Initial Environmental Examination

August 2017

Mongolia: Sustaining Access to and Quality of Education during Economic Difficulties Project

Prepared by the Ministry of Education, Culture, Science and Sports for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 1 August 2017)

Currency unit	–	togrog (MNT)
MNT1.00	=	$0.000409
$1.00	=	MNT2,443.50

ABBREVIATIONS

ACM	–	asbestos containing materials
ADB	–	Asian Development Bank
ASI	–	agency for specialized inspection
DPR	–	detailed project report
EIA	–	environmental impact assessment
EMoP	–	environmental monitoring plan
EMP	–	environmental management plan
GASI	–	general agency for specialized inspection
GoM	–	Government of Mongolia
GRM	–	grievance redress mechanism
IEE	–	initial environmental examination
MET	–	Ministry of Environment and Tourism
MECSS	–	Ministry of Education, Culture, Science and Sports
MoF	–	Ministry of Finance
UMED	–	Ulaanbaatar Metropolitan Education Department
VOC	–	volatile organic compound

WEIGHTS AND MEASURES

1 cusec	–	measure of flow rate (28.317 liters per second)
1 ha (hectare)	–	10,000 square meter
1 km (kilometer)	–	1,000 meter
1 kV	–	kilovolt (1,000 volts)
1 kW	–	kilowatt (1,000 watts)
1 kWh	–	1 kilowatt-hour = 1000 watts

NOTE

In this report, "$" refers to United States dollars.

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CURRENCY EQUIVALENTS

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GLOSSARY OF TERMS USED

General Terms

Aimag	:	Province
Soum	:	Smallest administrative unit of Aimag
Bagh	:	Smallest administrative unit of Soum
District	:	Smallest administrative unit of UB city
Khoroo	:	Smallest administrative unit of District
Ger area	:	Area in the cities which residents use traditional dwellings like as herders tent (sometimes called as “yurt”)
Khashaa Plot	:	Fencing around Ger owned by households
Construction Blue Print	:	Technical and detailed drawing for construction of building

For the Purposes of this IEE

Sub-project	:	Individual Schools/kindergartens selected and included in the project for expansion and new construction

EXECUTIVE SUMMARY

1. The growth of Mongolia's economy has rapidly decelerated since 2011, due to declining foreign direct investment and falling commodity prices. The slowed growth has caused serious economic difficulties, including large revenue shortfalls and cuts in government investment, which are expected to continue beyond 2017, and further require the government to reduce public spending. Education expenditures are brought down to a minimum, only enough to keep existing schools and kindergartens operating. Under the circumstances, maintaining the current level of education services is a challenge, not to mention, expanding education services and sustaining quality improvements in the education system.

2. ADB is preparing a project to help the Government of Mongolia sustain access to and quality of pre-primary, primary, junior and senior secondary education during economic difficulties. The project will have five outputs: (i) gap in enrollment capacity of schools and kindergartens narrowed; (ii) unfinished curriculum reform and associated assessment system reforms completed; (iii) teaching and learning materials that accompany the new curriculum provided; (iv) teachers and managers' knowledge and skills upgraded for the new curriculum and assessments; and (v) systems for planning and managing education services strengthened. The executing agency of the project will be the Ministry of Education, Culture, Science and Sports (MECSS), and that the implementing agencies will be MECSS and Ulaanbaatar Metropolitan Education Department (UMED). The project will be implemented from September 2017 to June 2021.

Components and Summary Environmental Issues

3. The IEE report comprises of baseline data on the existing condition of the physical and biological environment, the anticipated environmental impacts, proposed mitigation measures, monitoring frameworks, grievance procedure and public consultations. The consultant team undertook field surveys to sub-project sites to assess the physical and biological environment – factors such as site ecology, management of construction, sanitation, use of equipment and machineries, environmental health and safety, occupational hazard etc. The environment management and monitoring plan have been dealt with in detail in the respective sections of the report. A generic environment management plan has been attached separately. However, a summary list of key impacts on environment parameters are briefly enumerated in **Table 1** below:

Table 1: Summary Impacts on key environment parameters

#	Environmental Parameter	Type of Impact	Reason	Proposed Mitigation Measures
1	Air Quality	Low	Insignificant air emission from the construction activity except during stacking/storage of soil, construction material at site	Sprinkling of water, proper handling of excavated soil, proper construction material storage
2	Water Quality	Low	The project will require small quantity of water for construction. No hazardous effluent is envisaged to be discharged during construction	The required water will be sourced from tankers by the construction company. Domestic effluent shall be discharged in holding tanks which will be cleaned regularly and waste thrown at urban body's solid waste management site.
3	Soil Quality	Low	Land is available-has open/vacant areas within the school premises for	Construction company to ensure proper housekeeping, sanitation and cleanliness at work site.

#	Environmental Parameter	Type of Impact	Reason	Proposed Mitigation Measures
			expansion projects and government land for new schools.	
4	Noise Quality	Low	The construction activity may lead to noise pollution during concreting etc. for the residents of the area. Small noise related installations within shell structure may continue beyond school holidays	The schools shall be closed for summer vacation during shell construction of the new building to minimize disruption. Noise monitoring will be done at regular intervals. If any night construction activity that is noise intensive is undertaken, neighbourhood must be consulted to determine suitable timings.
5	Hazardous Substance – eg. Asbestos, Volatile Organic Compounds (VOCs)	Minimal	The expansion projects will not impact the main buildings of the schools	Sections of buildings, if they contain any hazardous material will not be selected for improvement actions.
6	Terrestrial Ecology	Low	No ecologically sensitive place (protected area/reserved forest/Important flora and fauna species) within 5 km radius from each sub-project site	Tree replantation/transplantation to be carried out inside school by construction company if any trees are cut.

4. **Table 2** below gives key features, including environmental issues (if any) for the sub-projects:

Table 2: Key features and environmental issues for each Sub-project

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
A	**Kindergartens**			
A 1	Kindergartens under expansion			
1	Kindergarten No. 66	UB, Bayngol District, 2nd khoroo.	Existing 3 floor building is established in 1972, connected to central heating, electricity, water and sewage system. "Ikh Zasag" college is using the 3rd floor of this building as a dormitory with entrance through backside. The expansion will be a separate two floor building in the south side of building within the premises.	Dund Gol river is 1 km, Tuul river is 5 km and the Bogd Khan SPA is 10 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1-5 km vicinity of the School.
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	Existing 2 floor building is established in 1985, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so it was losing much heat but after improvements in wall insulation, the heat loss has decreased. KG has enough land space in its premises. The	Dund Gol river is 0.2 km, but there are several buildings and road between river and kindergarten. Tuul river is 3 km and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the School.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			expansion will be a separate two floor new building in the back side within premises.	
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	Existing 2 floor building is established in 1973, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The expansion will be a separate two floor new building in the back side within premises.	Dund Gol river is 1.8 km, Tuul river is 5 km and the Bogd Khan SPA is 10 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1.8 km vicinity of the School.
4	Kindergarten No.88	UB, Bayngol District, 18th khoroo.	Existing 2 floor building is established in 1982, connected to central heating, electricity, water and sewage system. The expansion will be a separate two floor new building in the back side within premises.	Tuul river is 7 km and the Bogd Khan SPA is 12 km away from site. No other wildlife sanctuary or ecological sensitive area within the 7 km vicinity of the School.
5	Kindergarten No.22	UB, Baynzurkh District, 1st khoroo.	Existing 2 floor building is established in 1970, connected to central heating, electricity, water and sewage system. The kindergarten has 3400 m^2 land area and expansion will be a separate two floor new building in the back side within premises.	Selbe river is 0.7 km, Tuul river is 12 km and the Bogd Khan SPA is 18 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1 km vicinity of the kindergarten.
6	Kindergarten No.8	UB, Baynzurkh District, (16th khoroo.	Kindergarten has 2 floor old building constructed in 1957. The building connected to central heating, sewage and water supply system. The current building washrooms have poor sanitation condition, walls and ceiling of classrooms are breaking down, and water and wastewater plumbing systems have deteriorated. Access road is available. The expansion will be separate new building in the back yard of kindergarten.	The land is in the middle of city and surrounded by apartment buildings, services and far from any protected area, National Park.
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	Existing 2 floor building is established in 1980, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The kindergarten has 7420 m^2 land area and expansion will be a separate two floor new building in the back side within premises.	Uliastai river is 8 km, Tuul river is 10 km and the Bogd Khan SPA is 13 km away from site. No other wildlife sanctuary or ecological sensitive area within the 8 km vicinity of the kindergarten. There are 115 trees and bushes in the kindergarten's premises.
8	Kindergarten No.108	UB, Chingeltei District, 6th	Existing 2 floor building is established in 1978, connected	Selbe river is 1.6 km and the Bogd Khan SPA is 8 km away from site.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
		khoroo.	to central heating, electricity, water and sewage system. The expansion will be separate 2 floor building with capacity of 150 children in the back side within premises.	No other wildlife sanctuary or ecological sensitive area within the 1.6 km vicinity of the kindergarten.
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	Existing 2 floor building is established in 1972, connected to central heating, electricity, water and sewage system. The expansion will be a separate two floor new building in the back side within premises.	Dund Gol river is 0.6 km, Tuul river is 3 km and the Bogd Khan SPA is 8 km away from site. No other wildlife sanctuary or ecological sensitive area within the 0.6 km vicinity of the kindergarten.
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	Existing 2 floor building is established in 1976, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The expansion will be a new two floor separate building in the back side within premises.	Dund Gol river is 1 km, Tuul river is 3 km and the Bogd Khan SPA is 8 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1 km vicinity of the kindergarten .
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	Existing 1 floor building is established in 1980, not connected to central heating and sewage system and has individual heat only boiler, holding tank, but connected to district public water supply system and central electricity. Kindergarten is using 3 additional Gers for classrooms. The expansion will be a separate building in its premises.	Tuul river is 0.5 km and the Bogd Khan SPA is 3 km away from site. No other wildlife sanctuary or ecological sensitive area within the 3 km vicinity of the kindergarten.
12	Kindergarten No.84	UB, Songinokhairkhan District, 6th khoroo.	Existing 2 floor building is established in 1948, connected to central heating, electricity, water and sewage system. The plumbing systems of current building is too old. Kindergarten has 10172 m^2 area of land. The expansion will be separate building in its premises.	Tuul river is 15 km, Dund Gol and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten .
13	Kindergarten No.104	UB, Songinokhairkhan District, 12th khoroo.	Existing 1 floor building is established in 1986, connected to central heating, electricity, water and sewage system. Kindergarten has 10172 m^2 area of land. The expansion will be separate building in its premises.	Tuul river is 8 km and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten .
14	Kindergarten No.107	UB, Songinokhairkhan District, 14th khoroo.	Existing 1 floor building is established in 1986, connected to central heating, electricity, water and sewage system. Kindergarten has 8861 m^2 area of land. The expansion will be	Tuul river is 8 km, Dund gol river is 5 km and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			separate building in its premises.	
15	Kindergarten No.110	UB, Songinokhairkhan District, 15th khoroo.	Existing 1 floor building is established in 1987, connected to central heating, electricity, water and sewage system. Kindergarten has 10026 m^2 area of land. The expansion will be 2 floor separate new building in its premises.	Tuul river is 8 km, Dund Gol river is 5 km and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of it.
16	Kindergarten No.158	UB, Songinokhairkhan District, 24th khoroo.	Kindergarten has 2 floor building which established in 2011, has not connected to central heating, electricity, water and sewage system and has individual heat only boiler, holding tank and water well. Additionally, the kindergarten has Ger branch in its owned 1100 m^2 area of land. The expansion will be a two floor separate new building in current Ger branch operating area inside the premises. This area has no heating, water supply and sewage infrastructure.	Tuul river is 13 km, Baruun Salaa river is 0.2 km and the Bogd Khan SPA is 16.3 km away from site. No other wildlife sanctuary or ecological sensitive area within the 10 km vicinity of the kindergarten.
17	Kindergarten No.176	UB, Songinokhairkhan District, 31st khoroo.	Kindergarten has 1 floor building which established in 2005, has no connection to central heating, water and sewage system and has individual heat only boiler, holding tank and water well. Kindergarten has 1388 m^2 area of land. The expansion will be additional floor on the top of building. The heat	Tuul river is 13 km, Dund Gol river is 2 km and the Bogd Khan SPA is 17 km away from site. No other wildlife sanctuary or ecological sensitive area within the 2 km vicinity of the kindergarten.
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	Existing 2 floor building is established in 1973, connected to central heating, electricity, water and sewage system. The expansion will be a two floor separate new building in the back side of the premises.	Dund Gol river is 1.5 km, Tuul river is 3 km and the Bogd Khan SPA is 8 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1.5 km vicinity of the School.
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	Kindergarten has 2 floor old building constructed in 1972. The building connected to central heating, electricity, sewage and water supply system. Access road is available. The expansion will be a separate new building in the back side of kindergarten premises.	The land is in the middle of city and surrounded by apartment buildings and 7 km far from Bogd Khan Strictly Protected Area.
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	Kindergarten's existing building is 2 floor and constructed in 1963. Kindergarten has 3950m^2 premises and out of it 810m^2 area is under the building. The existing building connected to central heating, electricity, water	Selbe river is 2 km and the Bogd Khan SPA is 15 km away from site. No other wildlife sanctuary or ecological sensitive area within the 2 km vicinity of the kindergarten.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			supply and sewage system. The expansion will be a two floor separate new building in the own premises in the left side of old building.	
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	Existing 2 floor building is established in 1962, not connected to central heating and sewage system, has individual heat only boiler, holding tank for waste water, but connected to water supply system. The current premise is 2400 m^2 area and also, the kindergarten has possession rights for 4500 m^2 area of new land in different area which is 500 m from existing premises. The expansion will be a two floor separate new building in the newly possessed land area. This new land area is very close to main pipelines of central heating, water supply and sewage system and will therefore be connected to all utilities.	Kherlen river is 2 km and the Dornod Mongol SPA is 180 km away from site. No other wildlife sanctuary or ecological sensitive area within the 2 km vicinity of the kindergarten.
A 2	Kindergartens under new construction			
1	New kindergarten **KG deleted from list after due diligence**	UB, Bayngol District, 17th khoroo.	The land allocated for this site is located in between 3 kindergartens (2 of them newly constructed) overlapping with their area and underground utility infrastructure.	The land is in the middle of city and surrounded by apartment buildings, three kindergartens and 12 km far from Bogd Khan Strictly Protected Area.
2	New kindergarten **KG deleted from list after due diligence**	UB, Baynzurkh District, 17th khoroo	District Government owned 3000 m^2 land is available. The land is surrounded by others owners' fences. There are no any central heating, water supply and sewage system available in the area.	Has no any trees and infrastructure and far from Protected Area. A neighbouring household's premise has to be removed to make access road to this land (a possible resettlement).
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	The land allocated for this site currently used by branch of kindergarten # 168 using 4 Gers as classrooms. Has individual electric heating, no holding tank for waste water and uses dug pit and transported drinking water.	The land is surrounded by Ger Khashaa plots. Environmentally it is not a significant area.
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	Government owned land near the Khoroo Government office. The land can be connected to central heating, electricity, water supply and sewage system. Access road is available.	The land is in the middle of city and surrounded by apartment buildings and 9 km away from Bogd Khan SPA
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	The site is proposed to be built in the premise of existing kindergarten # 165 with 2474m^2 area of land. The kindergarten	Turgen river is 2 km and Bogd Khan SPA is 1.5 km away from site. No other wildlife sanctuary or ecological sensitive area within

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			has 2 floor building, established in 2008, and has individual heat only boiler, deep water well and holding tank for waste water. In 2011, the kindergarten installed new electric heating facility. A two floor new building will be constructed within the premises.	the 2 km vicinity of the kindergarten.
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	District Government owned land has 3,000m^2 area situated near the "Family and Children Development Center", and has boundary with Khashaa plots in left and back side. Access road is available. The area is 400m away from District Heating Plant, water supply and sewage system.	Tuul river is 10 km and Bogd Khan SPA is 14 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten.
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	District Government owned land with 1,000m^2 area situated in Ger area surrounded by Khashaa plots and small shops. Access road is available. The area is 400m away from District Heating Plant, water supply and sewage system.	Tuul river is 12 km and Bogd Khan SPA is 15 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten.
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	District Government owned land 6,000m^2 area situated near the "Sport Complex", close with Khashaa plots in left side. Access road is available. The area is at least 500m away from District Heating Plant, water supply and sewage system.	Tuul river is 9 km and Bogd Khan SPA is 16 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the kindergarten.
9	New kindergarten **KG deleted from list after due diligence**	UB, Songino-khairkhan District, 5th khoroo.	The area for new kindergarten is nearby new building of 25th Khoroo Government office. The kindergarten will be built on the remaining old building of Khoroo government demolishing it. The existing Khoroo government building is far from central heating, water supply and sewage system.	The land is in the middle of Ger area and surrounded by khashaa plots 1 km from Baruun Salaa river, 15 km away from Bogd Khan SPA.
10	New kindergarten	UB, Songino-khairkhan District, 25th khoroo.	District Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby main road and surrounded by Ger khashaa plots and small services. Access road is available. There are no central heating, water supply and sewage system available in the area.	The land is in the middle of Ger area and surrounded by small buildings and 19 km away from Bogd Khan SPA.
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	Aimag Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby the	The land is in the middle of Ger area and surrounded by small buildings and 65 km away from Ikh Nart Nature Reserve.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			school dormitory and school. Access road is available.	
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	Aimag Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby main road and 200m away from Gas station. Access road is available.	The land is in the middle of Ger area and surrounded by small buildings and 170 km away from Ikh Nart Nature Reserve.
13	New kindergarten	Orkhon, Erdenet city	The new construction site is situated in Tsagaan Chuluut bag, having 10,000 m^2 area owned by Aimag Government . The surrounding area is included in city development plan and close to central heating, water supply and sewage system.	The land is in the middle of Ger area and located in empty, Ger area development site, not surrounded by any buildings and 100 km away from Zed Khantai SPA. No other wildlife sanctuary or ecological sensitive area within the 15 km vicinity of the site.
14	New kindergarten	Bulgan, Teshig Soum,	The new construction site is planned inside existing kindergarten premises. The kindergarten has possession right for 11,060 m^2 land area. It is surrounded by buildings, households and main street. The new building will connect to central heating, water supply and sewage system. The new kindergarten will have two floors with capacity of 150 children.	The land is in the middle of Soum center and located inside of kindergarten's fenced area. It 10 km far from Zed Khantai SPA and 1 km far from Eg river. No other wildlife sanctuary or ecological sensitive area within the 1 km vicinity of the site.
15	New kindergarten	Baynkhongor, Baynkhongor Soum, 4th Bag.	The new construction site is situated in the edge of Ger Khashaa Plot area. Total of 4900 m^2 area and owned by Aimag Government. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.	Tuin Gol river is 0.6 km and Khangai Nuruu Mountain NP is 40 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1 km vicinity of the kindergarten.
B	**Schools:**			
B 1	Schools under expansion:			
1	School No.51	Bayngol District, UB	Existing 3 floor building constructed in 1974 by brick. Connected to centralized electricity, heating, water supply, sewage system. The expansion will be a separate building behind the existing school building.	Dund Gol river is 5 km and Bogd Khan SPA is 10 km away from site. No wildlife sanctuary or ecological sensitive area within the 10 km vicinity of the Schools/Kindergartens.
2	School No.18	UB, Khan-Uul District	Existing 3 floor building is established in 1979, connected to central heating, electricity, water and sewage system. The expansion will be additional floor on the roof, and have permission of Specialized Inspection Agency to add one more floor on top.	Dund Gol river is 1 km, Tuul river is 3 km and the Bogd Khan SPA is 8 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the School.
3	"Erdmiin Orgil"	UB, Nalaikh	Existing 1 floor building is	Tuul river is 13 km and the Bogd

