

Environmental Monitoring Report

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Mongolia: Western Regional Road Corridor Investment Program – Tranche 2

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WESTERN REGIONAL ROAD CORRIDOR INVESTMENT PROGRAM.

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ENVIRONMENTAL MONITORING REPORT: FIRST HALF OF YEAR 2021



EMR 2021 NO.1

WRRICIP

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CONTENTS

1	INTRODUCTION	3
1.1	ABOUT THE REPORT	3
1.2	LOCATION OF THE PROJECT	3
1.3	CONSTRUCTION PROGRESS UPDATE	5
2	ENVIRONMENTAL RESPONSIBILITIES	6
2.1	ADB REQUIREMENTS	6
2.2	DOMESTIC ENVIRONMENTAL REQUIREMENTS	6
2.3	ROLES AND REPONSIBILITIES	7
3	IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN	8
3.1	OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN	8
3.2	ENVIRONMENTAL PERSONNEL	8
3.3	AIR QUALITY MANAGEMENT	9
3.4	NOISE AND VIBRATION CONTROL	10
3.5	MANAGEMENT OF WATER RESOURCES	10
3.6	MANAGEMENT OF SOIL RESOURCES AND INERT MATERIALS	12
3.7	WILDLIFE PROTECTION	14
3.8	CAMP MANAGEMENT	15
3.9	WASTE MANAGEMENT	16
3.10	HEALTH AND SAFETY	17
3.11	GRIEVANCE REDRESS MECHANISM	18
4	ENVIRONMENTAL MONITORING	20
4.1	MONITORING PARAMETERS	20
4.2	MONITORING ACTIVITIES	20
4.3	MONITORING RESULTS	21
4.3.1	Water quality monitoring	21
4.3.2	Air quality monitoring	21
4.3.3	Noise monitoring	23
5	CONCLUSION	23
5.1	SUMMARY OF ENVIRONMENTAL MANAGEMENT	23
5.2	FURTHER RECOMMENDATIONS:	23
APPENDICES		
APPENDIX 1. EMP COMPLIANCE CHECKLIST		24



ABBREVIATIONS

ADB	: Asian Development Bank
COMO	: Community Outreach Monitoring Officer
CW	: Construction Work
CSC	: Construction Supervision Consultant
dB	: Decibel
DEIA	: Detailed Environmental Impact Assessment
EA	: Executing Agency
EIA	: Environmental Impact Assessment
EMoP	: Environmental Monitoring Plan
EMP	: Environmental Management Plan
EMR	: Environmental Monitoring Report
EMS	: Environment Monitoring Specialist
H&S	: Health & Safety
GASI	: General Agency for Specialized Inspection
GoM	: Government of Mongolia
GRM	: Grievance Redress Mechanism
MRTD	: Ministry of Road and Transportation Development
MET	: Ministry of Environment and Tourism
PIU	: Project Implementation Unit
TSP	: Total suspended particulate
TSS	: Total Suspended Solids
WRRICIP	: Western Regional Road Corridor Investment Project



1 INTRODUCTION

1.1 ABOUT THE REPORT

This report summarizes environmental activities performed at the active components of Tranche 2 phase of the Western Regional Road Corridor Investment Program in the first half of the year 2021. Environmental protection activities, implementation of mitigation measures and routine environmental monitoring performed by the contractors under supervision of the PIU have been discussed in detail in this report.

This Environmental Monitoring Report comprises of following sections:

- ❖ Section 1 of the report provides report structure, project location and the construction progress achieved in the reported period.
- ❖ Section 2 describes environmental responsibilities of the project within the framework of domestic regulations and ADB requirements.
- ❖ Section 3 summarizes mitigation measures implemented by the contractor in each aspect of safeguard, including air quality, water, soil resources, wildlife and health and safety. Rehabilitation results of borrow sites are described in the section.
- ❖ Section 4 provides results of the environmental monitoring activities carried out in the reported period.
- ❖ Section 5 provides conclusion and recommendations for the next reporting period.

This report is prepared by the PIU Environmental Monitoring Consultant E. Khasar with inputs from the Contractors.

1.2 LOCATION OF THE PROJECT

The road is part of the Asian Highway network, Route 4 (AH4, 6,024 km) is a designated Central Asia Regional Economic Cooperation (CAREC) Corridor 4a, which links Russia (Novosibirsk) with Pakistan (Karachi). It traverses about 752 km through territory of Mongolia.

Tranche 2 section of the western regional road links the Khovd city to the Ulaanbaishint border crossing between Mongolia and Russia. Construction of the Tranche 2 road is completed in most of its sections. The remaining components of Tranche 2 is shown in the table below.

