context: households with severe livestock losses should be treated as a priority vulnerability category in all engagement, TLUA negotiations, and access management decisions.

Table 5-7. Significance assessment of VEC 3

Cumulative impact	Direction	Magnitude	Duration	Significance
Temporary construction dust + pre-existing multi-track dust acting simultaneously on post-dzud-vulnerable herder households	Adverse	Moderate — both sources managed simultaneously through ESMP Table 5-2 Row 3	Short (2026 season)	Moderate — residual after mitigation; monitored through PM10 measurements and household health complaints
Construction works during fodder preparation season (August–September) on households with severely reduced post-dzud livestock stocks	Adverse	Moderate to High for directly affected households — seasonal window is non-substitutable	Short (August–September 2026 peak risk window)	Substantial — managed through scheduling avoidance; CLO fodder area mapping before construction season; treated as high-priority mitigation item
Improved road enabling post-dzud herder household market access and reduced transport costs	Positive	High — operational road directly reduces vehicle operating cost and travel time to Undurkhaan and Choibalsan markets	Permanent	Significant positive — the primary social benefit of the project; monitored through annual household income survey

5.5.6 Greenhouse Gas Emissions

The A0502 rehabilitation will reduce vehicle fuel consumption and GHG emissions by enabling vehicles to travel at their designed speed on a smooth paved surface rather than at reduced speed on the deteriorated surface or on parallel dirt tracks. The economic lifetime GHG reduction is estimated at approximately 65,881 tonnes CO2 across the MTCLIP corridor components (MTCLIP project documents). The A0502 contributes a proportionate share of this benefit, consistent with Mongolia's Nationally Determined Contribution (NDC) target of 22.7% unconditional and 44.9% conditional GHG reduction by 2030 relative to the 2010 BAU scenario.

Construction activities (fuel combustion by machinery and haulage vehicles; bitumen production) generate temporary GHG emissions that are not separately quantified in this ESMP but are addressed through the requirement for Euro III minimum emission standard vehicles (Table 5-2 Row 3) and efficiency requirements in the construction equipment schedule. The long-term operational emission reduction substantially outweighs the construction-phase emission increase.

5.5.7 Management of Cumulative Impacts

The following measures specifically address cumulative impact pathways identified above, in addition to the standard project-level mitigation measures in Tables 5-2 and 5-3:

Table 5-8. Mitigation measures

Cumulative Impact Pathway	Management Measure	Responsible Party	Timing
Intra-project: construction dust + multi-track dust acting simultaneously on herder health	Dust suppression water truck coverage explicitly includes informal parallel tracks between active work fronts, not only active construction sections. PM10 monitoring at 3 representative sensitive receptors throughout construction season. Visual dust monitoring daily.	Contractor (EHS Officer; water truck); Engineer (monthly PM10 review)	Throughout 2026 construction season
Intra-project: construction access restriction + pre-existing difficult access on a corridor with post-dzud-vulnerable herder households	Livestock crossing points always maintained; advance notification via CLO ger visit ≥14 days before any access restriction; CLO ger visit log submitted to Engineer before restriction; no full-lane closure without IPIU approval and confirmed alternative access.	Contractor (CLO; Site Manager); IPIU Social Specialist	Before and throughout construction; CLO outreach to post-dzud priority households
Intra-project: construction works during fodder preparation season on post-dzud-vulnerable households	CLO maps all active fodder reserve areas in consultation with affected herder households before construction season begins (June 2026 at latest). Scheduling of earthworks and temporary access route activation in fodder-active areas adjusted to avoid August–September peak where technically feasible. Any unavoidable disturbance during peak fodder season: documented agreement with affected household per RPF.	Contractor (CLO; Site Manager); IPIU Social Specialist	Mapping by June 2026; scheduling confirmed before 2026 construction season start

In-combination: A0502 construction and A0501 construction in same regional season (Khentii aimag)	IPIU coordinates between the A0502 and A0501 project teams at Khentii Province level to share information on scheduling, workforce management, and community engagement. This coordination reduces the risk of simultaneous peak-disturbance activities in Khentii aimag from two MTCLIP projects operating concurrently.	IPIU (both project teams); Khentii Province administration	Pre-construction; quarterly during construction
In-combination: regional wildlife collision risk from A0502 rehabilitation plus broader MTCLIP network	Pre-construction wildlife survey and migration mapping (Table 5-2 Row 1) confirms actual wildlife movement patterns on the A0502 corridor before works commence. Wildlife crossings installed per MNS 6515:2015 at confirmed sensitive movement locations. Post-construction wildlife crossing effectiveness monitored for 3 years by Contractor per monitoring plan.	Contractor (Environmental Specialist; biologist for wildlife survey); Engineer; IPIU Environmental Specialist	Wildlife survey before mobilisation; crossings before opening; monitoring for 3 years post-completion
Long-term positive: 6,900 ha pasture recovery from multi-track elimination	Track closure programme implemented as part of construction works (Table 5-2, positive impacts). Satellite or drone imagery at 6- and 12-months post-construction to document track recovery. Herder feedback survey to confirm improved pasture access. Outcomes reported to WB as a project benefit indicator.	IPIU Environmental and Social Specialists; monitoring contractor	6- and 12-months post-construction

5.5.8 Cumulative Impact Monitoring Indicators

The following indicators track cumulative impact pathways throughout construction and the first year of operation. They supplement the standard ESMP monitoring indicators in Chapter 8.

Table 5-9. Monitoring indicators

Indicator	Measurement	Frequency	Responsibility
PM10 at 3 representative herder household receptor locations within 500 m of construction sections	Continuous or grab sampling during active construction; compared against MNS 4585:2025 and baseline	Monthly during construction season	Contractor Environmental Specialist; reported to Engineer
Number of livestock-vehicle collision incidents attributed to construction vehicles	Livestock Incident Register (Table 5-3); incidents disaggregated by vehicle type (construction vs public)	Weekly log; monthly report to IPIU	Contractor CLO; Engineer
Fodder area disturbance incidents (construction activity within mapped fodder reserve areas during August–September)	CLO field log; community complaint register	Monthly during construction; daily during fodder peak (Aug–Sep)	Contractor CLO; IPIU Social Specialist
Track recovery: reduction in bare-soil track area on the 50 km corridor	Satellite or drone imagery; comparison against pre-construction baseline track area (~6,900 ha)	At 6- and 12-months post-construction	PIU Environmental Specialist; monitoring contractor

Wildlife collision incidents on operational road (first 3 years)	Wildlife carcass register maintained by Road Maintenance Company; data from Traffic Police	Quarterly (operational phase); annual report to MRTD	Road Maintenance Company; MRT; IPIU
Post-dzud herder household income recovery along the corridor	Annual household income survey in Bayankhutag and Munkhkhaan soums; disaggregated by gender; compared against pre-project baseline	Annually for 3 years post-completion	IPIU Social Specialist (commissioned survey)

6. IMPLEMENTATION MECHANISM, ROLES AND RESPONSIBILITIES, AND TRAINING

This chapter defines how all ESMP obligations are allocated, enforced, and monitored under the Contract and project documents.

6.1 Implementation Arrangements, Roles and Responsibilities

All parties must coordinate and cooperate for the implementation of determined mitigation measures and safeguards instruments.

Table 6-1. ESMP implementation roles and responsibilities

Party	Roles and Responsibilities
Contractor: SDLG Mongolia LLC	**General:** The Contractor is bound by the ESMP as part of the Employer's Requirements. The Contractor must develop the Contractor's ESMP (C-ESMP), which must be consistent with and more detailed than this ESMP, and submit it to the Engineer for consent before the Notice to Commence is issued. **E&S staffing:** Appoint a full-time EHS Officer and a Mongolian-speaking Community Liaison Officer (CLO) before mobilization. Both posts are contractual requirements; vacancies constitute an NCN. **ESMP implementation:** On-site execution of all CESMP measures and subplans. **Reporting:** Prepare and submit monthly EHS reports to the Engineer within 7 days of each month-end. Operate the site-level GRM and Worker GRM as separate systems. Report serious incidents (fatality, GBV, significant spill) to Engineer within 4 hours and in writing within 24 hours.
Supervision Engineer: SOOSANG-DASANG Joint Venture in association with Geo Zuraglal LLC	**General:** Acts on behalf of MRT/PIU, issues instructions, gives or withholds consent to method statements and sub-plans; certifies or withholds interim payment certificates. **E&S staffing:** Appoint qualified and experienced Environmental specialist and a Social Specialist as part of the supervisory team. **ESMP-specific:** Conducts minimum monthly unannounced site inspections and routine inspections. Reviews and submit Engineer's monthly report to PIU within 10 days of month-end. Validates environmental and social monitoring data and escalates action trigger exceedances. Operate the NCN register and tracks corrective action closure. Employes contractual controls to ensure ESMP implementation.
Integrated Project Implementation Unit (IPIU), MRT	**General:** The PIU is the Employer under the FIDIC contract and is accountable to the World Bank for ESF compliance under Loan Agreement No. 9336-MN. **ESMP-specific functions:** Appoints IPIU E&S staff with demonstrated ESS2/4/5/10 competence. Owns and implements project SEP, leads local engagement. Holds the pre-construction ESMP orientation workshop before mobilisation. Maintains the central GRM register. Reviews and countersign all TLUAs. Commissions and oversee supplementary community consultations. Manage and finance RAP (if necessary). **Reporting obligations:** Submits quarterly E&S progress reports to the World Bank. Responds to Bank supervision mission findings within 30 days. Notifies the World Bank within 48 hours of: any worker fatality or serious injury; any confirmed GBV/SEA incident; any significant environmental spill reaching a water body or community well; any formal community protest or media-documented conflict related to the project.
Local Authorities (Aimag/Soum governments, relevant authorities)	**General:** Aimag Environmental Agencies approve the EMP/ESMP and monitor compliance under Mongolian Environmental Protection Law (1995, rev.) and the EIA Law (2012, rev.). Both Khentii and Sukhbaatar

	aimag agencies must approve before mobilisation. Traffic Police approve the TMP and enforce speed limits in construction zones. **ESMP Engagement:** Approves and monitors temporary land use permits, resource use permits and licenses. Serve as GRM entry points for community members who prefer not to contact the Contractor directly. Facilitates supplementary community consultations. Confirms livestock crossing GPS locations with bag leaders.
Workers and Subcontractors	**All direct workers:** Comply with ESMP, LMP, and Code of Conduct requirements. Complete all mandatory training before starting work. Use PPE at all times. Report incidents, near-misses, and grievances to the EHS Officer or GRM focal point. Respect community members, livestock, and cultural heritage sites. Comply with camp rules including curfew and visitor restrictions. **Subcontractors:** The Contractor is fully responsible for ESMP compliance by all subcontractors. All subcontractors must sign the Code of Conduct, receive OHS and GBV/SEA training, and be covered by the Worker GRM before starting work. The Contractor may not delegate ESMP accountability to a subcontractor.
World Bank	**General:** Oversight and guidance through quarterly E&S progress report review and periodic Bank supervision missions. Reviews pre-construction conditions file before NTC. **External grievance channel:** The Bank's Grievance Redress Service (GRS) is available as an independent external channel to any community member or affected party if the project GRM at contractor or PIU level fails to resolve a complaint. **Escalation:** PIU must notify the World Bank within 48 hours of any fatality, serious injury, confirmed GBV/SEA incident, significant environmental spill, or formal community protest. NCNs outstanding for more than 30 days are reported to the Bank.

6.2 Pre-Construction Conditions

The following conditions must be fulfilled and documented by the Contractor before mobilization or commencement of specific works. The Supervision Engineer and IPIU shall verify each item.

Table 6-2. Pre-Construction Conditions Checklist

Pre-Construction Condition	Timing
EMP approved by MECC	Before mobilization
C- ESMP approved by MRT	Before mobilization
All required permits obtained (water, borrow pit, quarry, camp, waste, traffic, electric)	Before relevant works commence
Site-specific OHS Plan prepared and submitted to Supervision Engineer for approval	Before mobilization
Traffic Management Plan (TMP) prepared and approved by Supervision Engineer and Traffic Police	Before any lane closure or work on the carriageway
Waste Management Plan submitted and approved	Before mobilization
Hazardous Management plan submitted and approved	Before mobilization
Camp Management Plan submitted and approved	Before camp construction
Biodiversity management plan (BMP) prepared and approved along with C-ESMP	Before relevant works commence
Emergency Response Procedure (fire, spill, accident, evacuation) documented and posted at site	Before mobilization
Borrow pit/Quarry Management Plan submitted and approved (topsoil stripping, dust, restoration)	Before quarry operations
Supplementary community consultations completed for 2 project soum sections	Before NTC is issued for each soum section

GRM operational: focal persons designated, contact info posted, drop-boxes installed at soums	Before mobilization
Worker GRM explained to all workers; GBV/SEA focal point designated; reporting channel active	Before any worker starts
ESMP induction completed for all Contractor key staff (management, EHS Officer)	Before mobilization
OHS induction completed for all workers; PPE issued and logged	Before any worker starts on site
Code of Conduct signed by all workers; GBV/SEA training completed	Before any worker starts
Pre-employment medical examinations for all workers; records filed	Before any worker starts
Monitoring point list with geo-referenced coordinates submitted (Annex 7)	Before mobilization
Baseline monitoring data collected (air, water, noise) at all designated stations	Before works commence
Temporary land use agreements (quarry, camp, spoil) documented and signed	Before use of any land outside ROW
Foreign worker permits verified and filed (153 Chinese nationals)	Before any foreign worker starts
Joint pre-construction ESMP workshop held with Contractor, Engineer, PIU, and local authorities	Before mobilization

6.3 Capacity Building and Training

A structured training programme will be implemented for all parties to ensure effective ESMP implementation. Training records (attendance sheets with names, roles, and signatures; signed Code of Conduct and CoC acknowledgement forms; PPE issue logs, etc) must be maintained and submitted as part of the monthly EHS report.

Refresher training is triggered without waiting for the next scheduled date if: (a) PPE compliance falls below 95% in any inspection; (b) an OHS incident occurs: topic-specific refresher within 5 working days; (c) a GBV/SEA complaint is received: full GBV/SEA refresher for all workers within 48 hours; (d) a new cohort of workers joins mid-project; (e) an environmental monitoring action trigger is breached: topic-specific refresher.

Table 6-3. Training and Capacity Building Plan

No	Training Topic	Target Group	Timing	Responsible	Key Content
1	ESMP/ ESF Induction	Contractor management; EHS Officer; CLO; all supervisors; IPIU E&S staff; Supervision Engineer E&S specialists	Month 1, before mobilization. Repeated for any new supervisor joining mid-project.	IPIU + Supervision Engineer; external WB ESF trainer where available	Covers: full ESMP obligations by chapter; applicable WB Environmental and Social Standards (ESS1–10); FIDIC Red Book enforcement mechanism (NTC, IPC, NCN, Sub-Cl. citations); monthly reporting requirements; Monitoring needs. All key personnel must complete before mobilization. Completion certificates filed in pre-construction record.
2	OHS Site Induction	All workers	Month 1; every new worker before first shift, without exception	Contractor (EHS Officer)	General OHS rules and site hazard map; PPE types, fitting, and care; emergency assembly points and evacuation routes; accident and near-miss reporting pathway (name of EHS Officer, emergency vehicle location); first aid kit location. No worker

					may commence without signed induction record.
3	OHS daily Toolbox Talks	All site workers	Daily (minimum weekly for low-activity periods); ongoing throughout construction	Contractor (EHS Officer)	Task-specific hazards and controls for that day's activities; PPE compliance check; near-miss and incident debrief; one safety topic per session (rotating). Sign-off sheet maintained per team per day; submitted weekly to EHS Officer.
4	Code of Conduct / GBV/SEA Prevention	All workers; all supervisors; all subcontractor staff	Month 1, before first day on site. Quarterly refreshers. Immediately for any new worker.	Contractor (HR Manager) + specialised GBV/SEA facilitator (NGO partner preferred). Delivered in Mongolian and Chinese with interpreter.	Zero-tolerance GBV/SEA/SH policy; definitions of sexual exploitation, abuse, and harassment; reporting channels: general GRM vs. confidential GBV channel; anti-retaliation protections; consequences (immediate termination + law enforcement referral); survivor-centered response principles. Role-plays and scenario exercises used. Signed acknowledgement from every worker before first day; quarterly refresher attendance tracked.
5	Cultural Sensitivity and Community Relations	All Chinese national workers; all project supervisors; CLO	Month 1, before mobilisation. Refresher after 6 months.	Contractor CLO + PIU Social Specialist	Mongolian herder lifestyle, seasonal mobility, and pastoral calendar; ovoo sacred site etiquette; ger approach and visit protocols; livestock as livelihood asset (not an obstacle); prohibited behaviors near ger camps; community contact protocols: when to approach, who to notify, what is not permitted).
6	Traffic Safety / Defensive Driving	All project drivers and all vehicle and equipment operators	Before commencement; refresher every 6 months; immediately after any traffic incident	Contractor (Safety Officer) + Traffic Police (participate where available)	Work-zone traffic management procedures; speed limit compliance (30 km/h in construction zones; 20 km/h near ger camps); pedestrian and livestock safety: what to do if livestock on the road; flagging procedures; fatigue recognition; reporting of traffic incidents; pre-shift vehicle checks.
7	Waste Management and Hazardous Spill Response	All workers; drivers of fuel or chemical vehicles; camp staff	Month 1; quarterly spill drill; immediately following any spill incident	Contractor (EHS Officer; Environmental Specialist)	Waste segregation: domestic, construction, hazardous, liquid; prohibited disposal methods (no dumping in pits, streams, or open steppe); fuel spill immediate response (3-step: contain, report, clean); legacy borrow pit no-disposal rule: Category A pits are

					livestock water points; hazardous waste documentation and chain of custody; reporting thresholds.
8	First Aid and Emergency Response Drill	One certified first-aider per work team (minimum); all team leaders; camp staff	Month 1; annual refresher; full drill for each emergency scenario (fire, spill, accident, flood)	Contractor (medical staff); qualified first-aid trainer	Emergency first aid, CPR, and bleeding control; heat stroke and hypothermia response (both apply in this climate — summer highs 35°C, winter lows −35°C); medical evacuation procedure (nearest hospital contacts in Annex 3: Undurkhaan District Hospital 450 km; Choibalsan Regional Hospital); fire extinguisher operation; spill containment drill; flood response (spring snowmelt risk).
9	GRM Awareness	All workers and community members	Before works commence in each soum section. Refreshed at each community meeting.	Contractor CLO + PIU Social Specialist	GRM contacts (hotline number posted at soum office in Mongolian); how to submit verbally, in writing, or anonymously; what project-related issues can be raised; response timeline; how to escalate to PIU if site GRM fails; World Bank Grievance Redress Service (GRS) as last-resort external channel.
10	Conservation of flora and fauna (birds)	All workers and community members	Month 1; before construction commencement	Contractor Env Specialist + IPIU env specialist	BMP implementation, protection of key fauna and flora species
11	Local Authority ESMP Monitoring Briefing	Aimag Environmental Inspectors (Khentii and Sukhbaatar); Aimag Land Officers; Soum Governors of Bayankhutag and Munkhkhaan	Months 1–2; annual refresher; as needed if new officials appointed	IPIU (organizes and leads); Supervision Engineer (contributes)	ESMP scope and the authority's specific oversight role under Mongolian Environmental Protection Law and EIA Law; which parameters they may inspect; how to submit a non-compliance observation to PIU or Supervision Engineer; GRM referral procedure; their right under the contract to request access to site monitoring data; legacy borrow pit Category A hand-over process at project closure.

Note: Training costs are included in the Contractor's BOQ and contract. The IPIU will track training attendance records and PPE compliance rates. Refresher training will be trig

7. STAKEHOLDER ENGAGEMENT PLAN

Package-specific Stakeholder Engagement Plan for Lot 3 (A0502 KM50+000–KM100+000) operates within the framework of the overarching MTCLIP Stakeholder Engagement Plan (IPIU SEP, February 2026 update, Annex 1), which establishes project-wide standards under ESS10. The IPIU SEP sets minimum requirements, including mandatory engagement frequencies, pre-mobilisation consultation conditions, borrow pit consultation requirements, and GRM performance standards, to which this chapter adds project-specific and contractor-specific obligations arising from the particular characteristics of this corridor, the herder community context, and the identified risks in Chapter 5.