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
	Complex	District	established in 1971, connected to central heating, electricity, water and sewage system. The expansion will be 3 floor separate building with capacity of 640 students, in the school yard inside premises.	Khan SPA is 17 km away from site. No other wildlife sanctuary or ecological sensitive area within the 8 km vicinity of the School.
4	"Ireedui" Primary School	UB, Songino-khairhan District.	Existing 2 floor building was established in 1983, connected to central heating, electricity, water supply and sewage system. The school has 14281.7 m^2 area. The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top.	Dund Gol river is 5 km, Tuul river is 8 km and the Bogd Khan SPA is 10 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the School.
5	"Ireedui" Secondary School	UB, Songino-khairhan District.	Existing 2 floor building is established in 1983, connected to central heating, electricity, water and sewage system. The school has 14602.2 m^2 area. The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top.	Dund Gol river is 5 km, Tuul river is 8 km and the Bogd Khan SPA is 10 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the School.
6	School No.122 (green school)	UB, Songino-khairhan District, 22nd khoroo.	School has 18000 m^2 land area and 4 floor building, constructed in 2013. The existing building has capacity with 640 students but currently 1500 students are enrolled at this school. The school building has individual heat only boiler for heating, water reservoir for keeping transported water and individual holding tank for waste water, connected to central electricity line. The expansion will be 3 floor building with capacity of 640 students and has a blue print for building.	Takhilt (small seasonally flowing creek) river is 0.3 km and Bogd Khan SPA is 19 km away from site. No other wildlife sanctuary or ecological sensitive area within the 10 km vicinity of the School.
7	School No.6	UB, Sukhbaatar District	Existing 2 floor building is established in 1973, connected to central heating, electricity, water supply and sewage system. The expansion will be additional floor on the roof. Has permission of Specialized Inspection Agency to add one more floor on top.	Dund Gol river is 1 km, Tuul river is 5 km and the Bogd Khan SPA is 9 km away from site. No other wildlife sanctuary or ecological sensitive area within the 5 km vicinity of the School.
8	Khantaishir	Govi-Altai, Altai town.	The school is in the one floor old building constructed in 1961, which is proposed to be used as office of construction company temporarily. The building is	The school is in the middle of town and surrounded by buildings and 50 km far from Khasagt Khairkhan National Park. No other wildlife sanctuary or ecological

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			connected to central heating, water supply and sewage system. School has possession of 3567 m^2 land and the expansion will be a new 3 floor building, with capacity of 320 students and can be constructed in front of old building.	sensitive area within the 25 km vicinity of the site.
9	Bogd Soum, Uvrukhangai	Uvurkhangai, Bogd Soum,	The existing school building is 2 floor and established in 1978. The school has possession of 566.9 m^2 land. It connected to Soum center's central heating, water supply and sewage system. The expansion will be 2 floor separate building with capacity of 320 students and will be constructed behind the old building.	Khovd river is 1 km and the Ikh Bogd NP is 20 km away from site. No other wildlife sanctuary or ecological sensitive area within the 2 km vicinity of the School.
10	Baruunburen Soum, Selenge **School deleted from list after due diligence**	Selenge, Baruunburen Soum.	The existing school building is 2 floor and established in 1981. The school has possession of 1563 m^2 land. It is connected to central electricity line, Soum center's heating, water supply and has individual holding tank for waste water. The expansion will be 2 floor separate building with capacity of 320 students. But there is lack of land for the expansion.	The school is in the middle of Soum center and surrounded by buildings and Orkhon river is 7 km from the site and it is far from Protected area, National Park. No other wildlife sanctuary or ecological sensitive area within the 7 km vicinity of the site.
B 2	Schools under new construction :			
1	New school	UB, Baynzurkh District, 14th khoroo.	Land is owned by District Government and is in the new apartment buildings' construction area of MONNIS company. The site is close to central heating, water supply and sewage system.	The area was Ger khashaa plot and included in re-development plan. Bogd Khan SPA is 11 km from the site. The area has no environmentally significant issues.
2	New school	Songino-khairhan District, 7th khoroo.	The new construction site is situated in the edge of Ger Khashaa Plot area. Total of 10000 m^2 area for this site and it owned by District Government. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.	Baruun Salaa river is 0.1 km and Bogd Khan Mountain SPA is 20 km away from site. No other wildlife sanctuary or ecological sensitive area within the 1 km vicinity of the kindergarten.
3	New school	Darkhan, Mangirt, 15th Bag.	Construct new school building with capacity of 960 students.1.5 ha area is available with a possibility to connect to central heating, sewage and water supply system. The site is included in new development area and no any other buildings in vicinity of new kindergarten	Kharaa river is 9 km and Tujiin Nars NP is 90 km away from site. No other wildlife sanctuary or ecological sensitive area within the 10 km vicinity of the kindergarten.

No	Sub-Project components	Location	Key features of sub-project component	Environmental Issues
			close to this site.	

NP: National Park, SPA: Strictly Protected Area

5. Potential impacts are mostly temporary, predictable, and reversible, and can be mitigated through adherence to national[1] and international standards[2], design criteria, and/or implementation of Environment Management Plan (EMP). Schools and kindergartens are proposed on government land and the location of schools and kindergartens avoided any sanctuary/protected areas or any other environmentally-sensitive areas. Utilization of the best available technology and best management practices are built-in to the project design and listed through the generic EMP and more specifically through the EMP.

6. IEE including EMP has been prepared to mitigate the potential adverse impacts of construction. The new schools and kindergartens are proposed only on land owned by the government and therefore acquisition of land will not be required from the surrounding communities. The proposed expansion of schools and kindergartens will be located on existing government lands or those lands that are allotted to MECCS by the Government of Mongolia. All proposed new schools and kindergartens have been identified to have possession of vacant land area; whereas the schools and kindergartens where expansion is to be done in their existing land, there is no need to acquire land.

7. For most of the proposed new schools and kindergarten, their blue print design (technical reports) will be finalized after conducting detailed physical survey of the land through engineering firms engaged by the EA under the project. The expansion/new construction will be done avoiding existing apartment/housing, other buildings, trees or any other existing settlement directly related with the livelihood of people. As assessed, the project benefits outweigh the negative impacts. The negative environmental impacts are likely to be associated with construction activities of the schools and kindergartens, noise during construction, transportation of construction material to site, disposal of waste soil, inconvenience to neighboring communities due to increased traffic due to new building construction activities.

8. During the site visits, the officials and consultants made numerous observations and held discussions with school managements concerned to assist in proper design of new schools with respect to the following: (i) location of proper access roads, laydown area for materials to be used by the construction companies to use without disturbing the school working and minimizing utilization of playground areas, (ii) avoidance of underground existing pipes for water, heating, sewage etc. at these proposed work sites, (iii) right of way for construction vehicles and provide traffic safety during construction to local residents living adjoining these schools, (iv) traffic caused by construction of new buildings/expansion projects by use of concrete, dump trucks etc. transporting materials inside school premises; traffic safety for children and their parents during operations of school in normal work hours (September 2017 onwards), (vi) lack of safety equipment such as smoke alarms in most old buildings and the need for adequate firefighting extinguishers and imparting evacuation drills and emergency response procedures training, (vii) distances of these schools from non-sensitive biodiversity areas and cultural heritage sites to ensure no impact, (viii) dust and noise emissions from the construction subprojects and their impacts on school children and apartment dwellers adjoining the school area, (ix) noises from any surroundings areas during construction and operations, (x) avoid any shadow projection onto adjoining buildings due to new structures to be constructed as part of this project, (xi) any banned substances generated as part of any expansion project such as asbestos etc., (xii) emissions from coal

[1] Relevant Mongolian Standards mentioned in section 2 later.
[2] World Bank/IFC Environment Health and Safety guidelines 2007.

based heating and water boilers (some cases), (xiii) if insulation works are required in schools to ensure energy efficiency, i.e. loss of heat due to old walls, (xiv) check presence of any associated facilities, and (xv) determine potential climate change impacts of project activities.

9. The team along with district officials and school/kindergarten managements conducted group consultation and discussions with the apartment dwellers/public residing in these sub-project areas to sensitize them about project activities, their impacts and get their suggestions.

10. Very small number of trees exist in the sites selected for expansion subprojects; whereas there are no trees situated in the land proposed for new buildings. No endangered or protected species of flora or fauna are reported at any of the subproject sites. Locational orientation of the schools/kindergarten will be finalized in a manner so as to avoid or minimize the shadow falling on adjoining structures. Before start of construction, the construction company shall procure all requisite regulatory approvals from all concerned authorities. Adequate provisions have been made for the environmental mitigation and monitoring of predicted impacts, along with their associated costs in the IEE. Adverse impacts if noticed during implementation will be mitigated using appropriate design and management measures as per the EMP by the construction company.

11. For some schools/kindergarten sub-projects, the blue print development is underway. The data regarding soil, topography, contour, land cutting and filling required, distance from water body and distance from major roads, details of trees can be affected, land details will be collected by engineering firms. If sites are changed other than those indicated in the IEE, supplementary information will be supplied for each of new location for these subprojects by MECSS to ADB for prior approval before finalizing design drawings.

12. The Ministry of Environment and Tourism (MET) regulation requires development of a generic Environment Impact Assessment (EIA). According to the Government of Mongolia's (GoM) EIA Notification, projects are not listed as environmental sensitive projects and hence no clearance is required from MET; however, clearance from General Agency for Specialized Inspection (GASI) and urban bodies is required.

13. Since the project does not involve activities that have significant adverse impacts, an IEE has been developed comprising development of an environmental management plan and monitoring plan as per ADB's Safeguard Policy Statement (SPS) 2009. The IEE report conforms to national environmental regulations and is also consistent with ADB SPS 2009. Accordingly, the environmental classification for the project is "Category B" as per ADB SPS 2009.

1.0 INTRODUCTION

1.1 Background

1. The growth of Mongolia's economy has rapidly decelerated since 2011, due to declining foreign direct investment and falling commodity prices. This slowed growth has caused serious economic difficulties, including large revenue shortfalls and cuts in government investment, which are expected to continue beyond 2017, and further require the government to reduce public spending. Education expenditures are brought down to a minimum, only enough to keep existing schools and kindergartens operating. Access to and quality of pre-primary, primary, and secondary education are likely to deteriorate with the growth of school- and kindergarten-aged population, and unaccomplished curriculum and assessment system reforms, unless some mitigating measures are implemented.

2. Seats in existing schools and kindergartens have increasingly become unavailable due to the growth of school- and kindergarten-aged population which has been outpacing the construction and expansion of schools and kindergartens. From SY2009/10 to SY2015/16, enrollments in pre-primary education doubled (105.9%), whereas the number of kindergartens increased only by 58.2%. Similarly, between SY2012/13 and SY2015/16, enrollments in schools rose by 7.8%, whereas the number of the schools built was 13, an increase of 1.7%. As a consequence, the enrollment capacity of existing schools and kindergartens has been overstretched, with the class size enlarged, and 33 schools operating in three shifts in SY2016/17 (of which 30 are located in Ulaanbaatar). The gap in enrollment capacity has been particularly widening in Ulaanbaatar due to disproportionate population growth caused by internal migration. The average class size at Ulaanbaatar schools is the largest in the country (37 at primary level), as enrollments expanded by 18.1% between SY2012/13 and SY2015/16. With an increase of 41.5% in pre-primary enrollments, the class size at free public kindergartens in Ulaanbaatar becomes even larger (40–50 students), and students are selected by lottery. Although the net enrollment rates at pre-primary, primary, and junior secondary levels have been improving steadily, this may be reversed unless new schools and kindergartens are built, or existing schools and kindergartens are expanded. Kindergarten-aged population is further projected to grow until 2019, and school-aged population, until 2025.