The construction lots CW1, CW2 and CW3 in the below table are together regarded as Ulgyi bypass road.

Table 1. The remaining components of the Tranche 2 section of the western regional road

No.	Construction lot	Length, km	Location	Civil works contractor
1	CW1-4	25.8	Tsagaannuur village – Ulaanbaishint border crossing	Longjiang Road and Bridge LLC
2	CW1 & CW3	18.82	Western side of Ulgyi city	Hotgor Zam LLC
3	CW2	201 meters long bridge	Over Khovd river	HKB International LLC

The 18.82 km long Ulgyi bypass road traverses through territories of bags No.3, 10, 12 and 13 of the Ulgyi soum. The designed road locates at the territory of Ulgyi, Sagsai and Bugat soums in Bayan-Ulgii aimag. The starting point of the proposed road alignment starts from Khovd-Ulgyi paved road which continues about 3.0 km toward the south of Ulgyi city center. The road alignment ends at the Ulgyi-Ulaanbaishint paved road locates at section of south side near Balchin mountain from Ulgyi center which passes through west side of Ulgyi city.

Figure 1. Google image of the 18.82 km long Ulgyi bypass road


CW1-4 lot is a 25.8 km long and traverses through Nogoonuur soum territory and passes through a number of environmentally sensitive areas such as Bayan lake and Siilkhem Mountain Range SPA.

Figure 2. Google image of the 25.8 km long Tsagaannuur-Ulaanbaishint road



1.3 CONSTRUCTION PROGRESS UPDATE

Lot CW1-4: The contractor for the lot is Longjin Road Co., Ltd while Inter Continental Technocrats (ICT) LLC has been working as the engineering supervision consultant. The construction works at the package CW1-4 commenced from June 2021 and expected to be completed by March 2022. The contractor has mobilized 157 construction workers which includes 97 Chinese and 60 Mongolian workers and 81 number of equipment and machineries. As of 15 July 2021, the construction work progress was at 16%.

Lots CW1 and CW3: The contractor for the lot is Hotgor Zam Co., Ltd while Inter Continental Technocrats (ICT) LLC has been working as the engineering supervision consultant. Construction works at the lots CW1 and CW3 started in May 2020 and expected to be completed by 30 October 2021. The 2021 construction season started on 20 March 2021. The contractor has mobilized 207 construction workers and 53 number of equipment and machineries. As of 30 June 2021, the construction work progress was at 80% for the lot CW1 and 45% for the lot CW3, respectively.

Lot CW2: The contractor for the lot is HKB International Co., Ltd while Inter Continental Technocrats (ICT) LLC has been working as the engineering supervision consultant. Construction works at the lot CW2 started in March 2021 and expected to be completed by 30 October 2021. The contractor has mobilized 54 construction workers and 13 number of equipment and machineries. As of 30 June 2021, the construction work progress was at 8.11%.



2 ENVIRONMENTAL RESPONSIBILITIES

2.1 ADB REQUIREMENTS

The project is classified under category A. The ADB EIA for Tranche-2 was prepared in August 2010 and amended in 2013 and 2020. It provided description of physical environment for the project area, assessment of impacts, environmental management plan and grievance redress mechanism for construction period. The EIA concluded that Tranche 2 will not have any significant, long term or irreversible impacts on the physical, biological or socio-economic environment. Implementation of the environmental management, mitigation, and monitoring programs specified in the EIA were in compliance with ADB and government environmental guidelines and procedures.

The ADB's Safeguard Policy Statement (SPS), 2009 is applicable to the project which seeks to avoid, minimize or mitigate the adverse environmental and social impacts of projects including protecting the rights of those people likely to be affected or marginalized by the development process.

2.2 DOMESTIC ENVIRONMENTAL REQUIREMENTS

The main policy document is a set of environmental laws that were amended in May, 2012 including the Law on EIA. The purpose of the Law on Environmental Impact Assessment is to ensure environmental protection, the prevention of ecological imbalance, the regulation of natural resource use, the assessment of environmental impacts of projects and procedures for decision-making regarding the implementation of projects. The terms of the law apply to all new projects, as well as rehabilitation and expansion of existing industrial, service or construction activities and projects that use natural resources.

Lot CW1-4. DEIA for the lot was approved by MET in November 2016. It comprises of Environmental Protection Action Plan and Environmental Monitoring Plan. Required timeframe and frequency, responsible parties, budgets and corresponding domestic standards are specified in the Tranche-2 EMP. The key personnel of the contractors, including on-site environmental staffs, safety staffs, construction engineers and unit supervisors have attended EMP implementation trainings that were held at beginning of each construction season.