7.1 Stakeholder Identification and Categorization

Project-affected parties (directly affected): The following groups are directly affected by Package 3 construction activities and require active, individual-level or small-group engagement:

Table 7-1: Project affected parties

Stakeholder Group	Key Interests / Concerns	Engagement Approach for Package 3
Herder households within 1–2 km of alignment (estimated 20+ households seasonally; ~16 registered in Bayantsagaan bag year-round)	Livestock crossing access; water well contamination risk; legacy borrow pit water access; dust and health; construction schedule	Individual household outreach before works in each soum section; GPS crossing consultation with bag leaders; CLO monthly visits; soum Facebook/chat group updates
Herder household's dependent on legacy borrows pit water points (Category A pits to be identified in inventory)	No-removal guarantee for water-holding pits; advance notice of any pit intervention; replacement water supply if access restricted	Individual consultation before BPRP approved; written commitment from Contractor that no Category A pit will be disturbed without replacement water first
Post-dzud vulnerable herder households (households with <200 head livestock; estimate 48.7% of herder households nationally after 2024 dzud)	Livelihood protection; compensation sensitivity; access to local employment	Dedicated outreach through bag governor; CLO monthly home visits; priority for local employment vacancies
Women-headed households and women within herder households	GBV/SEA risk from male migrant workforce; access to confidential reporting; participation in consultations (1 woman of 7 in current FGD record, which is insufficient)	Women-only FGDs per soum; female GBV/SEA focal point posted in Mongolian; anonymous drop-box at soum offices
Persons with disabilities (27 confirmed in Bayantsagaan bag)	Physical accessibility of GRM channels; safety during construction near residence	CLO-assisted GRM submission; accessible crossing points; bag governor-assisted outreach
Soum and bag governors (Bayankhutag, Munkhkhaan)	Advance notice of works; GRM entry point role; TLUA confirmation; herder interests; local employment data	Formal letters before each soum section; attendance at community meetings; monthly CLO update call; soum governor signatures on TLUAs
Traffic Police (Khentii and Sukhbaatar aimags)	TMP compliance; speed enforcement in construction zones; accident reporting	TMP submitted for Traffic Police approval before any lane closure; monthly coordination call with CLO; speed enforcement zones mapped and shared
Aimag Environmental Agencies (Khentii and Sukhbaatar)	ESMP/EMP regulatory approval; monitoring compliance visits	EMP approval obtained before mobilisation; quarterly compliance meetings; monitoring data shared on request

Road users (private vehicles, freight operators, tourists)	Traffic diversions; travel time; safety during construction	TMP disclosed at soum offices; MTCLIP Facebook page; lane closure notices ≥2 week in advance; MRT website updates, national media outreach prior to tourism season
Project workers (219 total: 153 Chinese nationals, 66 Mongolian)	OHS; labour conditions; GBV/SEA prevention; GRM access; cultural orientation	Worker GRM (separate from community GRM); Code of Conduct and GBV training before first day; Cultural Sensitivity training for Chinese workers; toolbox talks daily

7.2 Consultations Completed to Date

Assessment of adequacy: The pre-construction consultations completed to date (two focus groups, 7 participants, and an 11-household survey) provide a starting point for developing baseline for this ESMP. Additional consultations and surveys will be required for the development of C-ESMP and Project Stakeholder Engagement Plan. Supplementary consultations as specified in Section 7.3 are pre-construction conditions.

Table 7-2. Record of Stakeholder Consultations

Event	Date	Location	Participants	Mode	Topics Covered	Key Concerns Raised
FGD-01 — Bayankhutag soum herders	22 Nov 2025	Bayankhutag soum centre	4 herder households, Jargalant 1st bag; 3 male, 1 female	Focus group (in-person, Mongolian)	Construction schedule; contractor identity; livestock equipment collision liability; local employment; dust from parallel tracks; water well protection; crossing points	Construction timeline trust deficit ('many years of promises'); livestock collision liability — herders said they always bear losses from previous projects; local employment even in unskilled roles
FGD-02 — Munkhkhaan soum herders	23 Nov 2025	Munkhkhaan soum centre	3 herder households, Bayantsagaan 3rd bag; 3 male, 0 female	Focus group (in-person, Mongolian)	Construction start date; TMP and crossing points; dust from multi-track corridor; water source protection; quarry and spoil site rehabilitation; waste management	Language barrier risk — soum governor flagged that GRM contact person is Chinese-speaking; herders demand Mongolian-speaking CLO; waste and quarry site not rehabilitated after previous construction
Household survey	Oct–Nov 2025	Distributed, 2 project soums	11 herder households	Structured questionnaire (Mongolian)	Livelihood income sources; vehicle ownership; infrastructure access; seasonal mobility; livestock composition post-dzud	Post-dzud livestock losses; sole vehicle ownership; household income heavily dependent on livestock products

Source: SIA, 2025

7.3 Supplementary Consultations — Pre-Construction Conditions

Mandatory supplementary consultations. The following 5 supplementary engagement actions are pre-construction requirements consistent with the IPIU SEP Section 5.4 mandatory minimum requirements. The Supervision Engineer conditions the Notice to Commence for each soum section on the relevant consultation records being submitted to and verified by IPIU.

Table 7-3. Required Supplementary Consultations — Pre-Construction Conditions

Ref.	Event	Format / Minimum Participants	Responsible	Timing	Topics and NTC Gate Condition
SC-01	Bayankhutag soum — full community meeting	Min 20 participants; soum-level community hall	IPIU Social Specialist + Contractor CLO	Before NTC for Bayankhutag section	Construction schedule; TMP; livestock crossing points; GRM; local hiring. Record to Engineer before NTC.
SC-02	Bayankhutag soum — women-only FGD	Min 8 female participants; at least 1 women's cooperative representative	IPIU Social Specialist (female facilitator)	Before NTC for Bayankhutag section	Dust and health impacts; GBV/SEA awareness; GRM confidential channel; childcare and household impacts
SC-03	Munkhkhaan soum — community meeting	Min 25 participants (larger soum; 5,025 pop)	IPIU Social Specialist + Contractor CLO	Before NTC for Munkhkhaan section	Construction schedule; language barrier issue; Mongolian CLO confirmation; GRM; borrow pit water points
SC-04	Munkhkhaan soum — women-only FGD	Min 8 female participants; Bayantsagaan bag focus	IPIU Social Specialist (female facilitator)	Before NTC for Munkhkhaan section	Same as SC-02; borrow pit water access specifically
SC-05	Expanded household survey — all households within 2 km	Min 30 households; gender-disaggregated data required	Contractor Social Officer (supervised by IPIU)	Before construction commences	Update social baseline; identify undocumented vulnerable households; map seasonal mobility

7.4 Community Concerns and Risk Mitigation Linkage

Every concern raised in consultations has a corresponding mitigation measure in the Environmental and Social Mitigation Plan (Table 5-1 and 5-2) and a monitoring indicator in the Environmental and Social Monitoring Plan (Table 8-1, Chapter 8). The table below cross-references each concern to the relevant risk mitigation row, enforcement mechanism, and contractor-specific action. This integration ensures that consultation outcomes drive mitigation design rather than being recorded as a separate, disconnected exercise.

Table 7-4. Community Concerns, ESMP Response, and Mitigation Linkage

#	Community Concern	Contractor-Specific Action Required	Responsible Party	Table 6-1 Row Reference	Monitoring / Enforcement Linkage
1	Construction timeline: years of promises, no action	Project commencement confirmed 2026. CLO to visit all households within 2 km at least 4 weeks before mobilisation, provide written schedule in Mongolian, and post at soum offices.	Contractor CLO; IPIU	*Mitigation Table 5-2 (Construction phase 4); SEP; Training*	Monthly construction bulletin in Mongolian distributed to soum offices and soum Facebook/chat groups. If schedule changes, 4-week advance notice to soum governors (FIDIC Sub-Cl. 8.1 condition).

2	Livestock hit by machinery — herders always bear the loss	Documented livestock incident response procedure established before construction. Any verified livestock loss caused by project activities compensated at current market value within 30 calendar days. GRM entry point for all livestock incidents.	Contractor CLO + Land Liaison; IPIU Social Specialist	*Mitigation Table 5-2 (Construction phase 2); GRM;*	Livestock incident register maintained by CLO; incidents reported to Engineer within 4 hours; PIU Social Specialist approves compensation payments. Crossing points designated per GPS survey.
3	Local employment — unskilled jobs welcomed	Minimum 30% of workforce (≥66 workers) sourced from Bayankhutag, and Munkhkhaan soums. Vacancies posted at soum and bag offices and on soum Facebook/chat groups ≥30 days before mobilisation.	Contractor HR Manager; IPIU Social Specialist	*Mitigation Table 5-2 (Construction 4); Annex 17 LMP; Training T-04*	Monthly payroll records disaggregated by nationality and soum of origin submitted in EHS report. Skills training offered for unskilled workers where possible.
4	Construction duration — when will it finish?	Target: single construction season (2026). Monthly progress updates through CLO. If extensions occur, communities notified ≥4 weeks in advance.	Contractor CLO; IPIU	*SEP;*	Quarterly community meetings as per SEP Section 4.3 minimum frequency requirements.
5	Extreme dust from parallel dirt tracks	Short-term: water trucks spray informal tracks within 200 m of any ger ≥2×/day. Long-term: road rehabilitation eliminates parallel track traffic — net positive land-use benefit. PM10 monitoring at nearest receptor per Table 8-1.	Contractor EHS Officer (water trucks); IPIU Env. Specialist (monitoring)	*Mitigation Table 5-1 (C-E2); Monitoring Table 8-1*	Wind trigger: if sustained wind >15 m/s, surface-disturbing works suspended. PM10 action trigger ≥120 µg/m³ at receptor: increase watering; ≥150 µg/m³: suspend dust works, notify PIU.
6	Protect water wells; correct the misplaced culvert from original construction	200 m exclusion zone: no camp, fuel storage, or latrines within 200 m of any community well. Culvert placement verified against natural drainage channels before installation. Groundwater monitoring at ≥3 community wells monthly.	Contractor Env. Specialist; Engineer	*Mitigation Table 5-1; Monitoring Table 8-1; Section 2*	If drawdown >1 m at any monitored well: suspend abstraction, provide mobile water supply within 24 h, notify IPIU.

7	Clear livestock/pedestrian crossing points across road	Crossing points GPS-mapped with bag leaders during desing review. Permanent crossing structures at confirmed GPS points (min 5 m clear width; reflective markers at 200 m approach). Operational 24 h throughout construction.	Contractor; Design Engineer; Contractor CLO (GPS mapping with bag leaders)	*Mitigation Table 5-2 (Pre Cons 6, Cons2); TMP (Annex 3)*	Livestock crossing points listed in pre-construction conditions register. Engineer may not issue NTC until confirmed in design drawings.
8	Quarry and dirt road sites must be rehabilitated after construction — previous contractor did not	All 41 new spoil sites: graded, topsoil respread, native grass seed applied, drainage reinstated before departure from each site. Quarry (KM23+000, ~36.8 ha): full restoration plan in Quarry Management Plan, vegetation recovery monitored biannually for 2 years. All 50+ legacy borrow pits actioned per BPRP. Herder acceptance document before Performance Certificate.	Contractor Env. Specialist; Engineer (certifies each site)	*Mitigation Table 5-1; Chapter 8; Monitoring Table 8-1*	Engineer conditions Performance Certificate on all signed herder acceptance documents. Progressive monitoring of vegetation recovery reported biannually.
9	Don't leave waste — previous contractors left uncovered dumps	Waste Management Plan (Annex 13) requires zero open dumping policy. All waste removed within 30 days of construction completion. Monthly waste log reviewed by Engineer. No asphalt millings abandoned in legacy pits.	Contractor EHS Officer + waste contractor; Engineer (reviews monthly)	*Mitigation Table 5-1;*	Engineer conditions section completion certificate on waste log showing zero residual waste at each site. Zero waste at closure is a Performance Certificate condition.
10	Need Mongolian-speaking CLO — GRM contact is Chinese-speaking (Munkhkhaan soum governor's concern)	Mongolian-speaking CLO is a binding contractual requirement (pre-construction condition). CLO appointment confirmed and posted at soum offices before any worker arrives. All GRM materials, notice boards, and community bulletins in Mongolian.	Contractor (appoints); Engineer (verifies before NTC)	*Chapter 5, table 5-2; Training T-11;*	Engineer may not issue NTC until Mongolian-speaking CLO confirmed on site.

7.5 Disclosure

All E&S documents developed for this project will be provided in Mongolian and distributed as hard copies to each Citizen Hall in the two soums where project activities will occur. Each set will include a cover letter briefly summarizing the purpose of the disclosure. These documents will be made accessible to all individuals and businesses.

7.6 Grievance Redress Mechanism (GRM)

This chapter establishes the package-specific Grievance Redress Mechanism for Lot 3. It applies the procedures and standards of the MTCLIP Project GRM (GRM_MTCLIP_V3.01, 23 February 2026, hereafter 'the IPIU GRM'), which is the overarching GRM for all MTCLIP packages. The Lot 3 ESMP GRM chapter supplements the IPIU GRM with: specific contact names and numbers for this package; Lot 3-specific grievance categories tied to the mitigation table; contractor-specific intake and reporting obligations under FIDIC Red Book; and the confidential GBV/SEA pathway with Mongolia-specific referral contacts. The full IPIU GRM document is Annex 2 of this ESMP.

7.6.1 What Can Be Reported

Any project-affected person, road user, or interested party may submit a grievance related to any matter arising from Lot 3 construction activities, including:

- Environmental impacts: dust, noise, vibration, waste, water contamination, groundwater drawdown, damage to pasture
- Land access: temporary restriction of pasture access, well access, or water point access; TLUA disputes; legacy borrow pit access changes
- Livestock: collision with construction equipment; restricted crossing routes; water point for livestock affected
- Safety: construction zone unsafe conditions; inadequate signage; near-miss; traffic accident in work zone
- Community: worker behavior; Code of Conduct violation; cultural disrespect; unauthorized access to ger camps
- Employment: non-payment of local workers; discriminatory hiring; unsafe working conditions
- Information: inadequate disclosure; construction schedule changes without notice; consultation not conducted
- GBV/SEA/SH: handled through separate confidential pathway
- Legacy borrow pits: unauthorized backfilling of Category A water pits; safety hazard at an unfenced pit; waste deposited in a pit

7.6.2 Submission Channels

Stakeholders may submit grievances through any of the following channels. All channels are free of charge. Anonymous submissions are accepted and addressed to the extent possible.

Table 7-5. Package 3 GRM Submission Channels and Contact Details

Channel	Contact	Availability	Notes
CLO — site office walk-in	Mongolian-speaking CLO - To be appointed prior to Construction start	During all working hours	Primary channel for herder households within 2 km of works. CLO documents all verbal complaints on the standardized

			intake form (Annex 2, GRM Intake Form) within 24 hours of receipt.
CLO — phone/SMS	Mongolian-speaking CLO - To be appointed prior to Construction start. Contact number to be conspicuously posted at soum offices and public locations	07:00–20:00 daily; voicemail out of hours	CLO responds to all messages within 1 working day. SMS accepted in Mongolian. Language: Mongolian. Chinese workers use Contractor Social Officer channel (see Workers' GRM).
Anonymous drop-box	Physical box at each of 3 soum offices: Bayankhutag, Munkhkhaan	24 hours, 7 days	CLO checks drop-boxes minimum weekly. Mongolian intake forms available next to each box. Contents logged by CLO and forwarded to IPIU within 1 working day.
IPIU GRM Coordinator — phone	Ms. Tsevelmaa +976 7709-7676	Office hours Mon–Fri; voicemail out of hours	Direct access to IPIU for anyone who prefers not to contact Contractor directly. All grievances registered in centralized GRM database.
IPIU GRM — email and web	pmo@mtclip.mn MTCLIP Facebook page	24/7 (monitored working hours)	For literate stakeholders or those with internet access. Mongolian preferred; Google Translate used if English received.
Soum governor's offices	Bayankhutag: D. Baigalmaa (+976 88485069) Munkhkhaan: A. Batdelger (+976 99813218)	Working hours	Soum governors serve as GRM entry points. Upon receipt of a project grievance, governor completes intake form and forwards to IPIU within 2 working days.
National 11-11 Hotline	Dial 11-11	24/7	Government Citizens' Reception. Project-related complaints forwarded to MRT and then to IPIU within 2 working days.
World Bank Grievance Redress Service	www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service	24/7 online	External last-resort channel if project GRM fails to resolve. Use does not limit complainant's legal rights.

7.6.3 Resolution Process and Timelines

Table 7-6. GRM Level, Responsibility, and Timelines

Tier	Responsible Entity	Submission Channels	Resolution Timeline	Scope of Grievances
Tier 1 — Site/Local Level	Contractor Social Officer (CLO) + Soum/Bag Governor offices	• Walk-in at contractor site office • CLO phone/SMS: dedicated number posted at camp and soum offices • Verbal complaint to foreman (must be documented by CLO) • Anonymous drop-box at each soum office • IPIU project page (Facebook: MTCLIP)	24 h registration; 2 working day acknowledgement; resolution within 15 working days	Site-level construction nuisances; dust; noise; access restrictions; water well concerns; livestock crossing issues; local employment queries; minor property damage

Tier 2 — Project Level	IPIU GRM Coordinator + Supervision Engineer E&S Specialist	• IPIU email: pmo@mtclip.mn • IPIU phone: +976 7709-7676 • MTCLIP website • Written submission to IPIU office (Ulaanbaatar or aimag office)	2 working day acknowledgement from IPIU; resolution ≤30 working days from initial complaint	Unresolved Tier 1 issues; complex multi-party grievances (e.g. borrow pit access, TLUA disputes); compensation claims; environmental monitoring exceedances; SEP compliance concerns
Tier 3 — National Level	MRT Senior Management / 11-11 Government Hotline	• 11-11 Government Citizens' Reception (online and phone) • Written submission to MRT • MRT.gov.mn	30 working days final decision	Appeals; policy-related grievances; issues involving multiple implementing agencies
External — World Bank GRS	World Bank Grievance Redress Service	• www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service	Per WB GRS procedures	Any grievance that the project's internal GRM has failed to resolve to the complainant's satisfaction; issues involving WB policy compliance

7.6.4 Worker Grievance Redress Mechanism (W-GRM)

The Worker GRM is a separate system from the community GRM, consistent with IPIU GRM Section 7 and ESS2. It applies to all 219 project workers (153 Chinese nationals, 66 Mongolian nationals) and covers: employment terms and wages; working hours; OHS; camp conditions; discrimination; workplace harassment; and Code of Conduct concerns.

1. W-GRM focal point appointed before mobilization; name and number posted at camp and at all work fronts in Mongolian and Chinese.
2. Dedicated grievance box at camp — checked by Contractor HR Manager minimum weekly; anonymous submissions accepted.
3. Acknowledgement within 2 working days; resolution within 15 working days.
4. W-GRM log maintained separately from community GRM log; submitted as part of monthly EHS report to Engineer.
5. GBV/SEA worker complaints handled through confidential pathway (Section 11.5) — not through general W-GRM.
6. Escalation: W-GRM to IPIU if unresolved after 15 working days. Workers retain the right to access national Labour Dispute Resolution mechanisms (Labour Law 2021).
7. Monthly W-GRM summary (number of complaints, category, status) included in monthly EHS report and disclosed to IPIU. Personal identifiers removed.

7.6.5 GBV/SEA/SH — Confidential Pathway

Given the risk profile of this project the GBV/SEA/SH confidential pathway is a critical safeguard. All GBV/SEA/SH complaints shall be handled in strict accordance with IPIU GRM Section 8 (GBV/SEA/SH Grievance Handling). The following principles are absolute and non-negotiable:

1. No internal investigation or mediation by project staff — all GBV/SEA allegations to be referred to competent national authorities with survivor's informed consent.

2. Survivor safety and dignity first — immediate physical safety takes priority over all documentation or investigation requirements.
3. Confidentiality — no identifying personal information to be entered into the general GRM database. Only anonymized aggregated data for monitoring.
4. Non-retaliation — any retaliation against a survivor, reporter, or witness constitutes serious misconduct and grounds for immediate termination under the Code of Conduct.
5. Informed consent — no referral or information sharing without survivor's voluntary consent, except where mandatory reporting applies under Mongolian law (e.g. cases involving minors — mandatory referral to Child Helpline 108 and Police 102).
6. Referral directory to be kept at all GRM entry points with proper induction provided.

8. ENVIRONMENTAL AND SOCIAL MONITORING PLAN

This monitoring plan covers all environmental, social, occupational health and safety, labour, community, and post-construction monitoring obligations for Lot 3. It integrates the project-specific monitoring requirements from the ESMP assessment (Chapter 5), the social monitoring requirements introduced in Chapter 7 of this ESMP, and the additional parameters recommended during document review. Every parameter includes: a measurable indicator, a reference standard or target, a monitoring frequency, a designated responsible party, a reporting requirement, and specific action triggers with prescribed corrective actions. The action triggers are contractually binding, exceedance of a trigger requires the response stated, not discretionary consideration of a response.