3. The curriculum reform, which started in SY2013/14 with the piloting of new curriculum for primary education, remains incomplete without the piloting and implementation of new curriculum for senior secondary education. Moreover, the current curriculum still lacks learning outcome standards that are expected for each grade students to attain, which leaves students and teachers unguided and confused. Relatedly, the current student learning assessment system is unreliable and fails to provide feedback on student learning or education policy. Furthermore, the standards for school performance evaluation have become too outdated to encourage school-based continuing professional development (CPD) of teachers and school leaders, and effective management of school resources to support the implementation of the current curriculum. Likewise, the current standards for teacher evaluation are too general to help teachers develop knowledge and skills.

4. Although the new curriculum was introduced, little accompanying teaching and learning materials (TLM), including textbooks, teachers' guides, student workbooks, tools and equipment, have been provided to implement the curriculum, which negatively affected the quality of student learning. There are huge disparities in the distribution of TLM among schools and kindergartens. In particular, schools and kindergartens in rural areas are more disadvantaged than those in urban areas, as the transportation cost is higher. Since a standard set of TLM accompanying the curriculum for each grade does not exist, TLM have been provided on an ad-hoc basis, further intensifying disparities.

5. Existing in-service professional development programs do not assist teachers in adopting child-centered methodology, and formative and summative assessment and evaluation methods required by the new curriculum. The budget allocated to teacher training is generally too limited to cover even the mandatory training for teachers in the first, fifth, and tenth year of service, causing the quality of education to suffer. In addition, little CPD opportunities are provided for school and kindergarten managers who are expected to provide instructional leadership for the implementation of the curriculum.

6. The low population density and harsh winters in Mongolia have caused inefficiency in education expenditures. High costs of providing education services derive from the need (i) to provide education services in sparsely populated rural areas; (ii) to provide school dormitory services for one quarter of the population engaged in semi-nomadic herding; (iii) for constant heating in schools, dormitories, and kindergartens during extremely cold winter months; and consequently; (iv) to employ a large number of non-teaching staff to operate and maintain schools, dormitories, and kindergartens. The government lacks effective information gathering, planning, and management system for schools, dormitories, and kindergartens, and resource sharing mechanisms among schools and kindergartens.

1.2 Impacts, Outcome, and Outputs

7. The project is aligned with the following impact: more accessible, more equitable, and better quality education system developed.[3] The project will have the following outcome: access to and quality of pre-primary, primary and secondary education sustained during economic difficulties.

8. The outputs will be (i) gap in enrollment capacity of schools and kindergartens narrowed; (ii) unfinished curriculum reform and associated assessment system reforms completed; (iii) teaching and learning materials that accompany the new curriculum provided; (iv) teachers and managers' knowledge and skills upgraded for the new curriculum and assessments; and (v) systems for planning and managing education services strengthened.

9. **Output 1: Gap in enrollment capacity of schools and kindergartens narrowed.** The project will support the construction and expansion of schools and kindergartens in Ulaanbaatar and *aimag* centers (Altai, Darkhan, Sainshand, and Sumber) to make more seats available and reduce three-shift schools and class size. Inclusive (age, gender, and special needs), energy efficient (improved insulation and heating systems), and disaster resilient features[4] will be built into new and expanded schools and kindergartens, using innovative designs introduced by the government and other development partners.

List of school and kindergarten expansion and construction sites

10. The Ministry of Finance, MECSS, UMED and ADB reviewed and agreed on the list of school and kindergarten expansions and new construction sites on which safeguard and technical due diligence was conducted (Annexure 1). The list was developed through the following procedures: (i) a preliminary list of school and kindergarten expansion and construction sites in Ulaanbaatar was prepared by UMED, while another list containing both school and kindergarten expansion and construction sites in Ulaanbaatar and 21 Aimags was prepared by MECSS; (ii) these preliminary lists were screened and shortened by considering (a) positive impacts on the reduction of 3-shift schools, (b) positive long-term

[3] State Great Khural. 2016. *Mongolia's Sustainable Development Vision, 2016–2030*. Ulaanbaatar; and Government of Mongolia. 2016. Action Program for *2016–2020.* Ulaanbaatar.

[4] Include sound seismic design to withstand earthquakes, winter snow storms, improved flood control, and precipitation resistant features.

impacts on enrolments in primary and pre-primary education and the reduction of class size in Ulaanbaatar, especially in ger districts and new residential areas, and some aimag centers, (c) availability of land, (d) absence of significant potentially category A environmental impacts which can be caused especially by the demolition of existing buildings, and (e) absence of significant potentially category A involuntary resettlement.

11. **Output 2: Unfinished curriculum reform and associated assessment system reforms completed.** The project will support the completion of unfinished curriculum reform and associated assessment system reforms by updating curriculum standards; student learning assessment criteria; methods and system for primary, junior, and senior secondary education; and standards for school and teacher evaluation. The curriculum for all grades and subjects will incorporate clearly defined learning outcome standards, while the Mongolian language and literature curriculum for grades 1–12 will be reviewed comprehensively to improve writing, reading, and communication skills of students. Based on the updated outcome standards, student learning assessment criteria and methods will also be reviewed, and the system for student learning assessment in primary, junior, and senior secondary education will be upgraded by strengthening the capacity of the Education Evaluation Center (EEC). Moreover, the standards for school evaluation will be updated to strengthen school-based management (SBM) and to better assist schools' self-evaluation, performance improvements, and reporting. The existing standards for teacher evaluation will be revised to include differentiated competency levels and encourage self-appraisal and CPD. Further, curriculum for pre-service teacher education programs will be reviewed in line with the updated school curriculum standards, student learning assessment criteria and methods, and competency-based standards for teachers.

12. **Output 3: Teaching and learning materials that accompany the new curriculum provided.** The project will improve the standards for TLM, including those for developing, evaluating, and selecting TLM, to improve the quality, and enhance systems for distributing TLM in paper and e-formats. A profile of TLM accompanying the curriculum for each grade, including pre-primary education and equivalency program, and their layout and physical standards will be developed. The provision of quality TLM for poorly resourced kindergartens will also be supported.

13. **Output 4: Teachers and managers' knowledge and skills upgraded for the new curriculum and assessments.** The project will upgrade teachers and school and kindergarten managers' (principals and head teachers) knowledge and skills to implement the updated curriculum standards, assessment, and evaluation. Given budget constraints, the capacity of the Institute for Teacher's Professional Development (ITPD) will be strengthened to develop and deliver CPD programs for pre-primary, primary, and secondary teachers through existing online platforms and workshops.[5] Model science, math, and information technology (IT) laboratories will be established at ITPD to train secondary teachers in the use of laboratory equipment and in facilitating students' experiments emphasized in the curriculum. Moreover, CPD programs for school and kindergarten managers, and Ulaanbaatar and *aimag* education department staff will be developed and delivered to improve leadership in the course of implementing the updated curriculum standards, assessment, and evaluation.

14. **Output 5: Systems for planning and managing education services strengthened.** The project will strengthen systems for planning and managing basic and secondary education services in the medium-term. A geographic information system (GIS)-based real time information system integrated into the existing systems will be developed to collect and analyze information on school and kindergarten construction, expansion, and

[5] Currently about 30% of primary and secondary teachers participate in CPD programs through online platforms (2017 baseline for indicator 4d in Appendix 1).

rehabilitation needs. The introduction of cluster systems for schools with senior secondary grades and kindergartens will be explored and piloted to facilitate resource sharing among schools and kindergartens. The policy and system for school and kindergarten catchment areas will be reviewed and measures to strengthen its enforcement will be identified to improve the planning and management of school and kindergarten enrollments, as well as construction, expansion, and rehabilitation.

15. The project is estimated to cost $50.69 million, of which $50 million will be provided through loans from ADB's ordinary capital resources. The total cost of the project includes physical and price contingencies, interest, and other charges during implementation. The government will provide $0.69 million, in-kind (taxes and duties).

16. The MECSS will be the project executing agency. The implementing agencies will be MECSS and UMED. A project implementation unit will be established by MECSS to manage day-to-day activities of the project. The project will be implemented from September 2017 to June 2021.

1.3 Scope of Work and Methodology Adopted

17. The broad scope of the Environmental Assessment study is:

(i) To conduct field visits to collect data relevant to the study area and also collect secondary data so as to establish the baseline environmental status of the study area;
(ii) To assess the impacts on environmental attributes due to the location, design, construction and operation of the proposed project;
(iii) To prepare a mitigation plan outlining the measures for protecting the environment including institutional arrangement and environmental monitoring;
(iv) To identify critical environmental attributes required to be monitored subsequent to the implementation of the proposed project;
(v) To carry out consultation with local people to identify the public perception of the project; and
(vi) To establish the Environment Monitoring Plan (EMoP) for the MECSS to submit environmental monitoring reports to ADB at regular intervals.

18. Each proposed school/kindergarten on the list was further examined for conformance to ADB's safeguards and technical due diligence confirmed for support before the design of the project is finalized in March 2017. Accordingly, transect walks and field surveys were undertaken to assess physical and biological environment in January/March 2017. However, the exact location of some Schools/Kindergarten may vary after the exact demarcation of locations by the Architects preparing construction blue prints (technical drawings) and General Agency for Specialised Inspection (GASI) requirements.

19. The IEE report comprises baseline data on existing condition of physical, ecological, economic, and social information, together with the anticipated environmental impacts and proposed mitigation measures. This report is prepared on the basis of preliminary survey, field study and consultations with the help of available secondary data of different sites, articles and report.

20. Detailed assessment of secondary source baseline environmental data for Ulaanbataar and concerned *Aimags/Soums* was done to support the findings of the field survey by consultants. Public consultations were held with affected persons such as apartment dwellers, other stakeholders, and government officers of the project area. **Annexure 6** gives details of places and persons who attended these consultations. The field studies were supported by data collected from secondary sources such as internet, forest

atlas, published data from GoM documents, population census statistics data, as well as documents from MECSS and documents from other government departments etc.

2.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 Mongolian - National, Local, Other Applicable Environmental Laws, Regulations, and Standards as applicable to the project.