Ulgvi bypass (CW1, CW2 and CW3). Environmental Department of the Khovd province has issued a General Impact Assessment for the access roads on 26 Feb 2019, which concludes that no DEIA is needed and the project may proceed with specific conditions (EMP is needed). As required by the General Impact Assessment, Environmental Management Plans prepared by the PIU was reviewed and approved by the Environmental Department of Khovd province in March 2021.



2.3 ROLES AND RESPONSIBILITIES

The project EMP defines the following key roles and responsibilities including:

- (i) **Executing Agency.** Ministry of Roads and Transportation Development (MRTD) is the Executing Agency for the Project and is ultimately responsible for ensuring the implementation of the EMP;
- (ii) **Implementation Agency.** The Project Implementation Unit (PIU) resides within the Department of Roads (DOR) which is the Implementation Agency. The PIU engaged an Environmental Monitoring Specialist (PIU-EMS) to monitor implementation of the EMP;
- (iii) **PIU-EMS.** The PIU-EMS facilitates the implementation of the EMP and the grievance redress mechanism (GRM), have regular contact with the PIU and Supervising Engineer and prepare bi-annual environmental monitoring reports;
- (iv) **Construction Supervising Consultant (CSC).** The CSC supervises the site environmental management system of the contractors, provide corrective instructions, and assist the contractors to implement the EMP;
- (v) **Contractor.** Environmental responsibilities for the Contractors and their construction activities are stated in the Contract signed between the ADB, MRT and the contractors. On one hand, all the construction activities shall meet ADB's rules and standards regarding environmental protection, and on the other hand, it shall obey the environmental laws and regulations of Mongolia. The contractors for the lots CW1-4, CW1. CW2 and CW3 are responsible for implementation of the measures specified in the EMP, thus they have employed permanent on-site environmental and safety staffs and contracted with local professional laboratories to carry out the tasks.



3 IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN

3.1 OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN

The updated EMP of the project defines mitigation and monitoring measures and describes the institutions and mechanisms to monitor and ensure compliance. Specific measures are developed in relation to the design, construction and operation of each project component and the impacts identified in relation to physical, biological, cultural and socio-economic resources.

Key tasks for the contractors during implementation of the Environmental Management Plan are to:

1. Ensure that environmental requirements specified in the contract documents are adequately performed.
2. Carry out construction and supportive activities in compliance with all relevant Government laws, rules and regulations including environmental laws in force.
3. Manage construction works and operations to prevent or at least minimize adverse impacts on the environment.
4. Implement environmental protection and mitigation measures specified in the EMP.
5. Employ necessary personnel, local consultant to carry out environmental protection measures and monitoring activities.
6. Allocate a budget necessary for carrying out environmental monitoring activities.
7. Provide safeguard rules to protect workers from any accident and hazard associated with the construction operations and ensure protection of their health
8. Ensure protection of the health and welfare of road side communities by minimizing nuisance including pollution.
9. Observe the laws and other environmental regulations of the country and liaise with the Engineer and statutory authorities for the smooth and efficient operation to complete the Project.

3.2 ENVIRONMENTAL PERSONNEL

The PIU employs E. Khasar as the environmental monitoring consultant for the project who is responsible for facilitating implementation of the EMP, training contractors' environmental staffs and handling environmental issues related with the project on daily basis. The environmental monitoring consultant has visited the Project area during 23-24 June. The field trip was aimed to:

- i). carry out to environmental monitoring works
- ii). Active construction points, construction camps and nearby soum centers to undertake observations, measurements
- iii) organize interviews and meetings with environmental staff of the contractors and soum administration to find out existing problems
- iv) check out restoration of borrow areas.

Each contractor employ on-site HSE staff who are responsible for implementation of EMP measures and occupational safety measures on daily basis. Contact information of the on-site environmental staffs employed by the contractors is provided in below table.

**Table 2. On-site HSE staffs employed by the contractors**

Construction packages	Name of on-site environmental staff	Phone number
Lot CW1-4	Mr. Ozat	99415161
Lot CW1	Ms. Lyala	99425545
Lot CW2	Mr. Ganibat	99058625
Lot CW3	Mr. Aiyim	99329490

3.3 AIR QUALITY MANAGEMENT

As specified in the EMP, following mitigation measures have been implemented by both contractors to minimize dust emission:

1. Asphalt plants and concrete batching plants is located at least 1000 m downwind from the nearest dwellings in order to reduce the impact of fumes on humans and to be fitted with necessary equipment such as bag house filters to reduce fugitive dust emissions.
2. The location of the stockpile is on downwind of sensitive receptors.
3. Dust monitoring is conducted at the monitoring spots on monthly basis to ensure dust level is within the maximum allowed level.
4. Earth material transporting vehicles started used blankets to prevent dust spread
5. Water is sprayed on construction sites and material handling routes where fugitive dust is generated. The Ulgyi bypass construction teams employ a total of 3 water spray trucks while the lot CW1-4 construction team employs 2 water spray trucks, respectively, that are used to sprinkle water along the temporary roads, embankment construction sites, borrow points and quarry sites to reduce dust generation.