8.1 Environmental Monitoring Parameters and Action Triggers

Table 8-1. Environmental Monitoring Plan

Parameter	Indicator	Standard / Reference	Frequency	Location	Responsible	Reporting	Action Trigger / Corrective Action
Dust (PM10)	PM10 24h average	MNS 5286: 150 µg/m³ (24h)	Daily visual; instrument measurement if visible plume or complaint	Active earthwork sites; nearest ger/settlement; downwind of quarry and crusher	Contractor EHS; Supervision Engineer verifies	Monthly contractor; quarterly PIU	>120 µg/m³ (80% of standard): increase watering frequency >150 µg/m³: suspend dust-generating work; immediate corrective action; notify PIU
Dust (PM2.5)	PM2.5 24h average	WHO: 25 µg/m³ (24h)	Monthly measurement during peak earthworks	Nearest settlements; downwind	Accredited laboratory; Supervision Engineer	Monthly	Exceed WHO guideline: review controls; notify PIU
Noise	Leq (dB(A))	MNS: ≤65 dB(A) day (08:00–22:00); ≤45 dB(A) night; WHO: ≤60 dB(A) day	Weekly during heavy equipment use; ad hoc on complaint	Nearest ger/household within 300 m of active works; school and clinic in soum	Contractor EHS; Supervision Engineer	Weekly (during heavy works); Monthly (summary)	Day: >60 dB(A) at receptor: review/erect barriers, adjust hours Day: >65 dB(A): suspend noisy works near receptor; notify PIU Night: any measurable exceedance: immediate stop
Groundwater Level	Water table depth (m)	Baseline level ±1 m	Monthly at community wells during active pumping	Herder wells within 1 km of drilling operations	Contractor; Supervision Engineer	Monthly	Drawdown >1 m from baseline: reduce or halt pumping; consult authorities
Soil Quality / Spill Monitoring	Visual inspection; soil sample if contamination suspected	No visible contamination; national soil quality standards	Monthly inspection; sample after any spill	Fuel/bitumen storage areas; vehicle maintenance	Contractor; Supervision Engineer	Monthly	Any visible oil contamination: immediate excavation of affected soil;

	(hydrocarbons, pH)			yard; quarry base			report to PIU and aimag environment authority
Vegetation and Revegetation	Visual cover (%); photographic record; species diversity	Target: revegetated areas reach ≥60% native cover within one growing season	Twice per growing season (spring and late summer)	Disturbed shoulders; spoil closure sites; quarry restoration area; borrow areas	Environmental consultant / contractor	Biannually (spring and late summer)	Cover <30% after first growing season: investigate cause (drought, compaction, seed failure); implement remedial seeding or soil treatment
Wildlife movement (corridors and connectivity)	Monitoring report and observation, track roadkill data	Target: zero tolerance	Once per month during wildlife seasonal movement	Wildlife crossing locations along the road alignment	Contractor; PIU E&S staff	Monthly	Roadkill data and wildlife monitoring report, BMP implementation
Waste Management Compliance	Volume and type of waste generated and disposed; segregation compliance; hazardous waste manifests	Zero open dumping; licensed disposal for all waste streams	Monthly inspection; review waste logs	Camps; construction sites; spoil areas; waste storage areas	Contractor; PIU E&S staff	Monthly	Open dumping found: immediate cleanup; disciplinary action against responsible worker; corrective action notice to contractor Licensed disposal missing stop hazardous waste operations; notify authorities

Note: Geo-referenced monitoring station coordinates (camp, quarry, crusher/asphalt plant, spoil sites, representative villages, wells, and ecological observation points) are provided in Annex 7. All monitoring equipment must be calibrated; laboratories must be accredited. Additional biodiversity surveys may be commissioned when warranted.

Table 8-2. Social Monitoring Plan

Ref.	Parameter / Aspect	Indicator	Standard / Reference	Frequency	Location / Stations	Responsible	Reporting	Action Trigger and Corrective Action
CONSTRUCTION PHASE: SOCIAL, OHS, LABOUR, COMMUNITY, AND GRM MONITORING								
1	**Traffic Safety — Construction Zone**	Number of traffic accidents (LTI, fatality) in construction zone; TMP compliance (signage, barriers present) (%); speed compliance of project vehicles (%)	Zero traffic fatalities; zero LTI from traffic accidents; TMP compliance ≥95%; project vehicle speed ≤30 km/h in construction zones	Weekly TMP compliance inspection by Engineer; speed spot-checks by EHS Officer at least twice per week; incident-based for any accident	All active work sections along 50 km alignment; road closure points; livestock crossing points; soum entry zones (20 km/h)	Contractor (OHS Officer + Traffic Controller): daily management and incident reporting; Engineer (weekly inspection; TMP compliance check)	Weekly safety inspection report; monthly EHS report; accident report within 4 h to PIU; fatality within 1 h	Any traffic accident in construction zone (regardless of severity): document; root-cause investigation; corrective TMP amendment within 24 h; report to PIU Fatality in construction zone: immediate stop-work; PIU notified within 1 h; World Bank notified within 4 h; Traffic Police, root-cause investigation Speed violation ≥50 km/h in construction zone by project vehicle: driver suspended pending review; NCN to Contractor TMP compliance <90% in any weekly inspection: NCN; corrective action within 24 h
2	**Livestock Crossing and Collision**	Number of livestock crossing points operational and accessible (24 h); number of reported livestock collisions with project vehicles; compensation case status (days from incident to payment)	All designated crossing points operational; zero uncompensated livestock collision claims outstanding >30 days; crossing width ≥5 m maintained	Monthly inspection of each crossing point; immediate CLO response to any collision report	All GPS-designated livestock crossing points; road sections within 2 km of ger camps; any section where livestock found on road by traffic controllers	Contractor CLO (monthly crossing inspection; records collision incidents); Engineer (verifies crossing compliance at section inspection)	Monthly crossing compliance log in EHS report; collision register maintained by CLO and submitted monthly	Livestock crossing blocked or partially obstructed: restore to full width within 24 h; NCN if not remedied Livestock collision reported: CLO on site within 4 h; joint assessment with herder; compensation estimate within 48 h; payment within 30 days Compensation case outstanding >30 days: PIU Social Specialist intervenes; escalated to Engineer NCN; IPC withheld if systemic delay
3	**Labour Influx — Cultural Conflict and**	Number of Code of Conduct violations (type,	Zero CoC violations related to community	Monthly review of CoC violation log; quarterly	Main contractor camp; all active work fronts;	Contractor (HR Manager; Camp	Monthly CoC violation log in EHS report;	Any CoC violation involving community harm (unauthorised ger visit, harassment, property damage):

	Community Relations	frequency); number of community complaints about worker conduct; camp self-sufficiency compliance (food, water sourcing records)	harm; zero unauthorized worker visits to ger camps; 100% camp self-sufficient in food and water (no community sourcing without CLO authorization)	anonymous community survey (via soum social worker) on perceived worker conduct; unannounced camp inspection by Engineer minimum monthly	community GRM records	Manager; CLO): daily enforcement; Engineer (monthly unannounced camp inspection); PIU Social Specialist (quarterly community survey)	quarterly community perception survey submitted to PIU	immediate worker suspension; investigation within 24 h; if substantiated: termination and removal from site Two or more substantiated community conduct complaints in one month: mandatory full CoC refresher training for all workers within 48 h; Engineer escalates to NCN Camp sourcing food/water from community without CLO authorisation: Camp Manager disciplinary action; NCN
4	**GBV / SEA / SH**	Number of GBV/SEA/SH complaints received through any channel (disaggregated — worker-on-worker vs worker-on-community); % referred to qualified service provider within 24 h; GBV focal point present and operational (binary)	100% of GBV/SEA/SH complaints referred to IPIU SEA/SH Focal Point within 4 h of receipt; 100% referred to qualified service provider with survivor consent within 24 h; female focal point operational before any worker arrives on site	Continuous (any complaint received at any channel triggers immediate protocol); monthly confirmation of focal point operational status; quarterly anonymous community women safety perception survey	GBV/SEA focal point contact posted at: 2 project soum offices, camp, all work fronts, soum women's organizations; confidential channel (not combined with general GRM)	Contractor (designated female GBV/SEA focal point); IPIU SEA/SH Focal Point (receives all referrals); monitoring data held in restricted-access log only	Monthly anonymized aggregate (number received, number referred, focal point status) in EHS report; detailed case data in restricted IPIU record only; World Bank notified within 48 h of any confirmed case	Any GBV/SEA/SH complaint: immediately removed from general GRM; IPIU SEA/SH focal point notified within 4 h; survivor safety priority; referral per Table 11-4 with consent; PIU notifies World Bank within 48 h Full GBV refresher training for all workers within 48 h of any confirmed incident Focal point not operational (resigned, unreachable): Contractor must appoint replacement within 24 h; works may not continue until replacement confirmed; NCN issued
5	**Herder Livelihood — Pasture and Water Access**	Number of active TLUAs signed and on file; number of community complaints about pasture or water access restriction;	100% of TLUAs signed before any temporary land use commences; zero herder access to water restricted for >24 h without alternative supply;	Monthly TLUA register review; monthly community GRM complaint log review; triggered by any reported access restriction event	All 41 spoil sites; quarry KM23+000; contractor camp; all detour roads; all legacy borrow pit water points (Category A)	Contractor CLO (TLUA register; access complaint log); PIU Social Specialist	Monthly TLUA register in EHS report; access restriction events reported within 24 h to PIU	Herder water access restricted for >24 h: mobile water supply provided within 24 h; compensation triggered a per-day market value TLUA not signed before land use commences: immediate stop-work at that site; NCN; IPC withheld for that section until TLUA filed Compensation claim outstanding >15 days: PIU Social

								Specialist escalates; Engineer issues NCN; IPC condition
6	**Occupational Health and Safety (OHS)**	Lost Time Injuries (LTI) (number); near-miss incidents (number); PPE compliance rate (%); pre-employment medical screening compliance (%); OHS induction completion rate (%)	Zero fatalities; LTI rate per Mongolian OHS Law standards; PPE compliance ≥95%; medical screening 100% before first day; OHS induction 100% before first day	Daily OHS log by EHS Officer; weekly site inspection by Engineer (OHS); monthly summary review; ad hoc after any incident; spot PPE checks minimum 3×/week	All active work sites; camp; quarry; maintenance hard standing; asphalt plant area	Contractor (EHS/Safety Officer: daily log; weekly report); Engineer (weekly OHS site inspection; incident response oversight)	Daily OHS log; weekly incident log to Engineer; monthly OHS summary in EHS report; fatality or serious injury: World Bank within 4 h verbal, 24 h written	Fatality: immediate stop-work; secure scene; PIU verbal within 1 h; World Bank within 4 h; root-cause investigation within 5 working days; works do not resume until investigation complete and PIU approves restart Serious injury (hospitalization): stop-work at affected area; PIU within 4 h; root-cause investigation; NCN PPE compliance <90% in any inspection: stop-work; mandatory retraining; site safety audit before works resume LTI frequency above Mongolian standard: NCN; corrective action plan; safety audit within 5 working days
7	**Labour and Working Conditions**	% workers with written contracts (target 100%); % wages paid on contracted date (target 100%); % local workers (target ≥30%); presence of workers under 18 (target 0); document retention incidents (target 0)	100% written contracts; timely wage payment; local hiring ≥30%; no child labour; no document confiscation; accommodation standard ≥4 m²/worker	Monthly payroll records review; quarterly labour compliance audit by Engineer; monthly local hiring report	Contractor HR records; camp accommodation; site offices	Contractor (HR Manager): monthly payroll and contract compliance; Engineer (quarterly audit); PIU (ESS2 compliance review at WB missions)	Monthly payroll summary (disaggregated by nationality and soum of origin) in EHS report; quarterly labour audit to PIU; World Bank mission data	Any document confiscation confirmed: immediate corrective action; NCN; PIU notifies MECC and Immigration Authority Local hiring below 25% for two consecutive months: NCN; Contractor to submit local hiring remediation plan within 5 working days Child labour (worker under 18) found: immediate removal from site; PIU notifies World Bank within 24 h; investigation Wage payment >10 days overdue: NCN; IPC condition applied until all outstanding wages paid
8	**Worker Grievance Redress (W-GRM)**	Number of worker grievances received (disaggregated	All worker grievances logged within 24 h; 100% acknowledged	Monthly W-GRM log review; weekly drop-box check at camp; any SEA/SH	W-GRM drop-box at camp; W-GRM focal point phone number posted at all	Contractor (HR Manager — W-GRM focal point); Engineer	Monthly anonymized W-GRM summary in EHS report;	W-GRM resolution rate <80% for two consecutive months: NCN; Contractor submits corrective action plan Worker retaliation for raising grievance confirmed: immediate

		by type and gender); % acknowledged within 2 working days (target 100%); % resolved within 15 working days (target ≥90%); SEA/SH cases referred within 4 h (target 100%)	within 2 working days; ≥90% resolved within 15 working days; W-GRM operated separately from community GRM	complaint triggers immediate protocol	work fronts and camp in Mongolian and Chinese	(monthly log review); PIU (oversight)	escalated cases to PIU	suspension of supervisor; investigation; NCN Any GBV/SEA complaint through W-GRM: immediately redirect to GBV confidential pathway (MP-S05); not handled through general W-GRM
9	**Code of Conduct and GBV/SEA Training**	% workers signed CoC before first day (target 100%); % completed GBV/SEA induction training before first day (target 100%); % completed cultural sensitivity training (Chinese workers, target 100%); quarterly refresher completion rate (target ≥95%)	100% CoC signed; 100% GBV training; 100% cultural sensitivity (Chinese workers); quarterly refreshers ≥95% attendance	Training records reviewed at induction; quarterly verification; triggered by any incident indicating knowledge gap	All workers (direct, contracted, subcontracted); CoC registry maintained at contractor HR	Contractor (HR Manager; GBV specialist); Engineer (verifies training records at monthly inspection)	Training completion certificate in pre-construction file; monthly training attendance log in EHS report	Worker found on site without signed CoC: removed from site until CoC signed; NCN if systemic CoC violation confirmed (community harm, harassment): termination and site removal; PIU informed within 24 h Quarterly refresher completion <85%: NCN; mandatory catch-up session within 5 working days
10	**Stakeholder Engagement — SEP Implementation**	Number of community meetings held vs SEP schedule (target ≥1/soum/month); attendance (total	Minimum 1 community meeting per soum per month during active construction; ≥30% female	Monthly meeting records; gender-disaggregated attendance sheets; disclosure records	2 soums (Bayankhutag, Munkhkhaan); soum notice boards; soum Facebook/chat groups;	Contractor CLO: organizes and records meetings; IPIU Social Specialist: oversees SEP	Monthly SEP implementation log in EHS report; quarterly PIU summary to World Bank	Meeting not held in a soum for ≥2 consecutive months: NCN; corrective engagement plan within 5 working days Female participation <20% for two consecutive meetings: IPIU requires women-only FGD supplement; NCN Disclosure not

		and gender-disaggregated; target ≥30% women); number of disclosed documents (ESMP summary, GRM info); consultation records filed	participation; all required documents disclosed in Mongolian before NTC		construction site information boards	compliance; Engineer: verifies records monthly		completed before NTC: NTC withheld until disclosure records filed
11	**Community GRM Performance**	Total grievances received (monthly, by type and gender); % acknowledged within 2 working days (target 100%); % resolved within 15 working days (target ≥80%); cases open >30 days (target 0)	100% acknowledgement within 2 working days; ≥80% resolution within 15 working days; 0 cases open >30 days; GRM performance benchmark per IPIU GRM	Weekly drop-box check; monthly GRM log consolidation and IPIU submission; quarterly trend analysis	Community GRM drop-boxes at 2 project soum offices; CLO phone; IPIU phone; soum governor offices	Contractor CLO (primary intake; site-level resolution; monthly log); IPIU GRM Coordinator (central database; oversight); Engineer (verifies monthly)	Monthly GRM log in EHS report; quarterly GRM performance summary to World Bank; disclosure of aggregated (non-identifying) GRM statistics at soum offices monthly	Resolution rate <70% for two consecutive months: NCN; corrective action plan; IPIU escalates to MRT Case open >30 days: automatic escalation to PIU GRM Coordinator; IPIU notified; explanation required to World Bank GRM drop-box not checked for >7 days: NCN; CLO reminded of obligation; if systemic: Engineer issues correction instruction
POST-CONSTRUCTION: RESTORATION, SAFETY, MAINTENANCE, AND LIVELIHOOD MONITORING								
1	**Legacy Borrow Pit Restoration**	Number of pits restored per category vs BPRP schedule; safety condition of retained pits (fencing, access, signage)	100% of legacy pits addressed per BPRP (Category A: safe retention with access and fencing; Category B: backfilled; Category C: stabilized/graded)	Monthly during implementation; final verification prior to completion of BPRP program	All legacy borrow pits along the 50 km corridor	IPIU / MRT (Owner): Overall responsibility for legacy liability resolution; RMC / Local Authorities: implementation support and long-term	BPRP implementation progress reports; final completion report; handover records for retained pits	Delays or non-compliance trigger IPIU corrective action plan; budget or coordination issues escalated to MRT; unsafe conditions require immediate temporary safety measures (fencing/signage)

						management; Engineer: verification and certification		
2	**Parallel Track Closure and Vegetation Recovery**	Vegetation cover (%) on closed tracks; evidence of erosion; continued vehicle use on closed tracks	≥60% natural regeneration within one growing season; no active erosion; progressive recovery thereafter	At closure; then biannually for 2 years	Closed parallel tracks along corridor	Contractor: physical closure (bunding, initial stabilization) within footprint; IPIU / MRT / RMC: post-construction monitoring and enforcement; Local Traffic Police: prevent re-use	Closure documentation at handover; post-construction monitoring reports by IPIU	Re-use of tracks: enforcement by Traffic Police; erosion or failed recovery: RMC implements stabilization measures; IPIU coordinates corrective actions
3	**Post-Construction Road Safety Audit**	Road Safety Audit (RSA) completed by qualified independent auditor; number of RSA findings by severity category;	All critical findings resolved before operation; non-critical addressed within DNP or by road owner post-handover	Once before handover; follow-up during DNP and annually thereafter	Full 50 km rehabilitated carriageway; livestock crossing points; all speed control zones at soum entries; drainage and visibility hazards	IPIU / MRT: commission RSA and ensure implementation; Contractor: remedy construction-related defects within DNP; Traffic Police: long-term monitoring; RMC: maintenance-related actions	RSA report; follow-up action reports; accident statistics	Outstanding critical issues delay handover; post-handover risks addressed by MRT/RMC; accident trends trigger further safety interventions by authorities
4	**Operational Road Safety — Livestock Crossing and Speed Zones**	Presence and condition of crossings and signage;	All crossings functional and maintained; speed zones	At handover; annually for 3 years	Livestock crossings and sensitive zones	RMC: maintenance of crossings and signage; Traffic Police:	Annual safety inspection reports; enforcement records	Damaged infrastructure repaired by RMC; enforcement gaps addressed by Traffic Police; IPIU escalates systemic issues

		enforcement of speed limits	enforced at soum entries			enforcement; IPIU / MRT: oversight and coordination; Contractor: defects correction within DNP only		
5	**Road Maintenance — Condition Monitoring and Reversion Risk**	Road condition (IRI or visual); drainage functionality; pavement distress	Road maintained within national standards; no reversion to pre-project condition	Annually for 3 years post-completion (commissioned by IPIU)	Full 50 km rehabilitated section; drainage structures (40 culverts); road shoulders	MRT / RMC: full responsibility for maintenance; IPIU: oversight and reporting	Annual road condition survey report	Maintenance interventions triggered by condition thresholds; emergency response for drainage or structural issues
6	**Post-Construction Livelihood**	Household satisfaction; travel time; market access; vulnerable group benefits	≥70% of households report improved access; measurable reduction in travel time	Annually for 3 years post-completion	2 project soums;	IPIU / MRT: monitoring and reporting; Local Authorities: facilitating local economic benefits; Relevant agencies: supporting market access and services	Annual satisfaction survey report to IPIU; disaggregated results in IPIU annual E&S report to World Bank	Survey response rate <50% in any soum: IPIU supplements with soum governor interviews and government administrative data Herder household satisfaction <50% at any annual survey: IPIU investigates specific concerns; corrective action may include GRM outreach, road condition inquiry, or maintenance request

9. ESMP BUDGET AND FINANCING

The cost of ESMP implementation is included in the Contractor's contract and Bill of Quantities (BOQ). The table below summarizes the main cost categories. Individual line-item costs are detailed in the Contractor's BOQ submission. The IPIU will verify ESMP budget adequacy during contract review and monitor expenditure through monthly ESHS reports.

Table 10-1. ESMP Cost Categories

Cost Category	Budget Source	Notes
EHS Officer (full-time, duration of works)	Contractor BOQ	Mandatory; full project duration
Personal Protective Equipment (PPE) – all workers	Contractor BOQ	Initial issue + replacement as needed
Water trucks for dust suppression (operating costs)	Contractor BOQ	Major cost item; daily operation during earthworks
Monitoring (air, noise, water quality, wildlife and soil – laboratory analysis)	Contractor BOQ	Quarterly laboratory tests + field monitoring equipment
Worker training (OHS, GBV/SEA, Code of Conduct, GRM, environmental)	Contractor BOQ	Initial + quarterly; includes NGO/specialist facilitation
Waste disposal (general waste haulage to licensed facility; hazardous waste handling)	Contractor BOQ	Ongoing operational cost; hazardous waste manifests
Camp management (sanitation, food hygiene, security, healthcare)	Contractor BOQ	Ongoing for full camp operation period
Revegetation and site restoration (quarry, spoil sites, camp area)	Contractor BOQ	At completion of use; part of retention conditions
Traffic management (signage, flaggers, barriers, temporary road markings)	Contractor BOQ	For full construction period
Community Liaison Officer (CLO)	Contractor BOQ	Full project duration; community meetings; GRM support
GRM operations (drop-boxes, translation, document management)	Contractor BOQ	Full project duration
Supervision Engineer E&S Specialists	Supervision contract	Environmental and Social Specialists engaged by client
IPIU E&S staff and oversight (site visits, reporting, Bank missions)	MRT/IPIU budget	Full project duration

Note: Budget traceability: each annex sub-plan (Camp, Waste, OHS, TMP, Emergency Response) that requires operational spending must have a corresponding BOQ line item or explicit budget source confirmed before mobilization.

10. ANNEXES

The following annexes form an integral part of this ESMP. Each annex is a binding implementation instrument.