2.1.1 Specific Environmental Regulatory and Policy Framework

1. Mongolia has enacted a comprehensive policy and legal framework for environmental assessment and management. It has policies, legislation and strategies in place to manage the protected estate, to satisfy its international obligations, and to protect the quality of the environment for the health and well-being of its citizens. The hierarchy of policies and legislative provisions for environmental management in Mongolia comprises five layers ranging from the Constitution to international treaties, and to environment and resources protection laws[6].

2. The main policy documents are the National Environmental Action Plan of 1996, the State Environmental Policy of 1997, the National Plan of Action to Combat Desertification, the Biodiversity Conservation Action Plan, and the National Plan of Action for Protected Areas, all developed under the Ministry of Nature Environment and Tourism (MNET) auspices, as well as the Mongolian Action Program for the 21st Century. The National Environmental Action Plan was updated in 2000 and the National Action Plan for Climate Change was added in the same year. Several program documents (e.g. National Water Program, National Forestry Program, Program of Protection of Air, Environmental Education, Special Protected Areas, and Protection of Ozone Layer) were also completed at the turn of the decade. State policy on Environmental Impact Assessment was in place in 1998. In addition, other guidance documents with important environmental repercussions were developed under the auspices of other ministries and these include the Roads Master Plan, the Power Sector Master Plan, the Tourism Master Plan, and the Renewable Energy Master Plan. Other documents, such as the annual Human Development Reports have increasingly incorporated environmental aspects.

3. A fundamental principle of the Mongolian state environmental policy is that economic development must be in harmony with the extraction and utilization of natural resources and that air, water and soil pollution will be controlled. In April 1996, Mongolia's National Council for Sustainable Development was established to manage and organize activities related to sustainable development in the country. The country's strategy is designed for environmentally friendly, economically stable and socially wealthy development, which emphasizes people as the determining factor for long-term sustainable development.

2.1.2 Mongolian Policy, Legal and Administrative Framework

4. The Government of Mongolia undertook a major environmental law reform in 1990 including the law of land, protected areas, water, forest, wildlife, and native flora resources. The legislation base is extensive as evidenced by the following table of key environmental legislation as shown in **Table 2.1** and their applicability to the project.

Table 2.1: Key Mongolian Environmental Legislation

No	Name of the Law	Year adopted	Associated regulations
1	Law on Environmental Protection	1995 revised in 2006, 2008, 2012	4

[6] UNDP. 2008. *Institutional Structures for Environmental Management in Mongolia*. Ulaanbaatar and Wellington.

No	Name of the Law	Year adopted	Associated regulations
2	Law on Land	June, 2002	
3	Law on Land Cadaster and Mapping	Dec, 1999	
4	Law on Land Fees	Apr,1997	
5	Law on Land Possession	June, 2002	
6	Law on implementation of regulations related to Land Possession Law	June, 2002	
7	Law on Geodezy and Cartography	Oct,1997	
8	Law on Special Protected Areas	Nov, 1994	16
9	Law on Buffer Zones	Oct,1997	
10	Law on Water	Apr, 2004	
11	Law on Water and Mineral Water Resource Fee	May, 1995	21
12	Law on Forests	March,1995	38
13	Law on Fees for Timber and Fuelwood Harvesting	May, 1995	
14	Law on Prevention of Steppe and Forest Fires	May,1996	
15	Law on Reinvestment of Natural Resource Use Fees for Conservation	Jan, 2000	
16	Law on Natural Plants	Apr,1995	3
17	Law on Natural Plant Use Fees	May, 1995	
18	Law on Protection of Plants	Mar,1996	
19	Law on Hunting	2000, 2003	6
20	Law on Fauna	2000	
21	Law on regulation of export and import of endangered species of flora and fauna	Nov., 2002	
22	Law on Hunting Reserve Use Payments and on Hunting and Trapping Authorization Fees	May, 1995	
23	Law on Underground Resources	Dec.,1994	18
24	Law on Minerals	1997, revised in 2006	
25	Petroleum Law	1991	
26	Law on Air	Mar.,1995	n.a.
27	Law on Hydrometeorology	Nov.,1997	n.a.
28	Law on Protection for Toxic Chemicals	Apr.,1995	18
29	Law on Environmental Impact Assessment	1998, revised in 2002	
30	Law on Tourism	1998	n.a
31	Law on Solid Waste	Nov.2003	
32	Law on prohibiting export and transportation of Hazardous Waste	Nov.2000	

5. Other Mongolian orders, regulations and guidelines related to water and wastewater are listed in the **Table 2.2**. **Tables 2.3 and 2.4** list key Mongolian orders for Hazardous waste and Hazardous chemicals respectively.

Table 2.2: Key Mongolian Orders, Regulations and Guidelines Related to Water and Wastewater

Name of Guideline, Order or Regulation	Year Adopted
Regulation of Fees On Water Pollution in 1992.	1992
Regulation of River And Water Source Protection Zone in 1992.	1992
Regulation of Lining Septic Tanks For Waste Water in 1995.	1995
Regulation for Registering Water Resource Pollution, Water Scarcity, Rehabilitation in 1996.	1996
Regulation on Water Resource Protection From Pollution in 1997.	1997
Regulation of Water Spring And Its Protection in 1998.	1998
Regulation of Establishing Wells And Water Points and Repair	2005
Regulation of Conducting Water Source Inventory And Registration in 2006.	2006
Regulation of Creating Water Source Database And Cadastre in 2006.	2006

Table 2.3: Key Mongolian Orders, Regulations and Guidelines Related to Hazardous Waste

Name of Guideline, Order or Regulation	Year Adopted
Guideline on Reporting and Recording of Storage and Disposal of Hazardous Wastes By Order No: 127 of MNET in July 1, 2003.	2003
Classification and Specification and Hazardous Level Of Wastes by Order No: 324/318/336 of Minister for Nature, Environment, and Tourism, Minster for Health, and Minister for Education, Culture and Science in 2006.	2006
"Regulation on Types of Landfill And Disposal Facilities and Centralized Waste Disposal Sites, Relevant Requirements and Specifications, and Procedures to be Conducted By Economic Entities and Individuals to Bury and Destroy Hazardous Wastes" by Order No: 404 of Minister for Nature, Environment and Tourism in 2006.	2006
Regulation on Issuing of Passport for Hazardous Wastes By Government Resolution No: 268 in 2006.	2006
Payment Calculation Methodology for Hazardous Wastes by MNET in 2006.	2006
Regulation of National Reporting and Inventory of Hazardous Wastes by MNET in 2009.	2009

Table 2.4: Key Mongolian Orders, Regulations and Guidelines Related to Hazardous and Toxic Chemicals

Name of Guideline, Order or Regulation	Year Adopted
List of Products Containing Toxic And Hazardous Chemicals (Renewed In 2008) by Joint Order No: 126/171 by MNET and MOH on July 1, 2003.	2003
Methodology of Calculating Waste Norms" by MNET, in 2006.	2006
Regulation on Trans-Boundary Movement, Trade, Transportation, Export, and Import Of Toxic And Hazardous Chemicals by Joint Order No; 92/90 of Minister for Nature, Environment, and Tourism and Minister for Foreign Affairs on December 29, 2008.	2008
Guideline On Methodology And Technology To Dispose, Storage, Transportation, Collection Of Chemical Wastes; (2009)	2009
Regulation On Use, Transportation, And Import Of Toxic And Hazardous Chemicals (renewed in 2009)	2009

Guideline on Transportation, Storage, Use, And Disposal Of Toxic And Hazardous Chemicals and b) Guideline on Developing Risk Assessment Of Toxic And Hazardous Chemicals" by Joint Order No: 28/40/29 of Minister for Health, Minister for Environment, Nature, and Tourism, and Chairman of National Emergency Management Agency on February 3, 2009.	2009
Guideline on Classification Of Hazardous And Toxic Chemicals Was Approved In 2009.	2009

6. **Table 2.5** lists all Mongolian laws as they are applicable to the project.

Table 2.5: Key Mongolian laws applicable to the project

#	Laws	Date of approval and ammendment	Applicable articles and paragraphs to project's ESS	
			Environmental safeguard	Social safeguard
1	Law on Land	Approved in 2002.06.07 Amended in: 2015.07.08, 2015.06.26, 2015.06.19, 2015.02.12 2013.12.26, 2012.05.17 2010.07.01, 2009.12.17, 2009.07.16, 2009.07.09, 2006.12.22, 2005.07.01, 2005.01.27, 2004.04.22, 2003.06.12, 2003.01.02	4.1.2, 4.1.4, 4.1.5, paragraph 11-16, 18.1.3, 19.2.2, 20.1.4, 20.2.2, 20.2.6, 22.1.2, 22.2.1, 22.2.3, 23.2.10, 23.2.16, 24.1, 27.5, 31.3, 31.4, 33.4, 34.2, 34.4, 34.11	4.1.6
2	Law on land ownership to Mongolian citizens	Approved in 2002.06.27 Amended in: 2012.05.18, 2011.02.10 2008.05.22, 2005.07.07 2005.06.23	5.1.6.1, 5.1.6.2, 6, 9.1.4, 9.1.5, 10.1.4, 12.1.4, 14.1.5, 27.1.1, 27.1.5, 27.1.8, 27.2.5, 27.2.6, 27.2.7, 27.2.8, 28.1.3, 29.6, 29.7, 30.1, 32 and 38, 39.1	5.1.1
3	Law on land use payment	Approved in 1997.04.24 Amended in: 2012.05.22, 2009.12.24 2006.12.08, 2005.07.01	paragraph 4 and 6.	
4	Law on cropland	Approved in 2004.04.22 Amended in: 2009.05.14, 2006.06.29	16.7, 17.2.2, 17.2.5	
5	Law on mineral resources	Approved in 2006.07.08 Amended in: 2015.06.04, 2015.02.18, 2015.02.13, 2015.01.23 2014.07.01, 2014.05.15, 2014.01.24, 2014.01.09 2013.10.03, 2012.05.17 2011.12.23, 2011.02.10 2010.07.01, 2009.10.15, 2009.07.16, 2009.01.08 2008.12.19	8.1.5, 11.1.23, 12.1.2-12.1.4, 13.5, 14.4-14.6, 14.8-14.9, 17.2.2, 17.3.3, 17.3.5, 19.2.3, 19.10, 24.4.2, 24.5, 25.1.6-25.1.7, 26.2.2, 27.1.13, 28.1.3, 35.2.2, 35.3.3-35.3.4, 35.3.7, 35.5, 35.10, paragraph 37, 41, 44 and 45, 53.3, 54.2, 55.3.2, 56.1.3, 56.1.5, 56.1.7-56.1.8, paragraph 63, 66.3- 66.4,	
6	Law on Protected Areas	Approved in 1994.11.15 Amended in: 1997.10.23 2014.07.01, 2014.05.15, 2008.12.19, 2006.12.22,	5.1-5.2, paragraph 7-24, 25.2, 26.3-26.6, paragraph 27, 28.3, 29.3, paragraph 30-32, 33.1, 36.2-36.3, paragraph	