Figure 3. Water spray trucks working on the temporary road to reduce dust emission

Construction lot CW1



Construction lot CW1-4



3.4 NOISE AND VIBRATION CONTROL

As specified in the EMP, following mitigation measures have been implemented by both contractors to minimize noise and vibration:

As specified in the EMP, following measures are implemented to minimize noise impacts:

- ❖ Source control: Maintain all exhaust systems in good working order; undertake regular equipment maintenance;
- ❖ Locate sites for concrete-mixing and similar activities at least 500 m away from sensitive areas;
- ❖ Operate between 8am-8pm only and reach an agreement with nearby residents regarding the timing of heavy machinery work, to avoid any unnecessary disturbances;
- ❖ Provide advance warning to the community on timing of noisy activities.
- ❖ Noise monitoring regularly to ensure noise levels at construction sites are within the allowed limit

3.5 MANAGEMENT OF WATER RESOURCES

CW1-4:

The road alignment crosses Buraat river and passes nearby Bayan lake. The contractor will construct a new bridge on the river. Protection of the surface water resources from pollution is a critical task. Therefore, water protection zones are established around the Bayan lake and Buraat river within which activities that might cause pollution to surface water resources, such as vehicle washing, use of borrow and quarry, waste collection, vehicles maintenance and fuel recharging, are prohibited.

The contractor uses transported water which is purchased from an existing well at the

Tsagaannuur village for both drinking and construction purposes.

In order to ensure surface water quality is not affected by construction, the contractor is sub-contracted with local professional laboratory to conduct sampling and testing of water quality for Buraat river and Bayan lake.

Figure 4. Temporary road passes adjacent to the Bayan lake, CW1-4



Ulgui Bypass road:

The main surface water body in the project area is Khovd river which is crossed by the the road west of Ulgui city. A new bridge with length of 201 meters will be constructed over the crossing point. Water protection zones are established around Khovd river within which activities that might cause pollution to surface water resources, such as vehicle washing, use of borrow and quarry, waste collection, vehicles maintenance and fuel recharging, are prohibited.

The contractor uses transported water which is purchased from an existing well in the Ulgui for both drinking and construction purposes.

In order to ensure surface water quality is not affected by construction, the contractor is sub-contracted with local professional laboratory to conduct sampling and testing of water quality for Khovd river.

As a result of proper implementation of the water protection measures, no any complaints regarding water pollution is received from the local communities and monthly water quality monitoring results showed the water quality is not affected by the construction works (detailed results of water quality monitoring is provided in Section 4).

Figure 5. Khovd river, Ulgyi bypass



3.6 MANAGEMENT OF SOIL RESOURCES AND INERT MATERIALS

Lot CW1-4:

The construction team has been using 6 borrow pits and 1 quarry site at 7 locations for construction purposes. Relevant permissions were obtained from the Nogoonnuur soum administration at the start of construction.

Figure 6. Operation of borrow site, CW1-4



Ulgui bypass road:

Hotgor Zam LLC, the contractor for lots CW1 and CW3, uses 5 borrow pits and 1 quarry site at 6 locations. Relevant permissions were obtained from the Bayan-Ulgii provincial administration at the start of construction in 2020.

Figure 7. Operation of a borrow site, CW3

***Soil protection measures***

As specified in the EMP, both construction teams have implemented following measures in order to minimize potential impacts related to land use and soil erosion:

- ❖ All truck drivers were instructed to strictly follow the pre-determined road routes in order to avoid creating multiple dirt tracks
- ❖ Access road to camp sites, borrow points were planned to minimize length of the access road
- ❖ Borrow pits and quarry sites were chosen in at least 3-5km distance from herder settlements
- ❖ During earthworks, topsoil is stockpiled separately and will be used for future rehabilitation while remaining inert materials are used for embankment construction

Figure 8. Handling of inert material, construction lot CW2



3.7 WILDLIFE PROTECTION

Ulgui bypass road:

Given its approximate location to the major settlement area Ulgui city, no wildlife species exist in the vicinity of the Ulgui bypass corridor.