No.	Title
1	Stakeholder Engagement Plan (SEP)
2	Grievance Redress Mechanism (GRM)
3	Traffic Management Plan (TMP)
4	Occupational Safety and Health (OSH) Plan
5	Cultural Heritage Chance Finds Procedure
6	Applicable Laws, Standards and Permits
7	Monitoring Sites, Quarry and Spoil Sites
8	Environmental Monitoring Plan
9	Camp Management Plan
10	Disaster Risk Management Plan
11	Biodiversity Management Plan
12	Waste Management Plan
13	Hazardous Material & Bitumen Storage Plan
14	Resettlement Policy Framework
15	Labour Management Procedure
15 A	Code of Conduct
16	Borrow pit and quarry restoration plan

MINISTRY OF ROAD AND TRANSPORT OF MONGOLIA

Transport Connectivity and Logistics Improvement Project (MTCLIP)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

ANNEXES 1 – 16

Package 3: Khentii–Choibalsan Road Rehabilitation (A0502, KM50+000–KM100+000)

Version: Final Draft | March 2026

The Ministry of Road and Transport of Mongolia

World Bank Loan Agreement No. 9336-MN

Annex Index

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15	Labour Management Procedure
15A	Code of Conduct
16	Borrow pit and quarry restoration plan

The annexes included in this ESMP comprise a combination of (i) framework-level instruments developed at the Project level and (ii) site-specific management plans to be prepared by the Contractor during implementation. All Contractor-prepared plans shall (i) Be fully aligned with this ESMP, the ESMF, and applicable national legislation; (b) Incorporate site-specific conditions, risks, and mitigation measures; (c) Be submitted to the Supervision Engineer for review and clearance; (d) Be approved by the IPIU (MRTD) prior to commencement of relevant works. No civil works shall commence in any section until the relevant C-ESMP components and associated annexes have been reviewed, approved, and disclosed as required.

Annex 1: Stakeholder Engagement Plan (SEP)

NOTE: The Stakeholder Engagement Plan (SEP) for the Mongolia Transport Connectivity and Logistics Improvement Project (MTCLIP) was disclosed and adopted in 2021 (and updated from time to time) and serves as the overarching framework document governing stakeholder engagement for all project components, including Lot 3. The MTCLIP SEP defines the project-wide stakeholder identification, engagement principles, consultation requirements, and grievance redress mechanisms in accordance with the World Bank Environmental and Social Framework (ESS10).
The MTCLIP SEP is available at: www.mrt.gov.mn
Given that the MTCLIP SEP is comprehensive and applicable to all project packages, the preparation of a standalone, fully separate SEP for Lot 3 is not required. However, in order to ensure practical, site-specific implementation, this annex provides a Lot 3-specific SEP template to support the Contractor, Supervision Engineer (SE), and the Integrated Project Implementation Unit (IPIU) in operationalizing the requirements of the MTCLIP SEP at the local level.
This annex is therefore intended as an implementation tool, rather than a replacement or duplication of the MTCLIP SEP.

1. Introduction

This Stakeholder Engagement Plan outlines the approach, methods, and responsibilities for engaging stakeholders in the sub-project. The plan aims to ensure effective communication, foster collaboration, and address stakeholder concerns throughout the project lifecycle.

2. Sub-Project Overview

- **Sub-Project Name:** [Insert Sub-Project Name]
- **Sub-Project Manager:** [Insert Name]
- **Start Date:** [MM/DD/YYYY]
- **End Date:** [MM/DD/YYYY]
- **Brief Description:** [Insert a short summary of the sub-project]

3. Stakeholder Identification

Stakeholder Group	Key Parties	Primary Interests
Project-Affected Parties (PAP)	Herder households and residents within 1 km of road corridor; mobile pastoralists using adjacent grazing land; road users (drivers, passengers); vulnerable individuals (elderly, women-headed households, low-income herders)	Most directly impacted by dust, noise, access disruption, and labour influx
Local Government	Khentii and Sukhbaatar aimag offices; Bayankhutag and Munkhaan soum governments; bagh leaders	Governance oversight; permit authority; community liaison; information dissemination
Regulatory Authorities	MNET (environmental permits); River Basin Authority (water); Traffic Police (TMP approval); Labor Inspectorate (OHS); Cultural Heritage Department (chance finds)	Regulatory approvals and compliance monitoring
World Bank	MTCLIP Task Team; Inspection Panel	Financing, ESF compliance oversight, GRS
NGOs and Civil Society	Women's NGOs; herder advocacy groups; environmental organizations (if any active in region)	May represent vulnerable groups; can assist in community outreach

Construction Sector	Contractor (SDLG Mongolia LLC); Supervision Engineer (Geo Zuraglagch LLC); subcontractors; suppliers	Direct implementers; part of project team

4. Stakeholder Analysis

Provide a brief analysis of key stakeholders, their expectations, and potential concerns. Address risks and opportunities related to stakeholder engagement.
Note: Women, elderly, persons with disabilities, and low-income herder households will be specifically reached through: household visits by CLO in cooperation with bagh leaders; separate women's focus groups if cultural barriers prevent open discussion in mixed meetings; simplified information materials with diagrams; accessible meeting locations and flexible timing to match herding schedules.

No engagement activity will be held during major local events (Naadam, Tsagaan Sar) or at times conflicting with seasonal herding activities. Where remote herders cannot attend meetings, the CLO will visit them directly or deliver information through trusted bagh leaders.

5. Engagement Strategies & Activities

Project Phase	Engagement Activities	Responsible
Pre-construction (completed Nov 2025)	Community focus group discussions (10 participants); ESMP disclosure at soum offices and MRTD website; consultation record prepared (Annex 3); key concerns integrated into ESMP	IPIU + Supervision Engineer + Contractor
Construction mobilization (Month 1)	Community meeting in each soum ≥2 weeks before construction commences; GRM drop-boxes installed; GRM contacts posted at sites; worker induction on community interaction rules; soum focal points briefed	IPIU + Contractor CLO
Active construction (Monthly during works)	Monthly community briefing meetings (per soum); monthly construction bulletin in Mongolian distributed to households; bi-monthly coordination meeting with aimag/soum officials and Traffic Police; GRM monitoring and quarterly reporting; site visits for community reps at key milestones	Contractor CLO + IPIU Social Specialist
Major closures / diversions (As needed, ≥7 days advance)	Written public notice; announcement on local radio and soum social media; information boards updated	Contractor TMO + CLO
Project completion	Completion community meeting in each soum; disclosure of project outcomes; satisfaction survey; handover of any community-usable infrastructure (wells, crossing structures)	IPIU + Contractor

6. Communication Plan

- **Communication Channels:** [List channels: email, meetings, reports, etc.]
- **Key Messages:** [Summarize main messages for different stakeholder groups]
- **Feedback Mechanisms:** [Describe how stakeholders can provide feedback]

7. Documentation & Reporting

Describe how engagement activities and feedback will be documented and reported (e.g., meeting minutes, engagement logs, status reports).

8. Roles & Responsibilities

- **Sub-Project Manager:** Overall responsibility for stakeholder engagement.
- **Team Members:** Support engagement activities as assigned.
- **Other Roles:** [Specify as needed]

9. Monitoring & Review

- Outline how the effectiveness of stakeholder engagement will be monitored (e.g., KPIs, surveys).
- Specify how and when the plan will be reviewed and updated.

10. Appendices

- Stakeholder Register[1]
- Meeting Schedules
- Engagement Log
- Other relevant documents

Disclosure: All key project documents (ESMP summary, SEP summary, GRM information) will be publicly disclosed in Mongolian at: (1) Bayankhutag and Munkhaan soum offices; (2) MRTD website; (3) contractor's site office notice board; (4) community center in each soum. Updates to the ESMP or TMP will be re-disclosed within 5 working days of approval. All disclosures are free of charge.

[1] *Note: Engagement records — meeting minutes, attendance lists, issues raised, and project responses — will be maintained by the Contractor CLO and IPIU Social Specialist, and included in quarterly progress reports to the World Bank.*

Annex 2: Grievance Redress Mechanism (GRM) Procedure

NOTE: The Grievance Redress Mechanism (GRM) for the Mongolia Transport Connectivity and Logistics Improvement Project (MTCLIP) was disclosed and adopted in 2021 (and updated from time to time) and serves as the project-wide system for receiving, recording, and resolving grievances related to environmental and social performance across all project components, including Lot 3. The MTCLIP GRM is designed in accordance with the World Bank Environmental and Social Framework (ESS10) and establishes standardized procedures for grievance intake, assessment, resolution, escalation, and reporting.
The MTCLIP GRM is available at: www.mrt.gov.mn
This GRM is adopted from the ESMF and aligned with ESS10 requirements. It defines procedures for receiving, recording, and resolving community and worker grievances, including confidential SEA/SH channels. The Contractor shall implement and maintain accessible GRM channels at site level in accordance with this framework.

1.1 Scope and Guiding Principles

The GRM covers all complaints, suggestions, requests for information, and concerns related to project implementation and impacts. Any individual or group may submit a grievance, including anonymously, without cost or retaliation.

- Accessibility & Transparency: GRM contacts publicly posted; progress communicated to complainant.
- Confidentiality: Complainant identity protected upon request; anonymous complaints accepted.
- Fairness & Impartiality: All complaints judged on merits; no discrimination.
- Timeliness: 5-day acknowledgement; 15-day resolution target; 30-day maximum.
- Learning & Improvement: Grievance trends analysed to improve project management.

1.2 Submission Channels

Table A1-1. GRM Submission Channels

Channel	Contact Details	Notes
In person	Contractor site office or soum Governor's Office – verbal or written	At any time during working hours
Phone / SMS	Contractor hotline: +976 80611882 (Wu Fumin) or +976 86236782 (Ding Baogang) IPIU: +976 7595-3111	24-hour voicemail; calls returned within 1 working day
Email	sdlqmongoliallc@gmail.com (Contractor) IPIU email: to be posted on MRTD website	Response within 2 working days
Anonymous drop-box	Sealed boxes installed at Bayankhutag and Munkhaan soum offices	Emptied weekly by soum focal point
Written letter	IPIU, Ministry of Road and Transport, Ulaanbaatar	Register on receipt; acknowledge within 5 days
Third-party	Through community leader, NGO, or World Bank GRS	Accepted; handled as first-party complaint

1.3 Four-Level Process

Table A1-2. GRM Levels and Timelines

Level	Responsible Entity	Timeline	Scope	Process

Level 1 Local	Contractor GRM Focal Point; Soum Governor's Office	5 days to acknowledge; 15 days to resolve or escalate	Minor construction nuisances; information requests; small local disputes	Contractor logs in grievance register; works with soum to resolve; forwards to IPIU if unresolved
Level 2 Project (IPIU)	IPIU GRM Coordinator (E&S Safeguards Specialist)	15 days from receipt at IPIU (max 30 days from initial complaint)	Complex, unresolved Level 1 issues; compensation disputes; multi-party cases	IPIU investigates; coordinates with contractor and Engineer; issues formal written response; implements remedies within project scope
Level 3 Project Steering Committee	PSC (MRTD leadership + aimag officials)	30 days from escalation to PSC	Appeals; policy-related; serious disputes requiring high-level decision	PSC reviews evidence; may hold hearing; issues final project-level decision in writing
Level 4 External	Courts / Government Agencies / World Bank GRS	Per Mongolian law (courts); WB GRS: acknowledge within 15 days	If project levels do not satisfy complainant; any criminal matter	Project cooperates fully with legal/Bank process; provides required documentation

1.4 GRM Focal Points – Bilingual Contact Table

Table A1-3. GRM Contact Points (English / Mongolian)

Name (EN / MN)	Role (English)	Үүрэг (Монгол)	Phone	Email
Wu Fumin У Фүмин	Contractor – Director, Complaints Mechanism Office (Shandong Luqiao Group Co. Ltd)	Гүйцэтгэгч – Гомдол хүлээн авах оффисын захирал	80611882	sdlqmongoliallc@gmail.com
Ding Baogang Дин Баогаан	Contractor – Community Liaison Officer	Гүйцэтгэгч – Орон нутгийн харилцаа хариуцсан ажилтан	86236782	sdlqmongoliallc@gmail.com
D. Baigalmaa	Governor – Bayankhutag Soum (Khentii)	Баянхутаг сумын Засаг дарга (Хэнтий аймаг)	88485069	—
A. Batdelger	Governor – Munkhaan Soum (Sukhbaatar)	Мөнххаан сумын Засаг дарга (Сүхбаатар аймаг)	99813218	—
IPIU GRM Officer Төслийн нэгж – Гомдол хариуцсан ажилтан	IPIU E&S Specialist / GRM Coordinator – MRTD	Байгаль орчин, нийгмийн асуудал хариуцсан мэргэжилтэн	7595-3111	To be announced on MRTD website

1.5 Special Provisions for Labour Grievances and GBV/SEA

Worker grievances are logged separately (to protect confidentiality from public disclosure) and resolved by contractor management within 5–10 days. Unresolved cases escalate to the IPIU or Mongolian Labour Dispute Resolution Committee. Workers may submit anonymously via a suggestion box at the camp.

GBV/SEA complaints: classified immediately as confidential. Shared only with the GBV Response Team (IPIU Safeguards Specialist + female GBV Focal Point + GBV expert). No mediation between survivor and perpetrator. Expedited response: acknowledgement within 24 hours; safety measures immediate. Survivor-centered approach: survivor's consent guides every step. Refer to Annex 2 for full GBV Action Plan.

1.6 Monitoring and Reporting

The IPIU maintains a central Grievance Register (database) with: unique ID, date, complainant reference (anonymous if requested), description, category, actions taken, responsible party, and status. Quarterly GRM reports summarize: total received/resolved, breakdown by category, average resolution time, breaches of timeline, and lessons learned. Reports are included in quarterly progress reports to the World Bank. Annual GRM summary is publicly disclosed (without personal details).

Note: All GRM contacts and procedures shall be displayed on signboards at all construction sites and soum offices in Mongolian and Chinese. The project GRM does not impede any complainant's right to pursue Mongolian legal remedies or the World Bank Grievance Redress Service at any time.

Annex 3: Traffic Management Plan (TMP)

The general traffic management plan guidelines for the Project is developed for the purpose of guiding the preparation of site−specific Traffic Management Plan and ensuring traffic safety in the local communities and the construction sites during the construction of the Project. These guidelines are developed based on the local requirements of UB, and the WB EHSGs and Good Practice Note on Road Safety of the WB, ESF including (i) Safe Workplaces at Construction site, (ii) Safe Vehicle at Construction site, (iii) Safe Driver and Driver−related practices, (iv) Traffic safety, (v) Emergency Preparedness and response.

1. Purposes

This guideline aims to ensure the traffic safety in the local communities and at the repair, reconfiguration and construction of new road sites of the Project, in particular, to protect the pedestrians, bicyclists, motorbike riders and workers including the materials supply workers, construction workers, and transport vehicle drivers.

2. Preparation of site specific TMP

As part of its bid the successful Contractor is required to submit a preliminary TMP, which will ultimately form part of the contractor ESMP. Before work commencement, updated TMP approved by local authority will be submitted to PMO. It will be presented to the workers on regular basis.
The site−specific traffic management plan will provide for:

a. the safety of the workers at the worksite and the public passing through or adjacent to the worksite;
b. overall strategy for the management of traffic, including traffic staging methodology during various stages of the work;
c. temporary traffic management arrangement for each stage of the works including scheduling of the transportation of construction, repair work waste, and resourcing materials;
d. arrangement and number of traffic controllers required for each stage of the works;
e. emergency access – for both workers and any emergency services vehicles travelling through the worksite any unusual hazards or job specific requirements e.g. nearby school or access to shops;
f. use of alternative routes or detours as required;
g. provision for over−dimensional vehicles;
h. provision of safe passage for pedestrians, cyclists and people with disabilities;
i. provision for, and impact on, public transport (e.g. delay to buses/trams, restrictions on passenger access to bus or tram stops, potential for traffic to queue across an adjacent railway crossing), including where possible, priority for public transport;
j. provision for access to abutting properties;
k. duration and times for conducting the works (e.g. day or night operation);
l. traffic management arrangements at the worksite outside normal working hours or when workers are not present at the site (after−care);
m. arrangements to address and monitor the risk of end−of−queue collisions due to a build−up of traffic at worksites;
n. emergency response procedures and contact details;
o. the actions to be taken to address crashes – including the requirement for root−cause analyses as a means to understand if further traffic management needs to be put in place to mitigate the risks and to help prevent that situation re−occurring; and,

p. communication arrangements.

3. Measures to be included in the TMP

a. General Measures

- Warning signs and night warning lights shall be erected at road intersections, crowded areas, and places with traffic safety hazards such as hospitals, schools, kindergartens and other spaces of public activities;
- Warning signs and speed limit signs shall be provided, and full−time traffic command personnel shall be assigned at sensitive receptors such as sites of pipeline construction in the community affecting road traffic or involving vehicles entering the community.
- Passages to emergency exits should be unobstructed at all times. Exits should be clearly marked to be visible in total darkness. The number and capacity of emergency exits should be sufficient for safe and orderly evacuation of the greatest number of people present at any time, and there should be a minimum two exits from any work area.
- Constant contact shall be kept with the traffic management department during the construction period to coordinate matters concerning transportation vehicles entering the construction sites.
- Traffic signs and facilities shall be erected at obvious positions in the construction sites of the construction works and on both sides of main passages, road intersections and temporary roads; special personnel shall be assigned for proper maintenance of such signs. The requirements of traffic organization in the construction stage shall be consistent with the respective requirements and regulations of the UB.

b. Traffic measures for construction activities near communities

- Obstacles with impacts on traffic shall be removed and then sidewalks are properly dealt with to provide space for pedestrian according to the relevant regulations;
- Visible signs shall be erected at road intersections to remind vehicles intending to enter the closed construction sections to bypass; traffic signs and traffic guidance facilities shall be provided on site;
- A full−time traffic coordinator shall be assigned to keep timely contact the traffic police department;
- Special personnel shall be assigned for traffic diversion during the construction period.
- The road surface shall be kept clean and tidy to ensure that no construction dust is raised;
- A traffic coordination office shall be established as a special body of traffic management;
- Signs shall be erected according to the national standards, and fences at the road intersections shall be well aligned and rounded;
- No materials shall be stockpiled on traffic lanes;
- No traffic changes shall be made until at the consent of the traffic police in the event of any special circumstances in the construction stage;
- Stronger efforts shall be made in safety education at the community level as well as for drivers of the transportation vehicles engaged in the implementation of the Project;
- Emphasizing safety aspects among drivers;
- Improving driving skills and requiring licensing of drivers;
- Adopting limits for trip duration and arranging driver rosters to avoid overtiredness;
- Avoiding dangerous routes and times of day to reduce the risk of accidents;
- Use of speed control devices (governors) on trucks, and remote monitoring of driver actions;
- Regular maintenance of vehicles and use of manufacturer approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;

- Minimizing pedestrian interaction with construction vehicles;
- Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present. Collaborating with local communities on education about traffic and pedestrian safety (e.g. school education campaigns);
- Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents;
- Using locally sourced materials, whenever possible, to minimize transport distances. Locating associated facilities such as worker camps close to project sites and arranging worker bus transport to minimizing external traffic.

c. Industrial Vehicle Driving and Site Traffic

Poorly trained or inexperienced industrial vehicle drivers have increased risk of accident with other vehicles, pedestrians, and equipment. Industrial vehicles and delivery vehicles, as well as private vehicles on-site, also represent potential collision scenarios. Industrial vehicle driving and site traffic safety practices include:

- The space provided for each worker, and in total, should be adequate for safe execution of all activities, including transport and interim storage of materials and products;
- Training and licensing industrial vehicle operators in the safe operation of specialized vehicles such as forklifts, including safe loading/unloading, load limits;
- Ensuring drivers undergo medical surveillance;
- Ensuring moving equipment with restricted rear visibility is outfitted with audible back−up alarms;
- Establishing rights−of−way, site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction;
- Restricting the circulation of delivery and private vehicles to defined routes and areas, giving preference to ‘one−way’ circulation, where appropriate.

d. key traffic signs and facilities

- The construction sites shall be separated from the carriageways with enclosure of no less than 1.8m in height and made of zinc−iron corrugated boards (green) with a thickness of not less than 2mm. Slogans about construction safety and civilized construction shall be erected and unrelated persons shall not be allowed to enter the construction sites.
- Signs on the construction sites shall be conspicuous. Road signs shall be set up at a certain distance in front of and behind the construction sections indicating "Bypass Here, Construction Works Ahead" or “Slow Down; Construction Works Ahead”. Full warning lights shall be provided at night.
- Obvious signs shall be set up at the entrance and exit of the construction sites, and special personnel shall be assigned for traffic maintenance to reduce the interference and avoid accidents between road construction machinery and dump trucks entering and leaving the construction site and non−constructional vehicles.
- Temporary traffic guidance signs and prohibition signs shall be set up at the various intersections and temporary roads in cooperation with the traffic management authority and assistance shall be provided to the traffic management authority in proper traffic management for temporary roads.

4. Emergency preparedness and response plan

Emergency preparedness and response plan shall be developed based on traffic risks during construction, mainly including:

(i) The construction sites shall be separated from the carriageways with enclosure of no less than 1.8m in height and made of zinc−iron corrugated boards (green) with a thickness of not less than 2mm. Slogans about construction safety and civilized construction shall be erected and unrelated persons shall not be allowed to enter the construction sites.

(ii) Signs on the construction sites shall be conspicuous. Road signs shall be set up at a certain distance in front of and behind the construction sections indicating "Bypass Here, Construction Works Ahead" or “Slow Down; Construction Works Ahead”. Full warning lights shall be provided at night.