#	Laws	Date of approval and ammendment	Applicable articles and paragraphs to project's ESS	
			Environmental safeguard	Social safeguard
		2004.04.22, 2003.01.02 2002.07.10, 2002.06.07,	37, 39, 40.1.2, 43.2-43.3	
7	Law on Protected Area Bufferzone	Approved in 1997.10.23 Amended in: Ongoing	3.1, 4.1, 5.1, 7.4, 8.2, 9.1	
8	Law on Water	Approved in 2012.05.17 Amended in:2012.08.17	8.1.1-8.1.2, 10.1.24, 12.1.1, 13.1.3, 15, 17.1.6-17.1.9, 17.1.12, 17.2, 18.1.3, 19.1.3, 22- 25, 29 and 30, 32.5, 33.1.13-33.1.14	
9	Law on repayment for polluting the water	Approved in 2012.05.17	4.1, paragraph 5-8, 10.1.1	
10	Law on Water resources	Approved in 2007.07.05 Amended in: 2014.07.01		
11	Law on Construction	Approved in 2008.02.05 Amended in: 2015.07.02, 2014.05.15, 2011.01.20, 2009.04.23, 2008.02.05	4.1.3, 5.1.7, 6.1.2, paragraph 9-11, 13.5, 14.5.1, 15.4, 15.5, paragraph 16, 18, 20, 22.2	paragraph 8, 14.11
12	Law on traffic road	Approved in 1998.01.02 Amended in: 2014.05.15, 2009.08.25, 2007.08.03, 2006.12.22, 2005.01.27, 2003.01.02 2002.07.01, 2000.09.01	5.15, 6.1.5, 6.1.6, 13.7, 17.3.1, 17.3.2, 17.3.3	
13	Law on Transportation	Approved in 1999.06.04 Amended in: 2012.08.17, 2011.10.06, 2011.02.10, 2011.01.20, 2009.05.07, 2008.12.19 2008.10.09, 2008.05.29, 2006.12.22, 2005.01.27, 2003.11.28, 2003.05.15 2002.07.10, 2001.11.30, 2001.11.08	7.4, 10.1.1, 10.2.7, 10.2.8, 10.2.9, 17.1	
14	Law on Air	Approved in: 2012.05.17 Amended in:2015.01.23, 2013.12.12	All	
15	Law on repayment for air pollution	Approved in: 2010.06.24 Amended in:2012.05.17	All	
16	General law on administration	Approved in: 2015.06.19	28.1.1-28.1.2, 48.2.2, 49.3.3, 49.3.5, 56.3, 62.2, 73, 75.1, 79, 81.2, 86.2, 92.1, 96.1, 97.1.1, 98.1.2-98.1.3, 100.1, 101.2, 104	13.2-13.4, 26.1, 74.1-74.2
17	Citizen's law	Approved in: 2002.01.10 Amended in:2015.07.02, 2014.12.05, 2014.05.15,	9-13, 21, 56, 92-95, 101-103, 106, 108, 116-118, 128.1, 134-140, 146.1, 150-151,	

#	Laws	Date of approval and ammendment	Applicable articles and paragraphs to project's ESS	
			Environmental safeguard	Social safeguard
		2013.01.10, 2011.12.15, 2011.10.06,2010.04.23, 2009.07.09, 2005.07.07	189, 228-230, 443-444, 497-514,	
18	Law on Use of sett-lement water supp-ly and sewagge water system	Approved in: 2011.10.06	4.1.1, 5.1.5, 7.1.2, paragraph 11 and 16, 17.3-17.4, 17.8, paragraph 18.	6.1.4, 21.2
19	Law on transferen-cy of information and right to get information	Approved in: 2011.06.16	7.1.5, 7.1.9	
20	Law on public audition	Approved in: 2015.07.08	4.2.2, 6.4	
21	Law on Mongolian administrative units and their organization and management	Approved in: 2006.12.15 Amended in: 2015.07.08, 2015.01.23 2013.07.05, 2012.12.20, 2012.09.14, 2010.10.29 2009.04.16, 2009.03.12 2008.05.06	paragraph 4, 12.1.7, 20.1.6-20.1.7, 20.1.9, 20.1.12, 28.1.3-28.1.9, 28.1.15, 29.1.1б, 29.1.5в, 31.1.1	17.1.8,18.1.2 з, 18.1.2к, 18.1.2л, 22.1.12, 22.1.16,28.1. 228.1.13,29.1 .330.1.6,30.1. 13
22	Law on land replanning and redevelopment in urban and settlement areas	Approved in: 2015.06.26	3.2, 6.1.1, paragraph 7, 8.1.1, 8.1.5, 8.1.6, 9.1.1, 10.1.1, 11.2, 12 зүйл, 14.1, 14.4, 14.7, paragraph 15-18, and 25,	11.1.5, 14.2, 14.5
23	Law on Urban development	Approved in: 2008.05.29 Amended in: 2015.06.26 2015.02.12	4.1.2, 5th paragraph, 7.1.3, 11.4, 12.4, 12.6, 12.8, 12.9, paragraph, 14, 16, 20 and 23-24,	Paragraph 17-18
24	Law on Solid Waste	Approved in: Nov.2003	Paragraph 3, 8, 9, 11, 12, 22 Articles 7.2, 9.2, 9.3, 9.4, 11.2, 22.1, 22.2	
25	Law on Hygiene	Approved in: 04 Feb, 2016	Article 3.1, Paragraph 4, 5, 8,11, articles 13.1.3, 14.1.1, 14.1.2, 20.1.3,	

2.1.3 Environmental Assessment Requirements of Mongolia

7. The EIA requirements of Mongolia are regulated by the Law on Environmental Impact Assessment (1998, amended in 2002). 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. The purpose of this law is to protect the environment, prevent ecological imbalance, ensure minimal adverse impacts on the environment from the use of natural resources, and regulate relations that may arise in connection with the assessment of environmental impacts of and approval decisions on regional and sectoral policies, development programs and plans and projects.

8. **Table 2.5** lists all classification of projects that require General EIA according to the Mongolian laws.

Table 2.5: Classification of projects obligatory to General Environmental Impact Assessment (According to the Law on EIA)

No	Project type	Executor	
		Central Government Authority for Nature and Environment	**The Governors offices of Provinces and the Capital city**
1.	Mining	Exploration of all kind of minerals	Exploration of common minerals to be used within local area
2.	Heavy industry	All types	-
3.	Light and Food industry	Big industries owned by Government	Local SMEs
4.	Agriculture	• Water reservoir • Irrigation system • Plantation of fallow	Other industries and services
5.	Infrastructure	• Energy production more than 1 MW capacity • Electricity transmission line more than 35 kV voltage • Heat distribution pipes • Hydro station • Railway • Airport • Road international and inter cities • Communication international and inter cities	• Energy production up to 1 MW capacity • Electricity transmission line up to 35 KV voltage • Heat distribution pipes local • Road and communication local
6.	Service	• Hotel, resort, sanatorium and other service organizations with capacity more than 50 bed day • Tourism	• Hotel, resort, sanatorium and other service organizations with capacity up to 5O bed day
7.	Other projects: • Town planning • Defensive and civil protection • Water supply system • Water treatment plant • Solid waste disposal and others	• Water supply, water treatment and solid waste disposal in urban areas with more than 10000 inhabitants • State owned facilities for defence and civil protection	• Water supply, water treatment solid waste disposal in urban areas with up to 10000 inhabitants • Local facilities for defence and civil protection
8.	Bio diversity	• Fisheries (big size) • Population, use and other activities relative to animal and plants,	• Hunting and forestry, tribe • Fishery for local market
9.	Chemicals, radioactive substances and	Treatment, use, storage, transport and disposal of chemicals, radioactive substances and	

No	Project type	Executor	
		Central Government Authority for Nature and Environment	The Governors offices of Provinces and the Capital city
	hazardous wastes	hazardous wastes	
10.	Activities to be conducted at special protected areas	Activities to be conducted in boundaries of special protected areas	Activities to be conducted at locally protected areas.

Approvals of Environmental Assessment/IEE

9. The definition on "Environmental Baseline assessment" stated in the paragraph 3.1.4 of the Mongolian Law on EIA as following:

3.1.4 "Environmental baseline assessment" shall mean an assessment that are carried out during the preparation of a feasibility study, design and drawing of any projects and formulation of national, regional and sector development programs and plans in order to establish the existing conditions and state of nature and environment of the territory, in which the proposed projects, programs and plans are to be implemented and to identify any environmental considerations that the project, programs, plans and policies need to incorporate;

10. In paragraph 6.1 of the law on EIA, about the obtaining clearance for IEE is mentioned as following:

Para 6.1 Environmental Baseline Assessment

6.1.1 The project implementer is responsible for commissioning the assessment referred to in Article 3.1.4 to identify potential impacts of the project.

6.1.2 The project implementer shall ensure that the environmental baseline assessment is performed with the due participation from the licensed professional entity and research institutions and if necessary, shall seek guidance from the state central administrative organization in charge of nature and environment (Currently the Ministry of Environment and Tourism).

11. However, there is no other definition about IEE in the EIA law as shown in Article 7 below:

Article 7. Environmental Impact Assessments

7.1 An environmental impact assessment shall consist of the following two assessments:

7.1.1 General environmental impact assessment

7.1.2 Detailed environmental impact assessment

7.2 Applications for a license for the use of natural resources, extraction of petroleum and minerals, and possession and use of land for business purposes and an approval for any other projects are subject to a prior general environmental impact assessment.

7.3 The project implementer shall apply for a general environmental impact assessment to the state central administrative organization in charge of nature and environment or the aimag and capital city governor's office, whichever is applicable according to the classification annexed to this law, by submitting a brief description of the project, the feasibility study, the engineering design and drawings, baseline description of the proposed project environment, a written opinion of the relevant soum and district governor and other related documents .