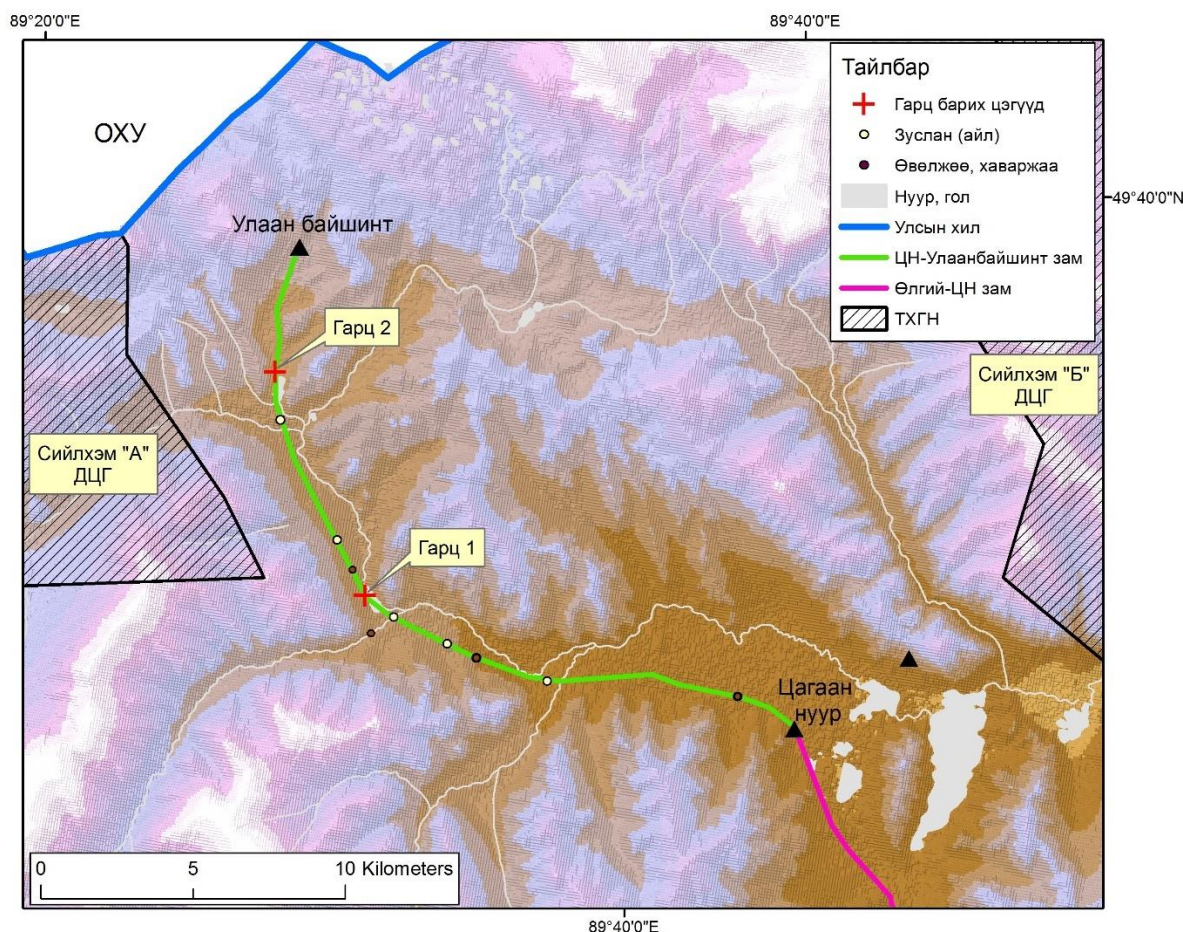
CW1-4:

A Wildlife Movement Survey conducted by the Wildlife Conservation Society (WCS) specialist Buuveibaatar in 2015 determined key migration routes for saiga, argali sheep, ibex and snow leopard determined along the AH-4 corridor. As proposed by the survey, wildlife crossings will be created at 2 locations in the Siilkhem Mountain range SPA towards the end of the road. Siilkhem Mountain Range SPA is known as a major habitat for argali sheep and ibex. Depending on the movement routes for the wildlife species that intersect with the road alignment, level crossings for

wildlife is planned at STA.13 and STA.21.

In accordance with domestic standard, level crossing for wildlife comprises of ramps on both sides of road embankment, warning signs and 3 speed bumps with 150-meters distance from each other.

Figure 9. The proposed site for wildlife crossings



3.8 CAMP MANAGEMENT

Each contractor has 1 camp site for its construction workforce. Location of the workers' camp sites are shown in the table below.