(iii) Obvious signs shall be set up at the entrance and exit of the construction sites, and special personnel shall be assigned for traffic maintenance to reduce the interference and avoid accidents between road construction machinery and dump trucks entering and leaving the construction site and non−constructional vehicles.

(iv) Temporary traffic guidance signs and prohibition signs shall be set up at the various intersections and temporary roads in cooperation with the traffic management authority and assistance shall be provided to the traffic management authority in proper traffic management for temporary roads.

Employees shall be provided with trainings and drills of related procedures to improve their emergency response capabilities.

Annex 4: Occupational Safety and Health (OSH) Plan

NOTE: This annex establishes minimum OHS requirements in line with ESS2 and national legislation. The Contractor shall prepare a detailed OSH Plan, including risk assessments, procedures, and emergency response measures, as part of the C-ESMP prior to mobilization.

5.1 Key Responsibilities

Party	Responsibilities
Contractor – OSH Officer (full-time on site)	Oversee daily OSH implementation; conduct daily site inspections; hold toolbox talks; manage PPE inventory; investigate incidents; prepare monthly OSH reports.
Contractor – Project Manager	Overall accountability for OSH compliance; approve OSH plan revisions; enforce discipline for OSH violations; cooperate with Labor Inspectorate.
Supervision Engineer – Safety Inspector	Independent monthly OSH site inspections; verify contractor compliance; issue corrective action notices for non-compliance; validate monthly OSH reports.
IPIU – OHS Officer	Oversight of contractor and Engineer OSH performance; compile project-wide OSH statistics; report to World Bank; coordinate with Labor Inspectorate if required.
Workers	Attend all OSH training; use required PPE; report hazards and incidents; right to refuse unsafe work without retaliation.

5.2 Hazard Controls by Work Activity

Table A5-1. Key Hazards, Controls, and PPE Requirements by Activity

Activity	Key Hazards	Controls / PPE Required
Earthworks / excavation	Trench collapse; falling objects; equipment strike	Shoring/sloping for trenches >1.2 m; PPE (hard hat, boots, vest); equipment exclusion zones with spotter; inspection before entry
Asphalt paving / hot works	Burns from hot bitumen; fumes inhalation; heat stress	Heat-resistant gloves and face shield; RPE (organic vapour cartridge) during spray; rest breaks in shade; buddy system in hot weather
Heavy equipment operation	Struck-by; run-over; rollover	Operator certification mandatory; reverse alarms and mirrors; daily pre-start check; spotter for all reversing; no passengers on equipment
Working near live traffic	Vehicle strike; dust/fumes exposure	TMP implemented before works (Annex 4); high-visibility vests mandatory at all times; flaggers in position; no work in lane without traffic control in place
Quarry operations	Blast injury; flying debris; dust; noise	Blast protocol (midday, cleared zone, notified community); ear and eye protection; respirators during crushing; hearing monitoring programme
Fuel / chemical handling	Spill; fire; toxic exposure	Bunded storage areas; PPE (chemical-resistant gloves, goggles); spill kits at fuel points; fire extinguisher nearby; no smoking within 10 m
Work in extreme cold (<–20°C)	Cold stress; frostbite; hypothermia	Insulated PPE; warm shelter and hot drinks on site; maximum 2-hour outdoor shifts; buddy system; suspend work in storms

Manual lifting / ergonomics	Musculoskeletal injury	Safe lifting technique training; max 25 kg individual lift; mechanical aids for heavier loads; task rotation

5.3 Mandatory PPE Standards

Minimum PPE for all workers on site at all times: hard hat (EN 397 or equivalent), high-visibility vest (Class 2+), safety footwear (steel-toe), work gloves. Additional PPE required for specific tasks as shown in Table A5-1 above. All PPE issued free of charge. Refusal to wear required PPE = "serious violation" under labour contract triggering disciplinary action.

5.4 Training Programme

Training Type	Target Group	Frequency	Key Content
OSH Induction	All workers	Before starting; 2-hour minimum session	Covers: site hazards, PPE, emergency procedures, incident reporting, right to refuse unsafe work. Sign-off required.
Daily Toolbox Talk	All site workers	Each morning (10–15 min)	Task-specific hazards for the day; reminders of safety procedures; workers encouraged to raise concerns.
Job-Specific Training	Operators, hazmat handlers, first aiders	Before task assignment	Crane operation certification; asphalt/bitumen safety; spill response; first aid and CPR.
OSH Refresher	All workers	Monthly formal session	Lessons learned from incidents; new hazards; seasonal adjustments (cold weather, storm season).
Emergency Drills	All workers	Semi-annually (fire and spill)	Evacuation route; assembly point; fire extinguisher use; spill containment; simulated injury response.

5.5 Incident Reporting and Investigation

ALL incidents and near-misses must be reported regardless of severity. Worker reporting is a duty; managers must not discourage reporting. Incident report form completed by OSH Officer within 24 hours. Root-cause investigation for all lost-time injuries; 5-why analysis minimum. Monthly OSH report to Supervision Engineer and IPIU by 5th of following month. Serious incidents (LTI, fatality, major spill) reported to IPIU within 24 hours; IPIU notifies World Bank.

OSH KPIs tracked monthly: man-hours worked; number of incidents by type (fatality, LTI, first-aid, near-miss); Lost Time Injury Frequency Rate (LTIFR); PPE compliance rate (%); toolbox talk attendance (%).

Note: A copy of this OSH Plan must be kept at the site office and worker camp at all times. It must be updated whenever the scope of work or hazard profile changes. All updates require IPIU approval.

Annex 5: Cultural Heritage Chance Finds Procedure

This procedure outlines the mandatory steps to be followed in the event of chance finds during construction, in accordance with ESS8. The Contractor shall integrate this procedure into site operations and ensure all workers are trained prior to commencement of works.

6.1 Definition of a Chance Find

A "chance find" is any unanticipated discovery that may have cultural, archaeological, or historical significance, including: pottery, ceramics, tools, weapons, jewellery, human remains, tombs or burial mounds, building foundations or ruins, rock carvings or petroglyphs, fossils, or any object that appears non-natural and potentially of heritage importance. If in any doubt, treat as a chance find and initiate this procedure.

6.2 Step-by-Step Procedure

Table A6-1. Chance Finds Step-by-Step Procedure

Step	Timing	Action Required
Step 1 STOP WORK	Immediate	Cease all construction activities within a minimum 10-metre radius of the find. Safely stop and switch off all machinery. Alert all workers ("Stop work — possible artifact found"). Do NOT move, remove, clean, or disturb the object or its surrounding context.
Step 2 SECURE THE AREA	Within 1 hour	Cordon off a minimum 10 m protection zone with roping or fencing. Assign a guard to monitor the area. Cover exposed find with a protective cloth/tarp if at risk of weather damage — without touching or moving it. No photographs to be shared on social media or publicly.
Step 3 NOTIFY	Within 24 hours	Notify: (1) IPIU E&S Manager — immediately by phone; (2) Aimag Cultural Heritage Department — within 24 hours by phone and formal letter; (3) World Bank Task Team — within 24 hours via IPIU. Document all notifications: date, person informed, contact, instructions received.
Step 4 EXPERT ASSESSMENT	As directed by authority	Cooperate with the qualified archaeologist/heritage expert deployed by the Cultural Heritage Authority. Provide site access, equipment support if needed. Work remains STOPPED until expert completes assessment and provides written clearance. Expert determines: significance; required action (salvage excavation, in-situ preservation, or clearance to proceed).
Step 5 IMPLEMENT INSTRUCTIONS	As per expert recommendation	Follow written instructions from Cultural Heritage Authority. If salvage excavation: provide logistical support; recover and hand over items to authority/museum. If in-situ preservation required: work with IPIU and engineers to redesign around the site. If clearance given: document the find and resume work. Resume only after formal written authority clearance is received by IPIU.
Step 6 DOCUMENT AND REPORT	After clearance and ongoing	Document the find: photographs (if permitted), GPS coordinates, description, date/time, personnel involved. Store in project E&S file. Report in regular E&S monitoring reports to IPIU and World Bank (anonymised if required). Inform community in general terms (without sensitive details that may attract looters).

6.3 Worker Training

All construction personnel must be briefed on this procedure during OSH induction (before any earthworks). Training covers: what heritage objects look like; common finds in Khentii/Sukhbaatar steppe region (Hunnu burial mounds, Bronze Age artifacts, petroglyphs); the stop-work obligation;

reporting chain; legal penalties for unauthorized removal or concealment. Toolbox talks before starting work in new sections will reinforce this.

Legal consequences: Mongolian Cultural Heritage Law provides for criminal prosecution for destruction or unauthorized removal of heritage items. Any worker found to have concealed a chance find, continued work after discovery, or attempted to remove artifacts will be immediately dismissed and reported to law enforcement.

Note: See Annex 14 (Cultural Heritage Management Plan) for the pre-construction archaeological survey requirements, intangible heritage consultation, and full heritage documentation procedures.

Annex 6: Applicable Laws, Standards and Permits

This annex summarizes applicable national legal requirements and permits. The Contractor is responsible for ensuring full compliance and obtaining all necessary permits prior to relevant activities.

8.1 Mongolian National Legislation

Law / Standard / Order	Reference	Key Requirement	Timing
Environmental Protection Law	2012 (as amended)	General environmental obligations; prohibitions on pollution and degradation	Throughout project
Law on EIA	2012 (as amended) Govt Decree 58/2023	DEIA required; annual EMP submitted by 1 Nov to aimag Environmental Agency per Order A/618	Before mobilization; annually
Environmental Management Plan Order (A/618)	MNET Order A/618, 2019	EMP preparation, approval, reporting format and procedures	EMP approved before works; annual report by 1 Nov
Water Law	2012 (as amended)	Water abstraction permit (Art. 30); wastewater discharge (Art. 30.2.2)	Permit before drilling/abstraction
Waste Law	2017 (as amended)	Art. 10 (obligations); Art. 22 (hazardous waste storage authorization); Art. 23 (licensing)	Before mobilization; during operations
Labour Law	2021	Employment terms; working hours; wages; leave; OHS; child labour prohibition	Before any worker engagement
OHS Law	2008	Workplace safety; PPE; incident reporting; medical examinations (Art. 28)	Throughout project
Labour Migration Law	2021	Work permits for foreign workers (153 Chinese nationals)	Before foreign workers enter Mongolia
Law on Protection of Cultural Heritage	Current	Reporting and protection of cultural heritage finds	Ongoing; immediately if chance find
Road Traffic Safety Law	Current	Work zone signage; speed limits; traffic safety requirements	Before any lane closure
Animal Law (Art. 6.1.3, 6.1.7)	Current	Wildlife habitat and migration route protection	Throughout construction
Road Design Standard ЗЗБНбД 22-004-2016	2016	Geometric design, cross-section, safety features for Class III highway	Design compliance
MNS 5286	Current	Ambient air quality standards (PM10, PM2.5)	Monitoring threshold reference
MNS 4943:2015	2015	Wastewater discharge standards; toilet/sanitation requirements at camp	Camp design and operation

MNS 4628:2013	2013	Fuel storage facility safety (setback, hard surfacing)	Fuel storage design
MNS 4596:2014; MNS 4597:2014	2014	Road work zone signage standards	TMP implementation
ВД 43-101-03 Construction Code	Current	Construction safety standards for fuel/chemical handling	Fuel and hazmat storage

8.2 World Bank ESF Standards

ESS1–ESS10 applicability is detailed in ESMP Table 2-1. Key standards: ESS1 (ESMP framework); ESS2 (labour and OHS); ESS3 (pollution prevention and resource efficiency); ESS4 (community health and safety); ESS5 (not triggered for permanent acquisition); ESS6 (biodiversity — modified habitat); ESS8 (cultural heritage); ESS10 (stakeholder engagement and GRM). Additional references: WBG EHS General Guidelines; IFC/EBRD Worker Accommodation Guidelines (camp standards).

8.3 International Conventions (Mongolia Ratified)

- ILO Convention No. 29 – Forced Labour
- ILO Convention No. 100 – Equal Remuneration
- ILO Convention No. 182 – Worst Forms of Child Labour
- ILO Core Conventions (fundamental rights at work)
- Convention on Biological Diversity (CBD)

Note: Full permit acquisition log (applicant, submission date, approval date, approval reference) shall be maintained by the IPIU and made available for review by the Supervision Engineer and World Bank upon request.

Annex 7: Monitoring Sites, Quarry and Spoil Sites

This annex identifies indicative locations and requirements for monitoring and material sourcing. The Contractor shall verify, finalize, and obtain approvals for all sites prior to use, ensuring alignment with ESMP requirements.

9.1 Quarry Site

Main quarry sites have been divided into following 7 sections in accordance with the by law Government of Mongolia, The common resource utilization for road and rail road sector infrastructure development projects.

#	Duration of usage month)	Coordinates							Quarry area (m²)	Location
		№	Long			lat				
QR -1	19	1	111°	32′	33.601"	47°	20′	26.912″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	34.473"	47°	20′	29.943″		
		3	111°	32′	16.133"	47°	20′	22.871″		
		4	111°	32′	19.710"	47°	20′	22.091″		
		5	111°	32′	23.830"	47°	20′	22.633″		
QR -2	19	1	111°	32′	48.932"	47°	20′	16.800″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	39.130"	47°	20′	21.113″		
		3	111°	32′	29.300"	47°	20′	20.222″		
		4	111°	32′	28.210"	47°	20′	17.802″		
		5	111°	32′	25.766"	47°	20′	16.467″		
QR -3	19	1	111°	32′	48.932"	47°	20′	16.803″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	25.763"	47°	20′	16.466″		
		3	111°	32′	23.491"	47°	20′	14.753″		
		4	111°	32′	22.712"	47°	20′	11.651″		
QR -4	19	1	111°	32′	48.932"	47°	20′	16.803″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	25.763"	47°	20′	16.466″		
		3	111°	32′	23.491"	47°	20′	14.753″		
		4	111°	32′	22.712"	47°	20′	11.651″		
QR -5	19	1	111°	32′	20.803"	47°	20′	14.188″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	48.931"	47°	20′	16.803″		
		3	111°	32′	22.412"	47°	20′	09.351″		
		4	111°	32′	24.671"	47°	20′	08.537″		
QR -6	19	1	111°	32′	50.804"	47°	20′	14.178″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	24.155"	47°	20′	09.352″		
		3	111°	32′	29.112"	47°	20′	06.161″		

QR -7	19	1	111°	32′	50.807"	47°	20′	14.185″	45508.38	Bayankhutag Soum Khentii aimag KM23+000 From road route: 500 m
		2	111°	32′	29.118"	47°	20′	06.163″		
		3	111°	32′	34.690"	47°	20′	05.311″		
		4	111°	32′	39.712"	47°	20′	06.044″		
		5	111°	32′	44.181"	47°	20′	08.083″		

ID	Location	Coordinates (WGS84)	Area	Purpose	Monitoring Frequency
Q-01	KM23+000 (right/north side of alignment)	Approx. 47.XXX°N, 111.XXX°E	~36.8 ha	Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-02				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-03				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-04				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-05				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-06				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure
Q-07				Gravel, aggregate, fill material for road works	Before quarry operations; monthly during operation; at closure

9.2 Spoil Disposal Sites (41 sites — indicative list)

Up to 41 spoil sites have been identified along both sides of the alignment within the road reserve or adjacent public land. Selected to avoid sensitive areas (water bodies, ecologically important habitats, cultural sites, and within 200 m of any ger/dwelling). Final coordinates to be confirmed in the pre-construction site survey.

Site ID	Chainage / Location	Land Tenure	Waste Type	Monitoring
S-01 to S-10	KM50–KM60 (both sides of alignment)	Within road reserve / public land	Old asphalt millings; excavated unsuitable soil	Monthly inspection; certification at closure
S-11 to S-20	KM60–KM70 (both sides)	Within road reserve / public land	Construction spoil	Monthly inspection; certification at closure
S-21 to S-30	KM70–KM80 (both sides)	Within road reserve / public land	Construction spoil; culvert excavation	Monthly inspection; certification at closure
S-31 to S-41	KM80–KM100 (both sides)	Within road reserve / public land	Mixed spoil	Monthly inspection; certification at closure

9.3 Borrow pits location

Type of fields	Duration of usage months)	Coordinates							Borrow area (m²)	Location
		№	Long			lat				
Borrow pit -1	19	1	111°	20′	11.310"	47°	18′	13.577"	39987.778	Khentii–Choibalsan Road Rehabilitation Bayankhutag Soum KM40+500 From road route: 772 m
		2	111°	20′	23.133"	47°	18′	03.948"		
		3	111°	20′	18.369"	47°	18′	07.828"		
		4	111°	20′	11.205"	47°	18′	03.231"		
Borrow pit -2	19	1	111°	20′	11.310"	47°	18′	13.577"	45508.382	Choibalsan Road Rehabilitation Bayankhutag Soum KM4+500 From road route: 772m
		2	111°	20′	26.526"	47°	18′	13.060"		
		3	111°	20′	18.369"	47°	18′	07.828"		
		4	111°	20′	23.133"	47°	18′	03.948"		
Borrow pit -3	19	1	111°	21′	14.777"	47°	18′	48.184"	48440.236	Choibalsan Road Rehabilitation Bayankhutag Soum KM8+00 From road route: 488 m
		2	111°	21′	14.591"	47°	18′	39.446"		
		3	111°	21′	31.863"	47°	18′	47.230"		
		4	111°	21′	23.248"	47°	18′	43.348"		
Borrow pit -4	19	1	111°	21′	14.591"	47°	18′	39.446"	48440.236	Choibalsan Road Rehabilitation Bayankhutag Soum KM14+400 From road route: 488 m
		2	111°	21′	29.815"	47°	18′	39.598"		
		3	111°	21′	31.863"	47°	18′	47.230"		
		4	111°	21′	23.248"	47°	18′	`43.348"		

Borrow pit -5	19	1	111°	25′	55.006"	47°	19′	40.382"	28646.573	Choibalsan Road Rehabilitation Bayankhutag Soum KM14+400 From road route: 157 m
		2	111°	25′	52.533"	47°	19′	44.773"		
		3	111°	26′	01.230"	47°	19′	47.605"		
		4	111°	26′	04.026"	47°	19′	43.903"		
Borrow pit -6	19	1	111°	29′	15.712"	47°	20′	04.718"	42560	Choibalsan Road Rehabilitation Bayankhutag Soum KM19+000 From road route: 832 m
		2	111°	29′	23.287"	47°	20′	01.246"		
		3	111°	29′	30.109"	47°	20′	04.409"		
		4	111°	29′	23.416"	47°	20′	10.364"		
Borrow pit -7	19	1	111°	31′	57.840"	47°	20′	35.875"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM22+400 From road route: 148 m
		2	111°	31′	55.050"	47°	20′	32.700"		
		3	111°	32′	02.550"	47°	20′	32.700"		
		4	111°	32′	04.850"	47°	20′	35.570"		
		5	111°	32′	00.270"	47°	20′	34.230"		
Borrow pit -8	19	1	111°	35′	31.849"	47°	21′	02.642"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM26-700 From road route: 1183 m
		2	111°	35′	28.374"	47°	21′	08.371"		
		3	111°	35′	38.435"	47°	21′	10.396"		
		4	111°	35′	41.430"	47°	21′	05.553"		
		5	111°	35′	35.423"	47°	21′	06.849"		
Borrow pit -9	19	1	111°	38′	42.576"	47°	20′	56.710"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM23+000 From road route:371 m
		2	111°	38′	48.327"	47°	20′	59.442"		
		3	111°	38′	55.240"	47°	20′	52.024"		
		4	111°	38′	51.327"	47°	20′	49.980"		
		5	111°	38′	50.073"	47°	20′	53.936"		
Borrow pit -10	19	1	111°	40′	38.465"	47°	21′	19.776"	45508.382	`Choibalsan Road Rehabilitation Bayankhutag KM31+100 From road route:158 m
		2	111°	40′	37.130"	47°	21′	23.543"		
		3	111°	40′	49.298"	47°	21′	26.483"		
		4	111°	40′	50.210"	47°	21′	21.353"		
Borrow pit -11	19	1	111°	41′	02.523"	47°	21′	46.755"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM34+400 From road route:1073 m
		2	111°	40′	49.151"	47°	21′	57.359"		
		3	111°	41′	12.794"	47°	22′	04.764"		
		4	111°	41′	06.763"	47°	21′	54.142"		
	19	1	111°	41′	02.523"	47°	21′	46.755"	45508.382	

Borrow pit -12		2	111°	41′	12.794"	47°	22′	04.764"		Choibalsan Road Rehabilitation Bayankhutag KM34+400 From road route:1073 m
		3	111°	41′	18.467"	47°	21′	51.989"		
		4	111°	41′	06.763"	47°	21′	54.142"		`
Borrow pit -13	19	1	111°	44′	58.717"	47°	22′	00.993"	45508.382	Choibalsan Road Rehabilitation Bayankhutag KM39+200 From road route:168 m
		2	111°	44′	58.575"	47°	22′	55.820"		
		3	111°	44′	51.267"	47°	21′	54.609"		
		4	111°	44′	50.399"	47°	21′	59.505"		
		5	111°	44′	54.712"	47°	21′	57.561"		

9.4 Environmental Monitoring Stations

The following stations are established for regular environmental monitoring (see Annex 10 for full monitoring plan and schedule). Contractor must confirm all coordinates with Supervision Engineer before mobilization.