7.4. General environmental impact assessments for all new projects and existing plants, factories, services and building facilities that are planned to be renovated and expanded and projects that will make use of natural resources in one way or another shall be performed by an assessment expert who shall complete the assessment within 14 working days and issue a formal opinion as to whether:

7.4.1. The project should not be permitted or rejected on the grounds that it is likely to cause considerable harm to the environment by virtue of its proposed technology, technique and activities; that it is absent in the land management planning; that its activities are inconsistent with the state policy, the strategic assessment opinions or relevant legislation;
7.4.2. The project may be implemented without a detailed environmental impact assessment subject to specific conditions;
7.4.3 The project requires detailed environmental impact assessment.
7.5 If deemed necessary, the time period specified in Article 7.4 may be extended once by 14 days at the decision of the chief expert.

12. There are two types of EIAs defined in the Law:
(i) **General EIA (screening)** - to initiate a General EIA, the project implementer submits to MNET (or Aimag government) a brief description of the project including feasibility study, technical details, drawings, and other information. The General EIA may lead to one of four conclusions: (i) no detailed EIA is necessary, (ii) the project may be completed pursuant to specific conditions, (iii) a Detailed EIA is necessary, or (iv) project cancellation. The General EIA is free and usually takes up to 12 days.

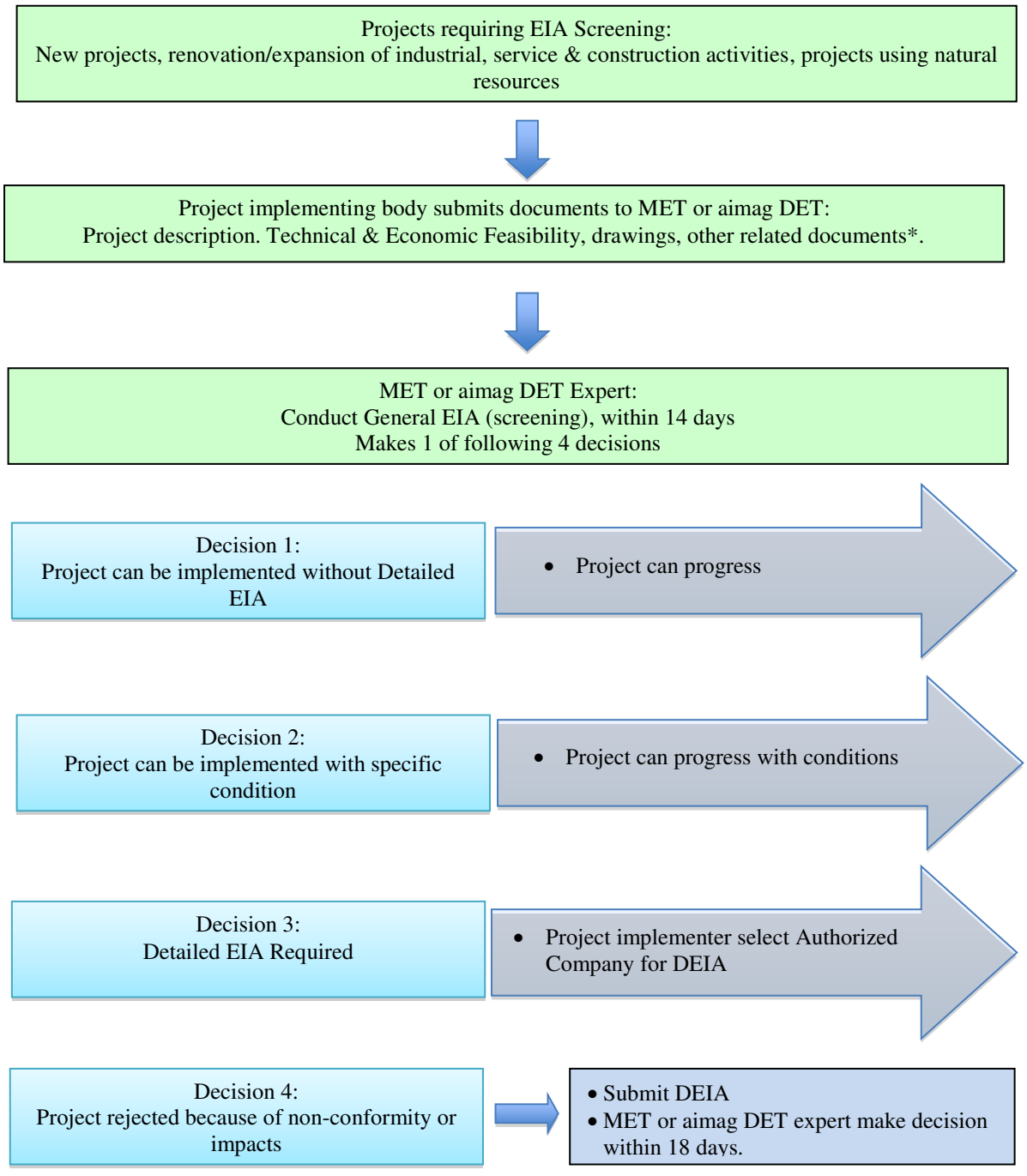
(ii) **Detailed EIA** – the scope is defined by the General EIA. The Detailed EIA report must be produced by a Mongolian company which is authorized by the MNET by means of a special procedure. The developer of the Detailed EIA should submit it to the MNET (or *Aimag* government). An expert of the organization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

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

13. The type and size of the planned activities define responsibility for the Ministry of Environment and Tourism (MET) or Aimag (provincial) government in making EIA.

14. The EIA process in Mongolia is summarized in **Figure 2.1**.

Figure 2.1. GEIA and DEIA procedure according to Mongolian Law on EIA.



Source: Adapted from Vol. 1 (2001) Compendium of Laws: A Mongolian Citizens Reference Book

15. The Division for Environmental Impact Assessment of MET is responsible for making any comments to this IEE. This IEE addressed the specific requirements from MET on this component.

2.2 Other International Environmental Requirements

16. The World Bank Group's Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good

International Industry Practice (GIIP). The EHS Guidelines are provided in a General Set in four major categories (Environmental, Occupational Health and Safety, Community Health and Safety, Construction and Decommissioning.) These general guidelines are applicable to all sub-projects and supplemented by relevant industry sector specific EHS guidelines.

17. According to ADB SPS 2009 "During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements."

2.2.1 Mongolia School/Kindergarten building Environmental Infrastructure

18. The consultants reviewed environmental issues related to development of infrastructure at schools and kindergartens in Mongolia. The project preparation technical assistance would ensure that project design proposes measures to address constraints in carrying out safe construction and expansion activities of school/kindergarten buildings as per national and international norms.

19. The project design must include development of overall environmental infrastructure, a systematic technological evaluation of appropriate, cost-effective and sustainable solutions to waste water, connections to centralized sewerage systems, effective solid waste management, connected water supply and energy efficient heating system infrastructure at school and kindergarten facilities in urban and rural settings.

20. Most schools in Ulaanbaatar are served by central water supply, wastewater collection and treatment facilities, centralized drainage systems, centralized heating systems and available electrical supply. However, regional environmental infrastructure systems are somewhat lacking in many cases, especially in Ger areas of Ulaanbaatar and outside, in rural areas. Additional Financing is also being made to schools and kindergartens in *Aimags* and *Soums* where many of the problems outlined above are more serious in other parts of Mongolia.

Green Building Concept[7]

21. A preliminary draft of a green building rating system was developed by Mongolia Green Building Council (MGBC) in 2014 by order of the Ministry of Environment, Green Development and Tourism of Mongolia (MEGDT). The draft system consists of ten main and 26 sub- criteria, covering the four thematic areas of energy, water, environment, and innovation (as shown in **Table 2.7**).

[7] Source of information Design and Technology Options - Analysis for a Green Public Kindergarten in Mongolia February 2016 Prepared by Mongolian Green Building Council and Building Technologies LLC for Global Green Growth Institute and Ministry of Environment.

Table 2.7 Criteria of the MGBC's Green building rating system

Energy	Implementation of the requirements of standard criteria of the A, B, C heating/thermal categories specified in BND 23-02-09 - Mongolian Building Standard
	Usage of energy efficient equipment
	Usage of interior and exterior lighting of the building
	Usage of renewable energy sources
Water saving	Water saving equipment installation
	Reuse of grey water futures
	Reuse of rain water
Environmental aspects	Location: External planning, playground, car parking, bike parking and greenery should be designed according to BND Connectivity to the public transport
	Building: Usage of resource saving building material Usage of Green marked building material
	Interior air quality: Internal air temperature, humidity and noise level according to BND Usage of green labelled material in Interior design.
	Environmental management: Usage of environmental management program and environmental monitoring plan during construction. Construction company or client has ISO 14001 environmental management standard Maximum natural lighting in design.
Innovation	Usage of innovative technology, idea and material not directly related to green building rating system, but incorporated into GBRS

(Source: Mongolia Green Building Council, 2014, report)

22. The criteria of the draft rating systems helped inform the choice of green design and technology options for the green public kindergarten in Mongolia. The design concept of the green public kindergarten (developed by Green Technology Center-Korea (GTCK)) examined design and technology options across five areas, as follows:

- Building materials: Insulation
- Interior: LED, others
- Energy: Energy Efficiency of Building: Insulation of building for heat loss prevention; Heating: Four types of electrical and renewable heating systems - Electric floor heating, Night heat saver, Power saving heating and usage of Hybrid systems
- Water and sanitation: Drinking Water: Solar panel to work the bore-well for drinking water; Wastewater: Biological treatment systems for wastewater
- Exterior: Landscaping etc.
- Other: Septic Tank for Solid waste

2.3 Mongolia and Multilateral Environmental Agreements (MEAs)

23. The health of Mongolia's natural ecosystems and populations of wild species is of both national and global importance. The country forms an important part of the global ecosystem in the ecological transition zone in Central Asia, where the great Siberian taiga, the Central Asian steppe, the high Altai Mountains, and the Gobi Desert converge. In recognition of its global responsibilities, Mongolia has acceded to a number of international environmental conventions and the key ones are tabulated below under four clusters in **Table 2.8**.

24. Each of these conventions places obligations on signatory governments ranging from the provision of a legislative basis for implementation, to adherence to the requirements and

conditions of each convention, to monitoring implementation performance on a regular basis, to reporting on a regular basis and to the conference of parties.