Table 3. Location of construction camp sites

No.	Construction lots	Location of workers campsite	Number of construction workers	Administrative division
1	CW1-4, 25.8km road to Ulaanbaishint border	STA.11+300	157 people	Nogoonnuur soum
2	CW 1, southern section of Ulgyi bypass road	STA.0+010	207 people	Ulgyi soum
3	CW 3, northern section of Ulgyi bypass road	STA.10+500		Ulgyi soum

4	CW 2 Bridge construction over Khovd river	The bridge construction site	54 people	Ulgii soum
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Waste collection points, sanitation system, rest rooms, canteen, ventilator, dorms and office rooms are available at all camp sites. Necessary permits were obtained from local government for all the camp sites.

Figure 10. Construction camp sites

Construction lot CW1-4



Bridge construction camp, lot CW2



3.9 WASTE MANAGEMENT

Solid waste management

The following solid waste management procedures are implemented by the contractors:

- ❖ Domestic and waste construction materials are disposed to a designated waste collection points at each camp site.
- ❖ Garbage boxes are placed at each office and dormitory rooms and the construction staff are not allowed to throw any waste at or nearby the construction areas
- ❖ The contractors have signed "Agreement on waste handling" with the Nogoonnuur and Ulgii soum administrations.
- ❖ Construction waste is delivered to the central landfill site of the relevant soum center.

Figure 11. Temporary waste collection points at the construction camp sites

Construction lot CW2



Construction lot CW1-4



3.10 HEALTH AND SAFETY

On-site HSE staffs employed by each construction team (as mentioned in the Table 1 in Section 3.2 of this report) are responsible ensuring the contractors internal Health and Safety procedures and relevant national standards are obeyed at construction sites.

On-site EHS staffs carry out following works on daily basis:

- ❖ Checking up workplace arrangements and identify risks
- ❖ Checking up the health and safety principles, determine actions to be taken to improve the work place safety
- ❖ Dress inspection before the construction workers go out to workplace
- ❖ Checking the abnormal status and risk factors for the heavy machineries and equipment and determine preventive measures
- ❖ Clear signs placed at construction sites in view of the public, warning people of potential dangers such as moving vehicles, hazardous materials and excavation and raising awareness on safety issues.
- ❖ If any risks are found, inform it to field supervisors and recommend appropriate mitigation measures

Figure 12. Construction workers wearing PPE before starting daily work, lot CW2



Figure 13. Construction workers wearing PPE before starting daily work, lot CW1



Following measures were implemented by the contractors' management toward prevention of COVID-19:

- Limit the number of persons in routine meetings – a chair spacing between workers.
- Use COVID-19 Self-Assessment tool questions to verify that workers are not feeling sick and so they are aware of what the symptoms are so they can self-monitor.
- Disinfect used pens, tables, chairs, etc., after each orientation.
- Following points were included/discussed frequently:
 - social distancing of 2 meters
 - hygiene and location of hand washing and hand sanitization stations.
 - what the company is doing at the site to promote a safe workplace and remind them that their health is important to us.
 - where the safety posters are located.
 - the importance of reporting to their supervisor if they are feeling unwell and leaving the project.

Following hygiene practices were implemented among the construction workforce:

- Clean hands with soap and water before eat and at the end of the workday, during the work



shift whenever possible, and when you get home from work.

- Do not shake hands; avoid physical contact.
- Do not share food, drinks, cigarettes, personal hand tools.
- Do not touch one's face, eyes, nose, mouth with unwashed hands (i.e., smoking, drinking water, eating, etc.)
- Follow good respiratory etiquette by covering one's mouth and nose with a disposable tissue or the crease of your elbow when you sneeze or cough.
- Regularly clean and disinfect commonly touched surfaces and tools

There were no COVID-19 cases occurred amongst the construction workforce during the reported period.

3.11 GRIEVANCE REDRESS MECHANISM

There are 3 main GRM entry points: local administration, EA and the contractors. The contractors' environmental staffs and Chinese-Mongolian translators are designated to take responsibility to receive and record complaints from local residents and pass it to managers and EA. There were no any complaints regarding environmental impact during the reporting period.

4 ENVIRONMENTAL MONITORING

4.1 MONITORING PARAMETERS

In accordance with the project EMP requirements, ADB standards and Mongolian regulations on environmental protection, the Contractor has chosen following parameters for environmental monitoring measurements:

- ❖ Dust concentration level PM10 (mg/m^3)
- ❖ Nitrogen dioxide (NO_2) and Sulphur dioxide (SO_2)
- ❖ Noise emission level (decibel)
- ❖ Water chemical contents: turbidity, mineralization, hardness and contents of other chemicals
- ❖ Hygiene inspection: inspection on waste and sewage removal, physical condition of camp sites, hygiene condition of kitchen and canteen, drinking water standards.