Table A9-1. Environmental Monitoring Stations (Indicative — coordinates to be finalized pre-mobilization)

Station ID	Parameter	Location Description	Purpose	Frequency
AM-01	Air quality (PM10/PM2.5)	Near Bayankhutag soum center	Residential receptor closest to road alignment start	Monthly
AM-02	Air quality (PM10/PM2.5)	Downwind of quarry at KM23 (~500 m from crusher)	Quarry dust impact monitoring	Monthly during quarry operation
AM-03	Air quality (PM10/PM2.5)	Near Bayan-Ovoo soum center	Mid-corridor residential receptor	Monthly
AM-04	Air quality (PM10/PM2.5)	Near Munkhaan soum center	Eastern corridor residential receptor	Monthly
NM-01	Noise (Leq, dB(A))	Nearest ger within 300 m of active works	Receptor monitoring — adjust by construction phase	Weekly during heavy equipment use
WQ-01	Surface water quality	KM55 ephemeral stream crossing (when flow present)	Nearest ephemeral water to quarry and spoil area	Quarterly; after rain/spill events
WQ-02	Groundwater level	Soum center deep well (Bayankhutag)	Community water supply monitoring — baseline vs pumping	Monthly during active drilling/pumping
WQ-03	Groundwater level	Nearest herder well to quarry (within 1 km)	Private well monitoring	Monthly during active drilling/pumping
SQ-01	Soil / Spill monitoring	Fuel storage area at main camp	Contamination detection around fuel and bitumen storage	Quarterly; after any spill event

BIO-01 to 03	Vegetation / revegetation cover (%)	3 representative spoil closure sites (mid, north, south)	Revegetation success monitoring	Biannually (spring and late summer)

Note: All monitoring stations should be photographed, marked with a GPS-referenced stake, and recorded in a site register kept by the Contractor EHS Officer. A map showing all station, quarry, spoil, and camp locations shall be posted at the site office.

Annex 8: Environmental Monitoring Plan

This annex defines the parameters, frequency, and methods for environmental monitoring and shall be read in conjunction with Chapter 8 of the ESMP. The Contractor shall develop a site-specific monitoring program, including laboratory arrangements and reporting formats, as part of the C-ESMP.

10.1 Monthly Monitoring Schedule

Period	Monitoring Activities
Month 1 (Mobilization)	Establish all monitoring stations (Annex 9); collect baseline data for all parameters; calibrate all equipment; submit monitoring station list and coordinates to Supervision Engineer and IPIU; pre-construction photo documentation of all sites.
Monthly (during construction)	Air quality (PM10/PM2.5): measure at all AM stations; Noise: weekly measurement at NM-01 during heavy equipment use; Groundwater: measure levels at WQ-02 and WQ-03; Waste: review waste logs; inspect storage areas; Soil/Spill: visual inspection at SQ-01; Labour/Social: review accident log, GRM register, PPE compliance rate; compile Monthly Contractor ESHS Report.
Quarterly	Water quality: collect samples at WQ-01 (when flow present) and submit to accredited lab; Soil: sampling at SQ-01 if contamination suspected; Labour/Social: compile GRM quarterly report; Biodiversity: assess revegetation where works completed.
Spring (May–June)	First biannual vegetation/revegetation survey at BIO-01 to BIO-03; species count and cover estimate; photograph from fixed reference points.
Late Summer (August–September)	Second biannual vegetation survey; compare with spring results; record any invasive species colonization.
At each spoil site closure	Visual inspection; revegetation assessment; confirm drainage works; photograph; Engineering certification form completed and submitted to IPIU.
At quarry closure	Final inspection; topsoil respread confirmation; revegetation assessment; drain-off check; final photo documentation; certification submitted to IPIU.
Project completion (Month 8–10)	Final site demobilization inspection; confirm all spoil sites rehabilitated; confirm camp restored; confirm no abandoned waste; Supervision Engineer issues closure certificate.

10.2 Air Quality Monitoring Detail

Table A10-1. Air Quality Monitoring Parameters

Parameter	Method	Stations	Frequency	Standard / Action Trigger
PM10 (24-hour average)	Portable particulate monitor (calibrated)	AM-01 to AM-04 (see Annex 9)	Monthly; additionally any day when visible dust plume crosses site boundary or community complaint received	≤150 µg/m³ (MNS 5286 24-hour standard) Action trigger: >120 µg/m³ → increase watering >150 µg/m³ → suspend dust-generating activity; notify IPIU
PM2.5 (24-hour average)	Portable particulate monitor (calibrated)	AM-02 (downwind of quarry/crusher)	Monthly during quarry operation	≤25 µg/m³ (WHO guideline) Exceedance: review controls; notify IPIU

Equipment exhaust (visual)	Visual observation	All sites	Daily pre-start check of all equipment	Black/excessive smoke: repair or remove equipment from service

10.3 Reporting and Corrective Action

Monthly monitoring results are included in the Monthly Contractor ESHS Report (due by 5th of following month). The Supervision Engineer independently reviews and verifies the data. Any parameter exceeding its action trigger must trigger a written corrective action plan within 3 working days, detailing: cause, corrective measure, responsible party, deadline, and verification method. Corrective actions tracked to closure by the Supervision Engineer.

All monitoring equipment must be calibrated according to manufacturer specifications and national calibration standards. Laboratories conducting chemical analysis must be accredited by the relevant Mongolian authority. Calibration certificates and lab accreditation records are stored in the project E&S file.

Note: Monitoring forms (standardized templates for air, noise, water, soil, waste, and biodiversity recording) are to be developed by the Contractor EHS Officer in Month 1, approved by the Supervision Engineer, and used consistently throughout the project.

Annex 9: Camp Management Plan

This annex provides minimum requirements for worker accommodation, sanitation, water supply, and camp operations. A detailed Camp Management Plan shall be prepared by the Contractor and approved prior to establishment of any camp.

1 Camp Location and Siting

- Camp sited on flat, stable ground; minimum 500 m from nearest ger or livestock pen unless explicitly agreed with the herder household.
- Located outside flood plains, drainage channels, and areas prone to seasonal ponding.
- Camp siting approval required from soum Governor's Office and Aimag Environmental Agency before construction.
- If temporary land outside the ROW is used for the camp: negotiated agreement with herder and/or soum documented; compensation for any grazing restriction paid before occupation.
- Camp layout includes: dormitory blocks; gender-separated sanitation facilities; kitchen/dining; recreation area; first-aid station; fuel/chemical storage (at safe distance); waste management zones; vehicle parking; clearly marked emergency assembly point and evacuation routes.

2 Accommodation and Facilities Standards

Table A11-1. Camp Facility Standards

Facility	Standard / Requirement
Sleeping quarters	Separate blocks for men and women. Lockable doors (lockable from inside). Minimum 3 m² floor area per occupant; minimum 2 m ceiling height. Adequate ventilation and heating (stove or central heating rated for –40°C). Fire exits clearly marked.
Sanitation	Gender-separated toilets and shower facilities. Clearly labelled. 24-hour lighting. Sealed disposal pits or septic tanks (no open defecation); comply with MNS 4943:2015. Closed-lid bins for sanitary products in women's facilities. Maintained daily.
Potable water	Quality tested (WHO or MNS drinking water standard); delivered water or approved borehole. Available at dormitories, kitchen, and all work sites. Sufficient quantity (minimum 50 L/person/day for domestic use).
Kitchen / Dining	Hygienic food preparation area. Refrigeration for perishables. Clean cooking surfaces; insect-proof food storage. Dining area well-ventilated, clean. Menu provides adequate nutrition and energy for manual workers. Kitchen inspected weekly by Camp Manager.
Recreation	Internet access; television; sports and board games (chess, draughts, table tennis) provided to reduce workers seeking external entertainment. Off-site recreational activities must be pre-approved and supervised.
First aid	First aid station with fully stocked kit (list as per OHS Plan Annex 5). Trained first-aider on duty at camp at all times. Vehicle designated for medical evacuation to nearest hospital.
Lighting / Security	Perimeter fencing with controlled access point. 24-hour security. No uncontrolled dark areas; lighting around sanitation, dormitories, and perimeter. Visitor register mandatory.

3 Camp Rules and Conduct

- ZERO TOLERANCE: GBV/SEA, workplace harassment, and bullying. Confirmed breach: immediate dismissal and law enforcement referral.

- ALCOHOL AND DRUGS: Strictly prohibited within camp and at all work sites. Workers arriving impaired will be refused entry and may face dismissal. Random testing permitted.
- WEAPONS AND HUNTING: No firearms, weapons, or hunting equipment permitted. No hunting, trapping, or wildlife disturbance by any project worker.
- CURFEW: Workers must be in the camp by [22:00] unless pre-approved by management. No unauthorized community visits after hours.
- VISITORS: All visitors must register at the gate. No minors permitted in the camp. Women visitors of workers must be specifically authorized.
- COMMUNITY RESPECT: No unauthorized interaction with local community members, particularly women and children. No trespassing on herder property or livestock pens. Community complaints about worker behaviour escalated immediately to CLO and IPIU.
- WASTE: Workers must use designated segregated bins. No littering. Disciplinary action for dumping waste outside designated areas.
- ENVIRONMENTAL OBLIGATIONS: No unauthorized wood collection, water extraction, or disturbance of wildlife.
- CAMP RULES BREACH: Progressive discipline: verbal warning → written warning → suspension → dismissal (depending on severity). GBV, weapons, and hunting are immediate dismissal offences.

4 Waste and Sanitation at Camp

Solid waste segregated at source: recyclables (metal, plastic, paper); organic waste (food scraps); general waste; hazardous waste (chemicals, oily rags — see Annex 16). Weekly collection by licensed contractor to nearest approved facility. No burning of waste.

Camp wastewater: septic tank or sealed holding tank; pumped out by licensed contractor. No discharge to ground surface or drainage channels. Comply with Waste Law and MNS 4943:2015.

Camp closure and site restoration: all structures removed; waste collected and disposed of; ground levelled and reseeded with native grass seed; Supervision Engineer issues closure certificate before departure.

Note: Camp management staff must conduct weekly inspections of all facilities, waste areas, and sanitation. Inspection records submitted to Supervision Engineer monthly.

Annex 10: Disaster Risk Management Plan

This annex outlines requirements for identifying and managing natural and project-related hazards. The Contractor shall prepare a site-specific plan covering emergency preparedness, response procedures, and coordination with local authorities.

1 Risk Identification and Prevention

Table A12-1. Risk Identification, Prevention, and Likelihood

Hazard	Causes	Prevention Measures	Likelihood
Fire	Camp cooking; fuel/bitumen storage; electrical fault; hot works (welding)	Install fire extinguishers and smoke detectors in all buildings; separate fuel storage from ignition sources; hot work permit system; no smoking within 10 m of fuel storage; fire extinguisher within 10 m of every fuel point	Medium
Fuel/Chemical Spill	Fuel tanker, drum leaks; machinery hydraulic failure; bitumen spill	Bunded storage areas for all fuels and chemicals; spill kits at all fuel points; immediate containment on any spill; pre-designated clean-up procedure; monthly inspection of storage integrity	Medium
Flood	Heavy summer rain (July–August); flash runoff in low-lying sections	Site camp outside flood plain; drainage ditches around camp and spoil sites; monitor weather forecasts; pre-positioned sandbags in flood-risk areas; emergency relocation plan for camp if flood warning issued	Low–Medium
Extreme weather (blizzard, storm, extreme cold)	Mongolian steppe winters (–40°C); spring/autumn storms with high winds	Warm shelter and hot drinks on site; maximum 2-hour outdoor shifts at <–25°C; wind speed monitoring; suspend works during storms; equipment secured against high winds	Medium
Earthquake	Moderate seismic hazard (MSK VII) in region	Structures built to seismic design code; heavy items secured to prevent falling; workers briefed on "drop, cover, hold" response; post-earthquake inspection before resuming work	Low (residual)
Traffic accident	High vehicle volumes on public road; construction vehicles and public traffic	TMP fully implemented (Annex 4 and 17); no speeding; first aid kit in every vehicle; emergency vehicle on site standby; coordinate with local ambulance	Medium
Steppe / wildfire	Dry summer conditions; campfire or equipment spark in grassland	No open fires outside designated cooking area; machinery spark guards; fire extinguisher on all vehicles operating in dry steppe; fire response plan with local fire brigade contact	Medium–High (summer)

2 Emergency Response Team and Contacts

The Contractor shall establish an Emergency Response Team (ERT) before mobilization. The ERT includes: Site EHS Officer (coordinator), Site Manager (decision authority), 2 trained first-aiders per shift, security guard, and driver of emergency vehicle.

Table A12-2. Emergency Contacts

Contact	Organization	Phone	Availability

Site EHS Officer (ERT Coordinator)	SDLG Mongolia LLC	+976 [to be filled before mobilization]	24/7
Contractor Project Manager	SDLG Mongolia LLC	+976 [to be filled]	24/7
IPIU E&S Manager	MRTD	+976 7595-3111	Working hours; emergency line after hours
Bayankhutag Soum Hospital / Clinic	Khentii Aimag	+976 [from local directory]	Emergency: 103
Undurkhaan Aimag Hospital	Khentii Aimag	+976 [from local directory]	Emergency: 103
Police	Local soum	102	24/7
Fire Department	Local soum / aimag	101	24/7
Ambulance (national)	—	103	24/7
IPIU Emergency Hotline	MRTD	+976 7595-3111	24/7

Note: Emergency contact list must be posted prominently at the camp entrance, site office, all dormitories, and the first-aid station in Mongolian and Chinese. Emergency drills (fire and spill) must be conducted semi-annually; results documented.

Annex 11: Biodiversity Management Plan

ESS6 Habitat Classification: NATURAL HABITAT. No critical habitats are present within the project footprint. Impacts are expected to be localized and reversible with proper mitigation.

1. PURPOSE OF THE BIODIVERSITY MANAGEMENT PLAN

The purpose of the BMP is:

- To provide a simple and practical guidance to protection of avifauna and fauna in the project area of influence;
- To provide technical methods for bird and wildlife survey monitoring during the construction and operation stages of the project
- To meet the World Bank ESF ESS6 and international best practices for biodiversity conservation

2. IMPORTANT HABITAT AND AVIFAUNA, FAUNA IN THE PROJECT AREA

Bird sensitive sites along the road alignment

The study area is fairly homogenous with no distinct bird habitat observed; therefore, the following sites are considered sensitive sites for this study:

- Areas with surface water points which are small lake, ephemeral ponds and Tuul river valleys. Specific habitats such as water sources attract many different species of birds, especially during migration periods. Species like Swans, Cranes and ducks are more likely to collide while using specific habitats like temporay small water points located in the along the road.
- Distribution of Brandt's vole/rodents and areas with potential supplying food

Sensitive sites could provide habitat for the following species:

- Breeding habitats for raptors which is Upland buzzard and Saker Falcon in mountains
- Stopover lakes/breeding ponds for waterbirds and shore birds, and cranes

Based on the above criteria, ***no critical habitat or sensitive areas have been identified*** for this study near along the road corridor.

During the field survey several small ponds and river and ephemeral ponds identified along the Khentee - Chiobalsan A0502 road corridor. Most small lakes and ephemeral ponds dry up under low rainfall conditions and are of little importance to birds.

3. MAP IMPORTANT BIRD AREAS

Bird species recorded in the road corridor (Khentee-Choibalsan 50 km)

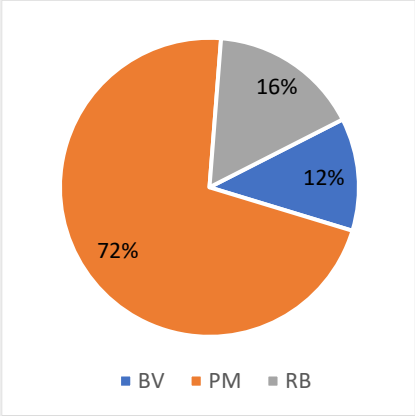
Total species observed in the project area combined with historical data: A total of 11 order, 60 species of birds were observed during the autumn Sep 2025 survey and previous survey conducted 2013-2017 years based on the summer field work survey data of 2013 and the eastern Mongolian waterbird survey result 2017.

Majority of the recoreded species were passage migrants (PM), which is 38 species (85%), followed by resident breeders (RB) 20 species (16%), and breeding visitors (BV) 15 species (12%) and other species.

There are a few classifications in the habitat use of birds in this area brief description: the Passage Migrants (PM- this group of birds include do not breed in the area, but migrating through the area by

stops short time during a seasonal migration), the Resident Breeders (RB- this group of bird species that spend live, breed and do not migrate at their whole year), the Breeding Visitors (BV- this group of birds include that arrive in the spring, breed and spend the summer and return to their wintering ground in fall)

The majority of the species belong to passerine and perching birds (*Passeriformes* - 55%), shore birds (*Charadriiformes*-30%), waterfowl (*Anseriformes*-15%), hawks, eagles, vultures and kites (*Accipitriformes* 8%), falcons (*Falconiformes* - 4%) and (Figure...) etc



4. CONSERVATION STATUS

The majority of the species were previously recorded and during the survey have low conservation priorities according to the Regional and Global Red List status. Species with national status of Least Concern (LC) made up 98% and globally 2% respectively of the total species recorded during the Autumn field survey.

Globally or International Red List

The species with higher conservation status according to the IUCN Red Lists included Near Threatened (NT) species of Ferruginous Duck (*Aythya nyroca*), Cinereous Vulture (*Aegypius monachus*) and Endangered (EN) Saker Falcon (*Falcon cherrug*). (Table…).

Table .... Regionally and Internationally endangered birds

Common name		Latin name	Red List Status		Mongolian legal status	Occurence form	On Vantage Point	Off Vantage Point
			National	IUCN				
1	Swan Goose							
2	Cinereous Vulture	*Aegypius monachus*	LC	NT	No	RB	+	+
3	Saker Falcon	*Falco cherrug*	VU	EN	RARE	RB	+	+
4	Falcated Duck	*Mareca falcata*	NT	NT	RARE	PM		+

Regional or National Red List

The species with higher conservation status according to the National Red Lists include regionally Vulnerable (VU) Ferruginous Duck (*Aythya nyroca*), Saker Falcon (*Falcon cherrug*) and Near threatened (NT) species which is Swan Goose (*Anser cygnoides*), Common Crane (*Grus grus*), White-naped Crane (*Antigone vipio*) (Table ..).

There are several species, Ferruginous Duck (*Aythya nyroca*), White-naped Crane (*Antigone vipio*), Common Crane (*Grus grus*) are listed as ‘Rare’ by the Mongolian Law on Fauna (2012) among all species of birds recorded previous research and historical data.

1 Baseline Summary

The project area lies in the dry steppe ecological zone (central Khalkh steppe). The road corridor vegetation is steppe grassland with no natural forests. A vegetation survey was conducted at seven representative sites (VP-1 to VP-7) in September 2025; 69 vascular plant species belonging to approximately 50 genera in 22 families were recorded.

Average live vegetation cover is 75–80%, with peak cover (~90%) in a sedge swale near Bor Kholoi and lowest (~60%) at a disturbed roadside camp. NDVI (Sentinel-2, August 2025) ranges from 0.21 to 0.37 along the corridor. Dominant communities are: Wormwood–Feather Grass, Leymus–Achnatherum, Mixed Forb–Grass, and Sagebrush–Grass. No endemic or critically endangered plant species were identified along the alignment.

Table: Summary of Plant Species Families Recorded (DEIA Field Survey, September 2025)

Family	# Species	% of Total	Key Species / Notes
Poaceae (Grasses)	12	18%	Dominant forage grasses: *Stipa grandis, Stipa krylovii, Leymus chinensis, Cleistogenes squarrosa*
Asteraceae (Composites)	11	16%	Wormwoods (*Artemisia scoparia, A. frigida*); *Saussurea salsa*
Fabaceae (Legumes)	8	11%	*Astragalus spp., Caragana microphylla, Medicago spp.*
Chenopodiaceae (Goosefoots)	5	7%	Saltworts on saline patches: *Suaeda, Chenopodium spp.*
Rosaceae (Roses)	5	7%	*Potentilla* spp. (cinquefoils)
Liliaceae (Lilies)	4	5%	*Allium spp*. (wild onions)
Cyperaceae (Sedges)	3	4%	*Carex duriuscula*
Brassicaceae (Mustards)	3	4%	Common steppe species
Other families (14 families)	18	28%	Including *Lamiaceae, Urticaceae, Euphorbiaceae*, etc.
TOTAL	**69**	**100%**	22 families, ~50 genera

Source: *Full species list in Section 1.2.4 of the DEIA (Sencou Solutions LLC, 2026).*

Fauna: 60 bird species including Saker Falcon (EN), Steppe Eagle (EN), Lesser Kestrel (VU). Mammals: Pallas's Cat (NT; Mongolian Red Book), Gray Wolf, Corsac Fox. Herpetofauna: common steppe species (Eremias argus, Gloydius halys). No critical habitat for any species within direct project footprint.

Group	Mongolian name	Latin name	Status*	Main habitat	Key road-related risks
Mammals	Чоно	*Canis lupus*	LC	Hills, steppe	Vehicle collisions during nocturnal movement
	Улаан үнэг	*Vulpes vulpes*	LC	Steppe, near settlements	Road collisions in low-crossing areas
	Хэрэм дорго (дааган дорго)	*Urocitellus undulatus*	LC	Grass steppe, non-wetlands	Movement across road embankments; habitat fragmentation
	Туулай	*Lepus tolai*	LC	Undisturbed steppe	Night-time vehicle collisions
	Сүүлт суусар	*Mustela eversmanii*	NT	Grassland with high rodent density	Road mortality
	Хүчтэн бор барс (мануул)	*Otocolobus manul*	NT (IUCN)	Rocky steppe	Road collisions
	Хярс	*Vulpes corsac*	LC	Dry steppe	Night-time vehicle collisions
	Буга	*Cervus elaphus*	LC (MN)	Forest-steppe ecotone, valleys	Road crossing collisions; attraction to lighting
	Гөрөөс	*Capreolus pygargus*	LC	River valleys, shrublands	Road crossing barriers; entanglement in fencing

Birds					
	Нөмрөг тас	*Aegypius monachus*	NT	Hills, cliffs	Collision with power lines; attraction to carcasses
	Хээрийн бүргэд	*Aquila nipalensis*	EN (IUCN)	Steppe, hills	Power line collisions; scavenging-related risks
	Хээрийн тогоруу	*Anthropoides virgo*	LC	Wet steppe, farmland edges	Road crossing collisions, especially during migration with juveniles
	Идлэг шонхор	*Falco cherrug*	EN	Steppe	Power line collision; illegal trapping

**LC – Least Concern; NT – Near Threatened; EN – Endangered (based on IUCN and National Red List classifications).*

Based on the results of the field survey, no mammalian species listed above were directly recorded within the project road alignment.

Wildlife movement within the road corridor of the project area is not characterized by large-scale or regular migratory routes. Instead, it is mainly expressed as short- to medium-distance movements associated with localized microhabitats that provide water, forage, shelter, and suitable breeding conditions.

2. PROTECTED AREAS

The project influence area has been defined within a 50 km radius. Nearest protected area Khar Yamaat Nature Reserve is located 17 km away from road alignment and not significantly influence by road construction and transport conditions.

3. CONSTRUCTION STAGE

Impact assessment

Construction impacts are those which may arise during the construction works, temporary use of land, movement of construction vehicles, presence of the construction camp and workers, and all other construction-related activities will may affect to the bird population. Potential impacts of construction activities include disturbance of birds from construction noise resulting in habitat avoidance and nest abandonment during breeding and migratory seasons. Effect of noise on birds can cause behavioral modifications in certain species of birds such as decreased foraging and mating success and avoidance of noisy areas.

The 2009 IECS report gives an illustrative overview of the effects of disturbance to waterbirds from different activities that may arise because of a construction project. Five levels of disturbance impact are defined for feeding and roosting.

Table 1. Noise impact criteria

Level	Impact	Effect Level	dBA	Types of Noise
1	No impact	Low	Below 60	Regular construction noise
2	Behavioural changes (alarm calls, heads up, change in feeding/roosting activity)	Moderate	Equal to or below 70	Piling noise
3	Movement with zone	Moderate to high	Above 70	Piling noise
4	Movement out of zone but remaining on site	High	Above 85	Piling noise
5	Movement off site	High	Not defined	

Source (Review of Effects of Construction Noise on Birds in SSSI near Springs Road Exploratory Wellsite, 2018)

4. SENSITIVE RECEPTORS

A total of five migratory passage species (Table ...) and four breeding visitor bird species (Table ...) have been identified as species of conservation concern under the IUCN and/or National Red List classifications. However, it should be noted that the inclusion of these species is based on previously conducted studies and historical biodiversity records rather than observations made during the 2025 field survey undertaken within the project area. None of the listed threatened or conservation-priority bird species were recorded within the direct project footprint or immediate area of influence during the 2025 field research. Accordingly, the current field survey did not identify evidence of regular use, breeding activity, or significant congregation of these species within the project corridor.

Table: Migratory birds

WATERBIRDS	PHOTO VIEW	INFORMATION	IUCN RED LIST STATUS	MONGOLIAN STATUS
Common Crane (*Grus grus*)		Food: Feeds on plants seed, roots, insects, aquatic invertebrates, amphibians, fishes and small rodents. Habitat use: Lakes, wetland and river valleys. Location: Buuruljuut Lake Season: May-September	LC	NT
Raptors	**Photo view**	**Information**	**IUCN Red List status**	**Mongolian status**
Saker Falcon (*Falcon cherrug*)		Food: Feeds on small mammals which are Brandt's vole and birds. Density depends on populations of voles and larks. Habitat use: Mountain hill and grassland, arid steppe Season: May-September	EN	VU
Cinereous Vulture (*Aegypius monachus*)		Food: Feeds on wildlife and livestock carcasses. Habitat use: Valleys of mountain and adjacent steppes where medium to large wild and domestic mammals are present in numbers. Season: May-September	NT	LC
Steppe Eagle (*Aquila nipalensis*)		Food: Feeds on rodents, corsac fox, rabbit, voles, birds, livestock and also feeds on carrion and follows herds of gazelles during calving and migrations. Habitat use: Found in grassland steppe, mountain steppe. Season: May-September	EN	LC

5. MITIGATION MEASURES FOR ADVERSE IMPACTS

Construction noise sensitive areas identified along road alingment: Noise impacts associated with construction activities will be temporary and localized to areas adjacent to the construction corridor. However, small lakes and ponds located along the road alignment are ecologically sensitive habitats supporting globally threatened bird species, including breeding, feeding, roosting, and migratory stopover sites. Biodiversity mitigation measures for the Project shall therefore be implemented in accordance with the mitigation hierarchy: avoid, minimize, restore, and offset/compensation, with clearly defined responsibilities, thresholds, and monitoring requirements.

Within the project scope, particular attention will be given to mechanical disturbance of vegetation cover, degradation and wildlife disturbance (including bird and mammal collisions), barriers to livestock and wildlife crossing and movement.

Particular attention shall be given to,

- Mechanical disturbance and loss of vegetation cover,
- Disturbance and collision risks affecting birds and mammals,
- Barriers to wildlife movement,
- Disturbance to breeding and nesting sites of sensitive bird species.

General principles for biodiversity impact mitigation measures:

1. The boundaries of the work site shall be clearly defined in advance, and movement of machinery and vehicles outside designated corridors shall be prohibited.
2. Temporary access roads, material storage areas, camps, warehouses, and parking sites shall be located as far as possible from ecologically sensitive areas.
3. Prior to vegetation clearance, topsoil stripping, and works in gullies, wet depressions, and shrub-dominated areas, a biodiversity survey shall be conducted, and sensitive locations shall be identified and marked.
4. In the event that wildlife, nests, burrows, or signs of breeding are observed, work at the respective location shall be temporarily suspended, and appropriate protective measures shall be implemented under the guidance of an environmental specialist.
5. Additional restrictions shall be applied when working within protected areas and their buffer zones.
6. All employees, drivers, and subcontractors shall be provided with biodiversity protection training and required to acknowledge it by signature.

9.1. Avoidance measures

The primary objective of the Project is to avoid impacts on ecologically sensitive habitats, wildlife movement corridors, and breeding areas wherever feasible. Accordingly, temporary construction camps, material storage areas, fuel storage facilities, access roads, and other auxiliary infrastructure shall be located as far as possible from small lakes, and sensitive habitats, gazelle movement areas.

Prior to commencement of construction works, wildlife biologist shall undertake pre-construction ecological surveys to identify as follows:

- Bird nesting and breeding areas;
- Mammal burrows and denning sites;
- Vegetation communities;
- Wildlife movement corridors and sensitive habitats.

All identified sensitive areas shall be clearly demarcated in the field and incorporated into C-ESMP and construction plan. Vegetation clearance, blasting, excavation, and other high-noise activities shall be prohibited within 500 m of confirmed bird nesting sites during the breeding season (April-July).

In addition, all machinery and vehicles shall remain within approved construction corridors and designated access roads. Off-road driving outside approved areas shall be strictly prohibited.

9.2. Minimization measures

Where impacts cannot be fully avoided, mitigation measures shall be implemented to minimize adverse effects on biodiversity during construction and transport activities. In cases where bird and wildlife species listed under the IUCN Red List categories Near Threatened (NT), Vulnerable (VU), or Endangered (EN) are recorded or observed within the project area, special protection measures shall be applied to these species and their habitats.

All project personnel and subcontractors shall be strictly prohibited from hunting, trapping, chasing, feeding, or harming any wildlife. Mandatory environmental awareness training shall be provided to all workers and drivers prior to commencement of works, with specific emphasis on the sensitivity of NT, VU, and EN species and their habitats.

Traffic-related and operational impacts shall be minimized through speed restrictions in ecologically sensitive areas, installation of wildlife warning signage, and reduction of disturbance in high-activity

zones such as wildlife corridors. Nighttime lighting shall be minimized, and where required, only directional, low-intensity lighting shall be used to reduce light spill into surrounding habitats.

A critical mitigation requirement applies to all works: if any bird nests, eggs, chicks, or mammal burrows are identified during construction, particularly those associated with IUCN-listed NT, VU, or EN species, a temporary exclusion buffer zone of 50-100 meters shall be immediately established depending on species sensitivity. All construction activities within this buffer shall be suspended without delay. Work shall only resume following formal clearance and written approval from a qualified environmental specialist.

Table 2. Biodiversity impact minimization measures for construction and operation phases

Potential impact	Mitigation Measure
Impacts on NT, VU, EN listed species	Implement targeted protection measures and provide environmental awareness training to all workers
Wildlife collisions	Enforce vehicle speed limits and install warning signs in sensitive areas
Bird collision risk	Install bird diverters and use high visibility marking systems
Noise disturbance	Restrict high-noise activities during sensitive periods (e.g., dawn and dusk)
Light disturbance	Use downward-directed, low-intensity lighting to minimize spillover into habitats
Waste-related impacts	Store waste in sealed containers and ensure regular collection and disposal

These measures are designed to ensure that sensitive species and habitats are protected in accordance with international conservation standards while maintaining safe and compliant construction operations.

9.3. Restoration measures

Areas temporarily disturbed during construction shall be progressively rehabilitated following completion of works. Temporary access roads, camps, storage areas, and work sites shall be cleaned and restored to conditions compatible with the surrounding environment.

Topsoil stripped during site preparation shall be separately stockpiled and reused during reinstatement activities. Disturbed wetland and steppe vegetation shall be restored using native plant species appropriate to the local ecological conditions. Exposed soils shall be stabilized through grading, reseeding, and erosion control measures to prevent land degradation.

Restoration performance shall be monitored annually for two years following completion of construction. Additional corrective measures shall be implemented if vegetation recovery remains below 70% of adjacent natural habitat conditions or if significant erosion and invasive species colonization are observed.

9.4. Offset and monitoring measures

To ensure the effectiveness of mitigation measures and to manage any residual impacts on biodiversity, a structured monitoring and adaptive management program shall be implemented throughout both the construction and operational phases of the Project. The primary objective of this program is to verify compliance with environmental safeguards, detect any unforeseen impacts at an early stage, and implement corrective actions where necessary.

Monitoring activities will focus on sensitive ecological receptors and key biodiversity components, including wildlife movement corridors, wetland habitats, bird migration pathways, and rehabilitated areas. Particular attention shall be given to collision-related mortality of birds and mammals, the effectiveness of installed mitigation infrastructure (e.g., bird diverters and warning signage), and the recovery of disturbed habitats.

Monitoring data shall be systematically collected, analyzed, and reported to relevant environmental authorities and financing institutions on an annual basis. Where necessary, more frequent reporting may be required for high-risk ecological zones.

Adaptive management will be applied in response to monitoring results. If predefined ecological thresholds are exceeded, additional mitigation measures shall be implemented without delay. These may include enhanced speed control measures, installation of additional bird diverters, reinforcement of fencing, modification of lighting systems, or the construction of additional wildlife crossing structures.

- Key performance triggers for adaptive management include:
- Repeated wildlife or bird collision hotspots along specific road segments;
- Failure of restored habitats to achieve expected vegetation recovery targets;
- Evidence of significant disturbance to sensitive species or habitats;
- Non-compliance with seasonal or spatial exclusion zones.

Where residual impacts cannot be fully mitigated through on-site measures, biodiversity offset or compensation measures shall be developed in consultation with relevant environmental authorities and in line with national regulations and international best practice. These measures will aim to achieve no net loss, and where possible a net gain, in biodiversity values affected by the Project.

6. MEASURES TO MITIGATE ADVERSE IMPACTS ON FAUNA

Within the project implementation area, species such as the steppe eagle, saker falcon, cinereous vulture, demoiselle crane, steppe polecat, Pallas's cat, and corsac fox may be present and are potentially at risk from transport and construction activities. Therefore, the following mitigation measures shall be implemented during the construction phase:

1. Restriction of activities that directly affect wildlife
    - No hunting
    - Any activities involving the disturbance, chasing, capture, injury, or hunting of wild animals within or near the worksite shall be strictly prohibited.
    - All workers shall receive environmental protection briefings to prevent both intentional and unintentional impacts on wildlife.
2. Waste management
    - Food waste, domestic waste, and animal carcasses shall not be left in open areas: it shall be collected in sealed containers and disposed of regularly.
    - Waste shall be centralized at designated disposal sites to prevent attracting wildlife to the project area.
3. Reduction of transport-related impacts
    - Vehicle speed limits shall be reduced during nighttime operations.
    - Drivers shall be regularly instructed on wildlife collision risks and provided with safety warnings.
    - Warning signs shall be installed along roads in areas with a high likelihood of animal crossings.
4. Protection of wildlife habitats
    - In cases where nests, eggs, offspring, or burrows are identified, a protective buffer zone of 50-100 meters shall be established, and all activities within the zone shall be temporarily suspended.
    - Work shall not resume without the approval of an environmental specialist.
5. Reduction of noise and lighting impacts
    - High noise levels and sudden explosive activities shall be restricted in areas frequently used by rare or predatory birds.
    - Nighttime lighting shall be minimized, and where necessary, directional lighting shall be used to reduce light spill into surrounding habitats.

Overall, based on the ornithological studies and with the application of the above-mentioned mitigation measures, the proposed road alignment is unlikely to pose significant impacts on birds. The use of diverters will reduce the collision risks, however, it is unlikely to eliminate the risks completely. Therefore, future monitoring will be undertaken of bird mortality along the road alignment. (Table 68).

Table 69. Avifauna Monitoring Plan

	Location			Frequency	Responsible agency	

Parameter/ Activity		Means of Monitoring	Monitoring indicator/ threshold limits		Implementation	Supervision	Cost, USD
CONSTRUCTION STAGE							
Bird monitoring field surveys	Potential bird sensitive sites along the road alignment	Birds monitoring survey report	Method/guideline recommended in the BMP	Once during breeding season (June)	Contractor Bird expert, Sub-contractor	IPIU Env specialist	Must Included in C-ESMP budget
Wildlife monitoring field survey	Potential wildlife sensitive sites along the road alignment	Wildlifemonitoring survey report	Method/guideline recommended in the BMP	Once during breeding season (June)	Contractor wildlife expert, Sub-contractor	IPIU Env specialist	Must Included in C-ESMP budget
OPERATION STAGE							
Bird and wildlife monitoring field surveys	Potential wildlife sensitive sites along the road alignment	Birds and wildlifemonitoring survey report	Method/guideline recommended in the BMP	Once during breeding season (June)	Bird and wildlife experts, Sub-contractor	MECC, Local environmental department, The World Bank	Must Included in C-ESMP budget

3 Biodiversity Monitoring

Revegetation: biannual surveys (spring and late summer) at BIO-01 to BIO-03 monitoring stations. Target ≥60% native cover within one growing season of site restoration. Photo documentation from fixed reference points.

Wildlife: log all wildlife sightings, vehicle collisions, and incidents of worker disturbance in the Contractor's daily EHS log. Report any collision with protected species (Saker Falcon, Pallas's Cat, etc.) to IPIU within 24 hours as a Level 2 incident (Table 7-2 of ESMP). Engage a qualified ecologist to oversee implementation and advise on adaptive management if unexpected impacts arise.

Annex 12: Waste Management Plan

This annex defines requirements for waste segregation, handling, transport, and disposal. The Contractor shall develop a detailed Waste Management Plan, including hazardous waste procedures, in compliance with national regulations.

1 Waste Types and Estimated Quantities

Table A15-1. Waste Types, Estimated Quantities, and Disposal Routes

Waste Type	Description	Estimated Quantity	Management / Disposal Route
Inert construction debris	Excavated soil; asphalt millings; concrete rubble; aggregate waste	~500–1,000 t (estimated for 50 km works)	Reuse milled asphalt as road sub-base where suitable; excess to designated spoil sites (Annex 9) or licensed inert landfill
General domestic waste (camp)	Food scraps; packaging; paper; plastics	~5–8 kg/person/day × 220 workers × ~210 days = ~230–350 t	Segregated bins; weekly collection by licensed contractor to nearest approved municipal facility
Recyclable materials	Metal scrap; cardboard; plastic bottles; glass	~10–15% of domestic waste volume	Segregated; sold or handed to licensed recycling collector
Hazardous waste	Used engine oils and lubricants; oily rags; fuel filters; batteries; solvents; bitumen waste; asphalt drum remnants	~15–20 t for full project	Sealed labeled drums on bunded impermeable pads; disposed of only through licensed hazardous waste handlers with full manifest documentation
Medical waste (camp first-aid station)	Sharps; bandages; expired medicines	Minimal (<50 kg)	Handled through licensed medical waste disposal services; sharps in rigid sealed containers
Wastewater (camp)	Greywater and blackwater; wash water from concrete batching	Camp: ~50 L/person/day domestic wastewater	Septic tank or sealed holding tank; pumped out by licensed contractor; comply with MNS 4943:2015

2 Waste Management Hierarchy

The project applies the waste management hierarchy in descending order of preference:

- REDUCE: Accurate material ordering; optimize excavation volumes; purchase supplies in bulk to minimize packaging; plan asphalt work to minimize off-cuts.
- REUSE: Milled asphalt reused as road sub-base where quality allows (must be assessed by Supervision Engineer). Suitable timber and metal from demolition reused for temporary works.
- RECYCLE: Segregate metals, plastics, glass, and cardboard at source; contract licensed recycler for collection. Organic kitchen waste composted at camp where feasible.
- DISPOSAL: Only residual waste to designated licensed landfills or approved spoil sites. Burning of waste is absolutely prohibited.

3 Hazardous Waste Handling (Waste Law Art. 22–23)

All hazardous waste must be: stored separately from general waste; in original labeled containers or clearly labeled sealed drums; on impermeable bunded flooring with secondary containment and spill kits nearby; accessible only to trained personnel; covered to prevent rain ingress.

Transport: only by licensed hazardous waste transporters with hazard-labelled vehicles and trained drivers. Disposal: only at certified hazardous waste treatment/disposal facilities. Manifest document (waste type, quantity, transport date, receiving facility) required for every hazardous waste movement. Manifests filed in the project E&S file; submitted monthly to IPIU.

IMPORTANT: Hazardous waste temporary storage area must be authorized under Waste Law Art. 22–23 before any hazardous material is brought to site. Authorization obtained from Aimag Environmental Agency.

Note: Waste logs (daily record of types, quantities, disposal routes, manifests) must be submitted as part of the Monthly Contractor ESHS Report. Total waste volumes will be reported quarterly to IPIU as part of the environmental monitoring data.

Annex 13: Hazardous Material & Bitumen Storage Plan

This annex outlines requirements for safe storage, handling, and transport of hazardous materials, including bitumen. The Contractor shall prepare a detailed plan addressing spill prevention, containment, and emergency response. Compliance with MNS 4628:2013, ВД 43-101-03, and WBG EHS Guidelines are mandatory.

1 Storage Facility Requirements

Table A16-1. Hazardous Material Storage Facility Standards

Element	Requirement	Notes / Standard Reference
Location	≥100 m from any watercourse, drainage channel, or seasonal depression; ≥50 m from residential areas (herder ger/camp); ≥30 m from any work area ignition source; outside flood plain	Siting approved by IPIU and soum authority before installation
Bunding / secondary containment	Impermeable concrete or HDPE-lined bunded area; capacity ≥110% of largest single container volume; sealed drain valve (normally closed; open only for controlled disposal)	No rainwater accumulation in bund; inspect weekly
Fuel storage tanks	Steel tanks; grounded; clearly labeled (diesel, petrol); overflow alarm and automatic shutoff valve; dipstick gauge; earthing cable to prevent static discharge	MNS 4628:2013 compliance; inspection certificate required
Bitumen storage	Separate heated bitumen tank with temperature controls; overflow alarms; insulated pipework; hard surfaced impermeable area underneath	ВД 43-101-03 requirements; separate from ordinary fuel storage
Drum storage	All drums upright and secured against rolling; labeled with product name and hazard class; incompatible materials (acids/bases; oxidizers/fuels) in separate bays	Maximum drum stack: 3 high; access aisle ≥1 m
Fire protection	Dry powder fire extinguishers within 10 m of every fuel point; sand buckets; no smoking or open flames within 10 m; firebreak (cleared ground) around storage area	Fire extinguisher monthly inspection; serviced annually
Fuel station	If fueling of vehicles on site: hard surfaced impermeable pad; drip trays under all vehicles during fueling; fuel attendant present; spill kit adjacent	Comply with MNS 4628:2013; same requirements as above

2 Handling and Transport

Only trained and designated personnel may handle hazardous materials. Required PPE: chemical-resistant gloves; eye protection (goggles or face shield); chemical-resistant apron; closed-toe footwear. Bitumen handling: additionally requires heat-resistant gloves and face shield. Decanting/transfer must use pumps and hoses — never pour directly from drums or tanks. No fueling of vehicles on soft ground or near drainage.