4.2 MONITORING ACTIVITIES

The contractors have hired Meteorology Institute of Bayan-Ulgii province to carry out the monthly environmental parameter measurement and laboratory test analysis for water and air quality. The contracted local laboratory sent a team of experts to carry out field monitoring works. The environmental monitoring team has conducted dust and noise level measurements using devices Dust Trak and VoltCraft, taken soil and water samples at the selected monitoring spots.

Figure 14. Noise and dust measurement devices used for monitoring



Source: PIU Environmental Consultant



4.3 MONITORING RESULTS

4.3.1 Water quality monitoring

Water quality monitoring was aimed to ensure surface water quality in the vicinity of the construction area are not affected. During the active construction month of June 2021, water samples were taken from the surface water bodies in the project areas: Bayan Lake at the construction lot CW1-4 and Khovd river at the Ulgyi bypass road. Laboratory test analysis is made at the laboratory of Bayan-Ulgii province Meteorology Institute and the results are compared against the Drinking Water Standard of Mongolia MNS 0900: 2018 in table below.

Table 4. Water Chemical analysis, June, 2021

Parameters	Bayan Lake CW1-4	Water supply well in Tsagaannuur village, CW1-4	Khovd river, Ulgyi bypass	Measuring unit	National Water Quality Standard MNS 0900:2018
pH	7.38	6.95	7.42	mg/l	6.5-8.5
Hardness:	7.0	2.6	0.72	mg/l	7
Cl ⁻	280.0	42.54	55.3	mg/l	350
SO ₄	40.0	15.0	7.36	mg/l	500
Ca	105.8	43.2	10.02	mg/l	100
NH ₄	0.83	0.73	0.81	mg/l	1.5
NO ₂	0.22	0.0	0.16	mg/l	1
NO ₃	2.4	12.3	2.24	mg/l	50
Fe	0.1	0.02	0.02	mg/l	0.3

Looking at the lab test results provided in above tables, level of turbidity, hardness and contents of other chemicals in water samples taken from the nearby rivers were all within the standard level, thus it can be concluded that the surface water quality in the project area are not affected.

4.3.2 Air quality monitoring

The monitoring team specialists have measured dust concentration levels with average value of one-hour duration nearby construction camp sites, borrow pits, active construction sites.

The maximum allowed level of dust concentration is 0.1 mg/m³ according Mongolian Standard on Ambient Air Quality. All measured parameters of air quality were within the standard level.

Table 5. Air quality measurement results, June 2021

Monitoring spot	NO ₂ , mg/m ³		SO ₂ , mg/m ³		Dust, PM ₁₀ , mg/m ³	
	Measured level	Allowed level	Measured level	Allowed level	Measured level	Allowed level
Main camp site CW1-4	0.008	0.200	0.003	0.45	0.052	0.100
Temporary road nearby Bayan lake, CW1-4	0.006		0.002		0.048	
Camp site, Ulgyi bypass	0.015		0.008		0.073	
Bridge construction site at Khovd river	0.007		0.002		0.071	

Figure 15. Dust measurement at construction site, CW1-4




4.3.3 Noise monitoring

The monitoring spots chosen for noise measurement considering construction activities and sensitive receptors and the points where construction staff are working such as camp sites and quarry sites. Maximum allowed level of noise during day time is 55 decibels according to Mongolian Standard on Noise. At all monitoring spots, the noise levels were within the allowed level.

Table 6. Measured daytime noise levels, June 2021

Monitoring Spot No.	Name of the monitoring spot	Measured noise level /dB/	Standard level dB
		August 2019	
1	Main camp site CW1-4	38.2	55
2	Temporary road nearby Bayan lake, CW1-4	27.9	
3	Camp site, Ulgyi bypass	51.7	
4	Bridge construction site at Khovd river	50.8	

5 CONCLUSION

5.1 SUMMARY OF ENVIRONMENTAL MANAGEMENT

The contractors implemented mitigation measures specified in the EMP properly during the reported period. Each construction package employed on-site environmental and safety staffs and hired local professional laboratories to carry out field monitoring activities (sampling, measurements and lab test). There was no any major environmental issue and no any environment related complaints received during the reported period.

Overall, the Project has demonstrated a satisfactory level of environmental due diligence in the first half of 2021 construction season.

5.2 FURTHER RECOMMENDATIONS:

- ❖ The lot CW1-4 contractor will create wildlife crossing at 2 locations in Siilkhem Mountain Range SPA, thus will need to ensure road design is properly updated to include the crossings.
- ❖ The contractor needs to continue implementation of the EMP and quarterly environmental monitoring for the rest of construction period in 2021.