Transport: licensed vehicles with hazard symbols; drivers trained and certified; emergency equipment (fire extinguisher, absorbent materials) carried. Hazardous materials not transported with foodstuffs. All loads secured to prevent movement or tipping. Transport route pre-approved by TMO to avoid community areas where possible.

3 Spill Prevention and Response

Spill prevention: daily inspection of all containers and pipework for leaks; drip trays under all decanting operations; proper stacking; bund integrity checked weekly.

If a spill occurs: STOP source immediately (turn off valve, uprighting spilled drum); contain spill with absorbent materials and bunds — prevent from reaching any drainage channel or natural surface; notify OSH Officer and Site Manager immediately; initiate spill response procedure; remove contaminated soil and waste as hazardous waste. Spills reaching off-site or any watercourse: Level 2 incident (ESMP Table 7-2); notify IPIU within 24 hours; notify environmental authorities. Spill response kits (absorbent pads, booms, protective equipment, waste bags) to be maintained at all fuel/chemical storage areas.

Note: A single designated hazardous waste temporary storage point shall be established at the camp, separate from the fuel storage area and bitumen storage. The hazardous waste storage area must be separately authorized under Waste Law Art. 22–23.

Annex 14: Resettlement Policy Framework (RPF)

NOTE: please refer to the RPF included in the ESMF document of the MTCLIP project found at www.mrtd.gov.org

Annex 15: Labour Management Procedure (LMP)

NOTE: This LMP template outlines the guidelines, rules, and methods for labour management in line with ESS2. Its aim is to guarantee fair treatment, non-discrimination, and equal opportunities for every worker involved in the project. For further details, please refer to the completed LMP included in the MTCLIP project's ESMF.

1. Introduction

2. Overview of Labor Use on the Project

- **Type of project workers:** (e.g., direct workers, contracted workers, community workers, primary supply workers)
- **Estimated number of workers:** (Insert estimated figure)
- **Key activities involving labor:** (Describe main work activities)

3. Applicable National Laws and ESS2 Requirements

Summarize relevant national labor laws and regulations and highlight how they align with or differ from ESS2 requirements. Identify gaps and how the project will address them to meet ESS2.

4. Terms and Conditions of Employment

- Wages, working hours, overtime, and rest periods
- Benefits and leave entitlements
- Written contracts of employment

5. Age of Employment

Outline measures to prevent the employment of children under the minimum age and procedures for age verification.

6. Non-Discrimination and Equal Opportunity

Describe policies and procedures to promote equal opportunity and fair treatment, including measures to prevent discrimination and harassment.

7. Worker's Organizations

State the right of workers to join and form workers' organizations and to bargain collectively, in accordance with national law and ESS2.

8. Grievance Mechanism for Project Workers

- Describe the process for workers to raise workplace concerns or complaints
- Outline how grievances will be addressed and resolved
- Ensure confidentiality and non-retaliation

9. Occupational Health and Safety (OHS)

- Identify potential OHS risks and mitigation measures
- Provide for training, protective equipment, and incident reporting

- Emergency prevention and preparedness

10. Contracted Workers

Outline procedures to ensure that third-party employers (contractors, subcontractors) comply with ESS2 and the provisions of this LMP.

11. Primary Supply Workers

Describe measures to identify and address risks of child labor, forced labor, and serious safety issues in the primary supply chain.

12. Monitoring and Reporting

- Describe oversight responsibilities and reporting mechanisms
- Set out procedures for regular review and updating of the LMP

13. Implementation Arrangements

- Assign roles and responsibilities for LMP implementation
- Include contact information for responsible staff

14. Annexes

- Sample worker contract
- Grievance reporting form
- OHS incident reporting form

ANNEX 15A: Workers' Code of Conduct

1. Purpose

This Code of Conduct (CoC) sets out the standards of behaviour required of all workers engaged under the Project, including employees of the main Contractor, employees of subcontractors, day labourers, and any other persons engaged in connection with the Project. It is a binding condition of employment. Each worker must receive a copy of this CoC in a language they understand, have its contents explained to them, and sign the acknowledgement at the end before commencing any work.
The CoC supports implementation of ESS2 (Labour and Working Conditions), ESS4 (Community Health and Safety), ESS6 (Biodiversity Conservation), and the World Bank's Good Practice Note on Addressing Sexual Exploitation and Abuse and Sexual Harassment in Investment Projects with Civil Works (2020).

2. Who Must Sign This CoC

The following categories of persons must sign this CoC before commencing work on any Project site or associated facility:
1. The main Contractor's employees — all roles, all levels
2. Subcontractors' employees — all roles, all levels
3. Temporary and casual workers
4. Labour broker employees assigned to the Project
5. Any other persons working under the direction of the Contractor

Subcontractors are responsible for obtaining signed CoC acknowledgements from all of their employees and providing copies to the main Contractor before those employees commence work.

3. Core Obligations — What Every Worker Must Do

1. Treat all people with dignity and respect. All workers, community members, and colleagues must be treated with courtesy, without discrimination on the basis of gender, age, ethnicity, nationality, religion, disability, sexual orientation, or any other characteristic.
2. Follow all applicable laws. Workers must comply with all applicable Mongolian laws and project requirements, including those relating to labour, safety, environmental protection, wildlife, and land use.
3. Comply with all safety requirements. Workers must use all required personal protective equipment (PPE), follow all site safety procedures, attend all mandatory safety inductions and toolbox talks, and report any hazard, near-miss, or incident immediately.
4. Report violations. Workers must report any suspected or known violation of this CoC to the Community Liaison Officer (CLO), the Supervision Engineer, the SEA/SH Focal Point, or through the Worker Grievance Redress Mechanism. Reporting in good faith will not result in retaliation.
5. Participate in mandatory training. Workers must attend all mandatory induction, OHS, SEA/SH awareness, protected area, and Code of Conduct refresher training sessions.

4. Prohibited Behaviours — Sexual Exploitation, Abuse, and Harassment (SEA/SH)

Zero tolerance applies to all of the following. Any violation will result in immediate suspension pending investigation and may result in dismissal and referral to law enforcement.

1. Sexual exploitation: any sexual act, or attempt to obtain a sexual act, by taking advantage of a position of vulnerability, differential power, or trust. This includes exchanging money, employment, goods, or services for sex.
2. Sexual abuse: actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.

3. Sexual harassment: unwelcome sexual advances, requests for sexual favours, or other verbal or physical conduct of a sexual nature in a work or community setting, including verbal comments, gestures, images, and digital communications.
4. Solicitation or purchase of sexual services: prohibited at all times in the project area and surrounding communities.
5. Relationships that exploit power imbalance: any sexual or romantic relationship between a project worker and a project-affected community member that exploits the worker's relative position of power, income, or resource access.
6. Distribution of sexual content: sharing, displaying, or storing sexually explicit material in workplaces, camps, vehicles, or digital communications used in connection with the project is prohibited.
7. Grooming behaviour: any approach, contact, or communication designed to gain the trust of a minor or vulnerable person for the purpose of exploitation.

5. Prohibited Behaviours — Child Safeguarding

Zero tolerance applies to all of the following. Any violation will result in immediate dismissal and referral to law enforcement.

1. Sexual contact with a minor: absolutely prohibited under all circumstances. A minor is any person under 18 years of age.
2. Grooming: any behaviour designed to gain the trust of a minor, their family, or their community for purposes of exploitation.
3. Employment of minors on hazardous tasks: no person under 18 years may be employed or directed to perform any hazardous construction activity. No person under 15 years may be employed in any capacity under the Project.
4. Photography of minors: workers may not photograph or share images of children without the explicit written consent of the child's parent or guardian.

6. Prohibited Behaviours — Community Interaction

1. Entry into community households: workers may not enter a herder's ger, private residence, or community building without an explicit invitation from the occupant. Entry is not permitted on the basis of work-related reasons without the occupant's prior consent.
2. Unauthorized commercial transactions: workers may not purchase goods, services, or food directly from community households except at designated soum market facilities during authorized rest periods. This restriction does not apply to formal businesses (shops, petrol stations, restaurants).
3. Alcohol and substances in community settings: consumption of alcohol or controlled substances in or adjacent to community settlements, during working hours, or during transit through community areas is prohibited.
4. Weapons: workers may not carry weapons of any kind (firearms, knives, traps) in community areas.
5. Intimidation, threats, and violence: no worker may threaten, intimidate, or commit violence against any community member, colleague, or other person in connection with the project.
6. Privacy violations: photography or recording of community members, households, or community spaces without explicit individual consent is prohibited.

7. Prohibited Behaviours — Natural Resources and Protected Areas

Violations in or near protected areas may constitute criminal offences under Mongolian law in addition to project-level consequences.

1. Hunting and poaching: workers may not hunt, trap, snare, poison, or capture any wild animal at any time during the project. This prohibition applies to all species including birds, reptiles, and small mammals, not only protected species.
2. Unauthorized entry into protected

3. Collection of natural resources: unauthorized collection of firewood, plants, soil, water, gravel, or any other natural resource from areas outside approved quarries, borrow sites, and haul routes is prohibited.
4. Fishing: workers may not fish in any stream, river, or water body within the project area of influence without a valid personal fishing licence. Fishing using poison, explosives, or electric shock is prohibited under all circumstances.
5. Littering and dumping in natural areas: waste disposal in streams, natural water bodies, pastureland, or protected areas is prohibited

8. Prohibited Behaviours — Occupational Conduct

1. Alcohol and drugs on site: workers may not consume, be under the influence of, or bring alcohol or controlled substances onto any construction site, camp area, quarry, plant area, or project vehicle.
2. Ignoring safety requirements: failure to use required PPE, disregarding safety instructions, or bypassing safety controls is a violation of this CoC and Mongolian OHS law.
3. Tampering with safety equipment: workers may not disable, remove, or tamper with safety devices, emergency exits, fire extinguishers, speed governors, or any other safety equipment.
4. Document falsification: falsifying inspection records, attendance sheets, incident reports, training records, or any other project document is prohibited.
5. Bribery and corruption: workers may not offer, accept, or solicit bribes, gifts, or improper payments in connection with the project.

9. Reporting Violations and Whistleblower Protection

Workers who observe or suspect a violation of this CoC are expected to report it. The following reporting channels are available:

Channel	How to Access	Who Manages It	Confidential?
Community Liaison Officer (CLO)	Personal approach; phone call	CLO	Yes — report may be verbal
Worker GRM drop-box	Drop-box at camp and work fronts; written or drawn note	Supervision Engineer; IPIU	Yes — anonymous accepted
Worker GRM hotline	Dedicated phone number posted at camp and all work fronts	Supervision Engineer; IPIU	Yes — anonymous accepted
SEA/SH confidential channel	Dedicated hotline number; drop-box managed by female Focal Point	SEA/SH Focal Point	Yes — no cross-reporting to general GRM
Supervision Engineer	Approach directly or via written note	Supervision Engineer	Yes
IPIU Social Specialist	Contact via CLO or directly	IPIU	Yes

Non-retaliation: Any worker who reports a CoC violation in good faith is protected against retaliation. Retaliation against a whistleblower is itself a serious CoC violation and may result in immediate dismissal of the retaliating party. Anonymous reports are accepted through the Worker GRM drop-box and hotline.

10. Consequences of Violations

Violations of this CoC will be addressed according to their severity:

Violation Category	Examples	Consequence

Minor	Failure to wear required PPE (first offence); minor littering; failure to attend a scheduled training (with no prior record)	Verbal warning; corrective action; documented in personal record; mandatory repeat training
Moderate	Repeated PPE non-compliance; unauthorized absence from site; disrespectful behaviour toward a community member (not involving physical contact)	Written warning; temporary suspension (1–3 days without pay); mandatory additional training; documented in personal record
Serious	Harassment of a community member; unauthorized entry into a protected area; unauthorized hunting or resource collection; alcohol on site; document falsification	Written warning + suspension pending investigation; may result in dismissal; mandatory reporting to IPIU
Gross misconduct	Any form of SEA/SH; sexual contact with a minor; violence against any person; bribery; confirmed poaching of endangered species; forced labour or document confiscation; second serious violation	Immediate dismissal without notice or severance; referral to Mongolian law enforcement; IPIU notified within 24 hours; case documented in permanent project record

The Contractor may apply a more stringent consequence at any severity level where the circumstances of the violation warrant it. The Supervisor Engineer and IPIU shall be notified in writing within 24 hours of any dismissal or referral to law enforcement arising from a CoC violation.

11. Worker Rights

This CoC establishes obligations for workers. It does not diminish the rights to which workers are entitled under Mongolian law and the Project's Labour Management Procedure (LMP). Workers have the right to:

1. written employment contracts in a language they understand before commencing work;
2. wages paid on time, in the agreed amount, to their personal bank account;
3. maximum working hours and voluntary overtime with premium pay as required by Mongolian Labour Law;
4. a safe workplace, adequate PPE, and access to first aid;
5. submit a grievance without fear of retaliation;
6. request a copy of this CoC at any time;
7. communicate through an interpreter when required;
8. freedom from forced labour, debt bondage, or document confiscation; and
9. freedom from any form of harassment, intimidation, or abuse by supervisors or colleagues.

12. Roles and Responsibilities

1. Contractor

• Distribute this CoC to all workers and subcontractor workers before their first day on site in all relevant working languages (Mongolian; Chinese).

• Explain CoC contents verbally for workers with limited literacy; use an interpreter where needed; note interpreter's name in the signature record.

• Obtain a signed acknowledgement from every worker before first day; maintain a signed CoC register and provide copies to the Supervision Engineer before the Commencement Notice.

• Conduct quarterly CoC refresher sessions for the duration of construction; record attendance.

• Investigate alleged violations, apply appropriate consequences, and report to the Supervision Engineer and IPIU within 24 hours of any serious or gross misconduct.

• Ensure subcontractors comply with all CoC requirements and provide signed acknowledgements to the main Contractor.

2. Supervision Engineer

• Verify that signed CoC acknowledgements are on file for 100% of workers before issuing the Commencement Notice for any section.
• Conduct unannounced spot checks to verify CoC compliance in the field.
• Receive incident reports of alleged violations and non-conformity notices for non-compliance.
• Report CoC violations of a serious or gross nature to the IPIU within 24 hours.

3. IPIU
• Maintain oversight of CoC implementation; review Contractor compliance reports quarterly.
• Ensure that the SEA/SH Focal Point and the Worker GRM are operational before any worker commences work.
• Report confirmed CoC violations involving SEA/SH or criminal conduct to the World Bank within 48 hours in accordance with the SEA/SH Prevention and Response Plan (Annex 6-6).

13. Worker Acknowledgement — Signature Form

I, the undersigned, confirm that:

- ✓ I have received a copy of this Code of Conduct in a language I understand;
- ✓ I have had the contents explained to me (verbally, and with interpretation where applicable);
- ✓ I understand my obligations and the consequences of any violation;
- ✓ I agree to comply with this Code of Conduct for the duration of my engagement under this Project; and
- ✓ I understand that my signature does not waive any of my rights as a worker under Mongolian law or the Project's Labour Management Procedure.

Item	Worker (to fill or dictate)
Full name (printed)	
Worker ID / Contract number	
Position / Role	
Section(s) assigned to	
Employer (Contractor or Subcontractor name)	
Language in which CoC was explained	
Date of signature	
Signature / Thumb impression	_____

Worker signature block	**Witness / Interpreter**
Signature: _____	Signature: _____
Name (printed): _____	Name (printed): _____
Date: _____	Role / Language: _____

Note: A completed and signed copy of this form must be retained in the Contractor's personnel file for this worker and a copy provided to the worker. A signed copy register must be submitted to the Supervision Engineer before the Commencement Notice is issued for any section. Signed forms must be made available for inspection by the Supervision Engineer, IPIU, or World Bank at any time.

Annex 16: Borrow pit and quarry restoration plan

1. Purpose

The purpose of this Plan is to ensure that all borrow pits, quarries, associated temporary access roads, stockpile areas, workshop areas, fuel points, and other ancillary areas used under the Project are safely closed, technically and biologically rehabilitated, and restored in an environmentally sound and stable manner following use, so that the affected land is returned to a condition equivalent to, or better than, its pre-project condition.

2. Scope

This Plan applies to all of the following:

1. New borrow areas used under the Project,
2. Stone, gravel, and soil quarry sites,
3. Temporary material stockpile areas,
4. Temporary access roads to borrow pits and quarries,
5. Workshops, fuel storage areas, loading areas, and associated ancillary sites,
6. Legacy disturbed areas included under the Project for closure and rehabilitation, where applicable.

3. Objectives

The objectives of this Plan are to:

- confine disturbance strictly to approved footprints,
- protect and reuse topsoil,
- stabilize slopes, edges, excavated faces, and spoil formations,
- prevent ponding, erosion, sedimentation, dust generation, and unsafe depressions,
- ensure safety for people, livestock, and vehicles,
- restore vegetation cover, and
- implement post-closure monitoring, verification, and formal handover procedures.

4. Key Principles

Rehabilitation shall be implemented in accordance with the following principles:

1. **Avoidance and minimization** – excavation, extraction, and vehicle movement outside approved boundaries shall be prohibited.
2. **Progressive rehabilitation** – where feasible, disturbed areas shall be rehabilitated progressively during operations.
3. **Topsoil conservation** – topsoil shall be stripped, stored separately, and reused during restoration.
4. **Safety-first closure** – unstable faces, steep edges, deep pits, and other physical hazards shall be removed or made safe.
5. **Stable final landform** – the final landform shall be physically stable and provided with appropriate drainage.
6. **Ecological suitability** – rehabilitation methods shall be suited to local soils, vegetation, and climatic conditions.

5. Roles and Responsibilities

6. Contractor

The Contractor shall:

- prepare site-specific rehabilitation plans as part of the C-ESMP,
- implement topsoil stripping, storage, land regrading, and technical and biological rehabilitation measures,
- maintain closure registers, photo logs, work records, and inspection records, and
- not consider any borrow pit or quarry closed unless verified by the Engineer.

7. Supervision Engineer

The Engineer shall:

- review and approve rehabilitation plans,
- inspect operations, progressive rehabilitation, and final closure,
- verify the adequacy and quality of technical and biological rehabilitation, and
- issue Non-Conformity Notices and require corrective action where deficiencies are identified.

8. IPIU

The IPIU shall:

- oversee overall implementation of rehabilitation obligations,
- coordinate verification at section close-out and final handover, and
- participate in acceptance inspections with local authorities where required.

9. Mandatory Operational Requirements

1. No extraction or excavation shall take place outside approved boundaries.
2. Topsoil shall be stripped separately, typically to a depth of 20–30 cm, and stored in designated stockpiles.
3. Topsoil stockpiles shall be protected against wind and water erosion.
4. Haul routes shall be restricted to approved alignments, and parallel track formation shall be prohibited.
5. Fueling, servicing, and maintenance of machinery shall occur only in designated hardstanding areas.
6. Temporary drainage, sediment control, and runoff management measures shall be maintained throughout operations.
7. Hazardous edges and unstable areas shall be marked and protected by temporary fencing or warning signs.

10. Technical Rehabilitation

Technical rehabilitation shall include:

- removal of waste materials, scrap metal, fuel residues, containers, concrete residues, asphalt residues, and other debris,
- reshaping excavated areas in accordance with the approved final landform,
- stabilizing steep slopes and unsafe quarry faces,
- filling unsafe depressions where necessary or reshaping them into stable and safe forms,
- restoring natural or designed drainage pathways,
- dismantling and grading temporary roads, stockpile areas, workshops, and fuel storage areas, and
- respreading stored topsoil over rehabilitated surfaces.

11. Biological Rehabilitation

Biological rehabilitation shall include:

- respreading topsoil,
- seeding with suitable local perennial grasses and other approved native species,
- applying mulch, erosion mats, or other protective measures where necessary,
- conducting aftercare until vegetation is established, and
- reseeding areas where vegetation establishment is unsuccessful.

12. Acceptance Criteria

A borrow pit or quarry shall be considered rehabilitated only when:

1. no exposed waste remains on site,
2. unsafe edges, pits, and unstable slopes have been eliminated or made safe,
3. drainage has been restored or stabilized,
4. topsoil has been respread,
5. seeding has been completed or vegetation establishment is evident,
6. temporary roads, workshops, and fuel points have been fully removed and restored, and
7. the site has passed inspection by the Engineer.

13. Monitoring

- Weekly: compliance inspection of active borrow pits and quarries
- Monthly: progressive rehabilitation review
- At closure: final closure inspection
- After major rain, wind, or erosion event: erosion and drainage inspection
- During vegetation establishment: rehabilitation performance inspection

14. Records and Evidence

The following records shall be maintained:

- site-specific closure maps,
- before/after photo logs,
- topsoil stripping and reuse records,
- rehabilitation work logs,
- inspection checklists,
- Engineer's closure certificate, and
- handover records.

15. Handover

Upon completion of rehabilitation, the Contractor shall submit a final closure request to the Engineer. The Engineer shall conduct an inspection and, where satisfactory, organize a joint acceptance inspection with the IPIU and, where required, local authorities. Formal site closure and handover shall be completed only after acceptance is confirmed.