APPENDIX 1. EMP COMPLIANCE CHECKLIST

No	Place	Concern issue	Recommended measures	Implementation status
1	Road Construction site	Use of Safety tools (goggles, gloves, dress, helmet, shoes, etc. by the Construction workers/ engineers.	Availability of safety tools at the camp and at the construction site.	Implemented
		Temporary Sign and Signals for construction works	Important signals like Line marker post, STA. post, Aerial markers, Intermediate aerial markers, Warning signs and Identification signs etc. should be made available along the road.	Implemented
2.	Construction camp	Water supply	<ul style="list-style-type: none"> • Arrangement for elevated service reservoir / tank. • Availability of taps in bathroom, toilet, kitchen and dining space • Ensure drinking water quality through tests as per Mongolian standards 	Implemented
		Sanitation	<ul style="list-style-type: none"> • Provision of water closet and flushing system in toilet and bathroom • Effluent transportation arrangement into septic tank for treatment and disposal through soak pits. 	Implemented Implemented
		Kitchen and dining environment.	Provision of adequate ventilation, fixing of hand basins and cleanliness	Implemented



No	Place	Concern issue	Recommended measures	Implementation status
		Drainage at the camp	Provision of storm water drainage to nearby drain/stream outside the camp area.	Implemented
			Avoid stagnation of water inside the camp.	Implemented
		Solid waste	Placement of waste collection bins placed at every building and every campsite shall have designated waste collection point. Collected solid waste is disposed to the central landfill site of the relevant soum regularly.	Implemented
		First aid facilities,	First aid tool kits available at camp site	Implemented
		Workshop	<ul style="list-style-type: none"> Structure modification with raised impervious platform and shed/roof. Collection of drips on tray and storing in drum for re-use or safe disposal Soaking arrangement with dry sands in case of accidental spillage and disposal in deep pit away from water body 	Implemented. N/a N/a
		Stock pile	Maintenance of stockpile height at a maximum of 4 meter	Implemented
3.	Quarry/Borrow pits.	<ul style="list-style-type: none"> Material collection Compliance with Environmental Law, 2012. 	<ul style="list-style-type: none"> Preparation of a plan for required and available quantity supported by survey data and profiling of the river at the material collection point Collect permission from local authority. 	Implemented Implemented



No	Place	Concern issue	Recommended measures	Implementation status
4.	Unplanned Hill cutting,	Unplanned hill cutting and disposal of spoil earth and debris materials will lead to erosion of the hill and will deposit the eroded soil on the road site.	<ul style="list-style-type: none">• Maintain necessary slope to the hill cutting area and staged disposal of spoil earth from hill cutting with adequate• compaction and erosion protection measures to prevent all kinds of soil movement on the constructed road, valleys, agricultural lands, and river/stream courses.	Implemented
5.	Crusher Plant at site.	Dust pollution at the site resulting different diseases of the residence of the camp	<ul style="list-style-type: none">• Regular spray water at the dust area and the entire internal road, inside the camps.• Arrangement for water sprinkler throughout the crushing time, wearing of masks, goggles, etc., and regular health checking of the crusher equipment operators/workers at the site.	Implemented Implemented
6.	Camp, Offices	Firefighting equipment should be placed at the camp and office	Immediate placement of firefighting equipment so that it can visible and in case of any emergency, it can be utilized.	Implemented
7.	Transport and equipment movement at the camp.	Excessive dust polluting surrounding environment of the camp and sound pollution due to transport movement in the camp.	Equipment meeting environmental standard in respect of sound should be used in the camp and construction area.	Implemented
8.	Storage and use of chemicals, fuel and lubricant at the camp and at the offices.	Soil pollution for spilled out from the vehicles, bituminous drum etc. at the camp and at the offices.	Strict chemical and solid waste handling and storage practices should be followed.	Implemented



No	Place	Concern issue	Recommended measures	Implementation status
9.	Construction workers related Impact at the camp and at the construction sites.	<ul style="list-style-type: none">• Unhygienic and littered environment around the camp,• Exposure to hazards, transmission of diseases among workers, water-borne diseases to workers.	The local workers should be oriented to hygienic disposal of solid waste, hazardous materials, and proper handling methods. And also should be provided regular health inspections and vaccination among the workers.	Implemented
10.	Traffic Signal	Without traffic signal accident may be happened	Signal Man should be provided at the construction site.	Implemented
11.	Accommodation in the camp	According to size of the room accommodation of the workers should be provided.	Accommodation of the workers should have enough space and should be cleaned every day.	Implemented
12.	Environmental officer	In absence of environmental officer contractors activities will may not going on as environment friendly.	Immediate placement of environmental officer.	Implemented