Table 2.8: International Environmental Conventions Signed by Mongolia

No	Convention	Year of Accession
A	Nature conservation	
1	Convention on the Protection of Wetlands of International Importance-Ramsar Convention on Wetlands	1998
2	CITES (Convention on International Trade in Endangered Species of Fauna and Flora)	1996
3	CBD (Convention on Biological Diversity)	1993
B	Hazardous material	
1	Stockholm Convention on Persistent Organic Pollutants (POPs)	2004
2	Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and Their Disposal	1997
3	Rotterdam Convention on Prior Informed Consent (PIC) for certain Hazardous Chemicals and Pesticides in International Trade	2000
C	Atmospheric emissions	
1	UNFCCC (United Nations Framework Convention on Climate Change)	1994
2	Kyoto Protocol	1999
3	UNCCD (United Nations Convention to Combat Desertification)	1996
4	Montreal Protocol (on Ozone Depleting Substances)	1996
5	Vienna Convention for the Protection of the Ozone Layer	1996
D	World Heritage	
1	World Heritage Convention	1990

2.4 Asian Development Bank's Safeguards Policies

2.4.1 Asian Development Bank's Environment Classification

25. The ADB's Safeguard Policy Statement (SPS), 2009 is applicable to all projects. These projects can be categorized as A, B, C or FI. **Table 2.9** below provides a list of categorization of the activities related to Environment, Safeguards, as per ADB's Safeguard Policy Statement 2009 requirements:

Table 2.9: Environment Safeguards Categorization: Definition

Category	Environment
A — Significant	Investments that anticipate significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works.
B — Less Significant	Investments with potential adverse impacts that are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be more readily designed than for Category A investments.
C — Minimal or impact	Investments that have minimal or no adverse environmental impacts.
FI — Financial Intermediation	Investment of ADB funds through financial intermediaries (FI)

2.4.2 ADB Prohibited Investment Activities List (PIAL)

26. At an initial stage of identifying project activities, the ADB's Prohibited Investment Activities List (described below) will apply. If the investment involves a prohibited activity, IA

will not consider the investment.

27. The following type of projects do not qualify for Asian Development Bank financing:
    (i) production or activities involving harmful or exploitative forms of forced labour[8] or child labour[9];'
    (ii) production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phase outs or bans, such as (a) pharmaceuticals[10], pesticides, and herbicides[11],(b) ozone-depleting substances[12], (c) polychlorinated biphenyls[13]and other hazardous chemicals[14],(d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora[15], and (e) trans-boundary trade in waste or waste products[16];
    (iii) production of or trade in weapons and munitions, including paramilitary materials;
    (iv) production of or trade in alcoholic beverages, excluding beer and wine[17];
    (v) production of or trade in tobacco;
    (vi) gambling, casinos, and equivalent enterprises;
    (vii) production of or trade in radioactive materials[18],including nuclear reactors and components thereof;
    (viii) production of, trade in, or use of unbonded asbestos fibers[19];
    (ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
    (x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

2.4.3 ADB SPS Requirements (SR1): Environment Policy

28. ADB's SPS sets out the policy objectives, scope and triggers, and principles for the environmental safeguards. To achieve the policy objectives and deliver the policy principles, ADB carries out the actions described in the "Policy Delivery Process" (subsection "B" of the SPS). To help borrowers/clients and their projects achieve the desired outcomes, ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. ADB staff, through their due diligence, review, and supervision, will ensure that borrowers/clients comply with these requirements during project preparation and implementation. These safeguard requirements are as follows:

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[8] Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty

[9] Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).

[10] A list of pharmaceutical products subject to phaseouts or bans is available at http://www.who.int.

[11] A list of pesticides and herbicides subject to phaseouts or bans is available at http://www.pic.int.

[12] A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phaseout dates. Information is available at http://www.unep.org/ozone/montreal.shtml.

[13] A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

[14] A list of hazardous chemicals is available at http://www.pic.int.

[15] A list is available at http://www.cites.org.

[16] As defined by the Basel Convention; see http://www.basel.int.

[17] This does not apply to investee companies who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to an investee company's primary operations.

[18] This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shielded.

[19] This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

Objectives: The objective of ADB's due diligence for the Project loan is that EA ensures the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process.

Scope and Triggers: Environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

Policy principles:

- Use screening process for each proposed project to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.
- Conduct an environmental assessment for each proposed project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential transboundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.
- Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.
- Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.
- Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.
- Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.
- Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.
- Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural

habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

- Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.
- Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.
- Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation

2.4.4 Other documents relevant to ADB's Safeguard Policy Statement, 2009

(i) World Bank Group's Environment, Health and Safety (EHS) Guidelines, 2007 which are currently under revision.

(ii) ADB's Environmental Safeguards: A Good Practice Sourcebook-Draft Working Document (November 2012).

(iii) International Labor Organisation (ILO) Core Labor Standards.

3.0 DESCRIPTION OF THE PROJECT

3.1 The Project

29. The project seeks to sustain access to and quality of pre-primary, primary, junior and senior secondary education during the economic difficulties. The project will have five outputs: (i) gap in enrollment capacity of schools and kindergartens narrowed; (ii) unfinished curriculum reform and associated assessment system reforms completed; (iii) teaching and learning materials that accompany the new curriculum provided; (iv) teachers and managers' knowledge and skills upgraded for the new curriculum and assessments; and (v) systems for planning and managing education services strengthened. The project is expected to be implemented from September 2017 to June 2021.

3.2 Justification of the Project

30. The growth of school- and kindergarten-aged population has been outpacing the construction and expansion of schools and kindergartens, making available seats increasingly scarce. From school year (SY) 2009/10 to SY2015/16, enrollments in pre-primary education doubled (105.9%), whereas the number of kindergartens increased only by 58.2%.[20] Similarly, between SY2012/13 and SY2015/16, enrollments in schools rose by 7.8%, whereas the number of the schools built was 13, an increase of 1.7%. As a consequence, the enrollment capacity of existing schools and kindergartens has been overstretched, with the class size enlarged, and 33 schools operating in three shifts in SY2016/17 (of which 30 are located in Ulaanbaatar).[21] The average class size in Ulaanbaatar schools is the largest (37 at primary level), as enrollments expanded by 18.1% between SY2012/13 and SY2015/16. With an increase of 41.5% in pre-primary enrollments, the class size in free public kindergartens in Ulaanbaatar becomes even larger (40–50 students), and students are selected by lottery. Although the net enrollment rates at pre-primary, primary, and junior secondary levels have been improving steadily, this may be reversed unless new schools and kindergartens are built, or existing schools and kindergartens are expanded. As kindergarten-aged population is projected to keep growing until 2019, and school-aged population, until 2025, urgent support is needed to meet the growing demand for seats at kindergartens and schools.

31. By 2021, about 3 schools and 7 kindergartens will be newly constructed, and 8 schools and 17 kindergartens will be expanded.

3.3 Location

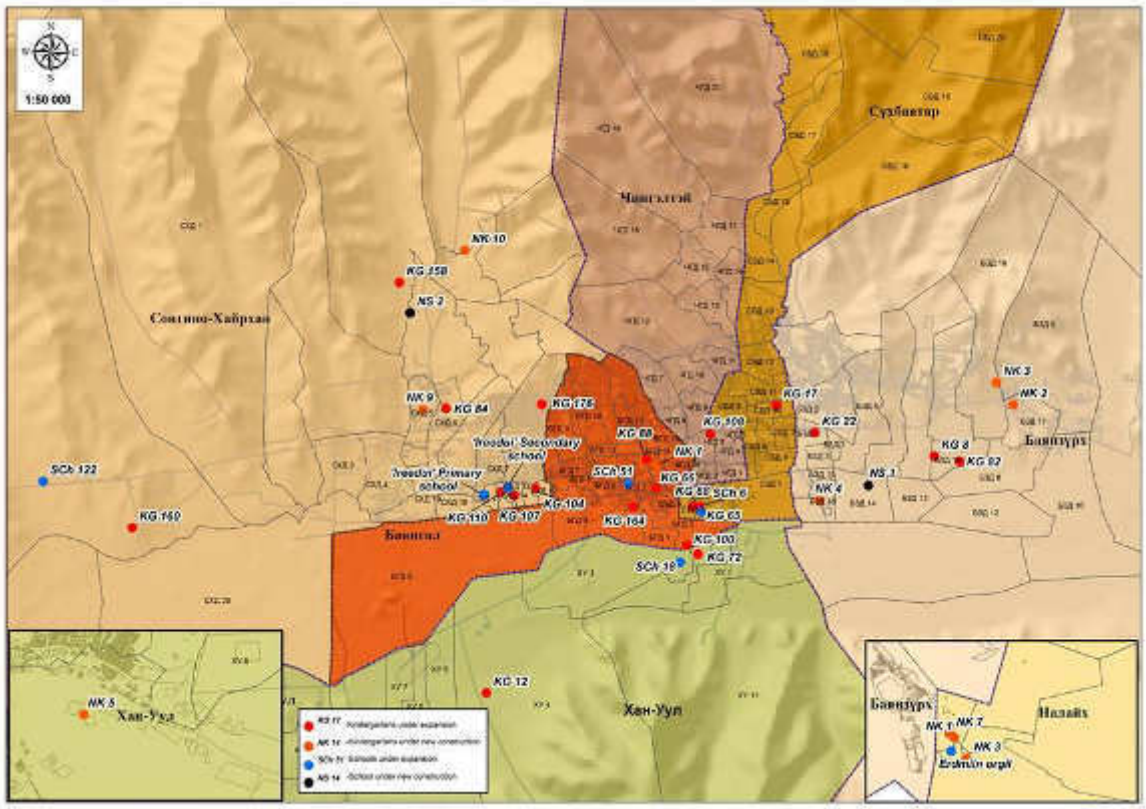
32. **Figure 3.1** provides the detailed map of Mongolia. **Figure 3.2** provides the location of ADB's funded sub-projects in Ulaanbaatar city.

[20] In SY2009/10, the total number of students enrolled in pre-primary education was 109,479, and in SY2015/16 it jumped to 225,388. On the other hand, the number of kindergartens in SY2009/10 was 814, of which 102 were private in SY2009/10. It rose to 1,288 in SY2015/16, of which 462 were private.

[21] Although the class size became larger, the student-teacher ratio remained fairly constant at 18.3–18.8 between SY2012/13 and SY2015/16.

Figure 3.1 Map of Mongolia and location of sub-projects implementing aimags.

33. **Figure 3.2** provides location map of the subprojects sites in the Ulaabataar city.



Figures 3.2. Location map of project sites in Ulaanbaatar city

34. **Figures 3.3- 3.11** provide location map of project sites in other Aimags respectively

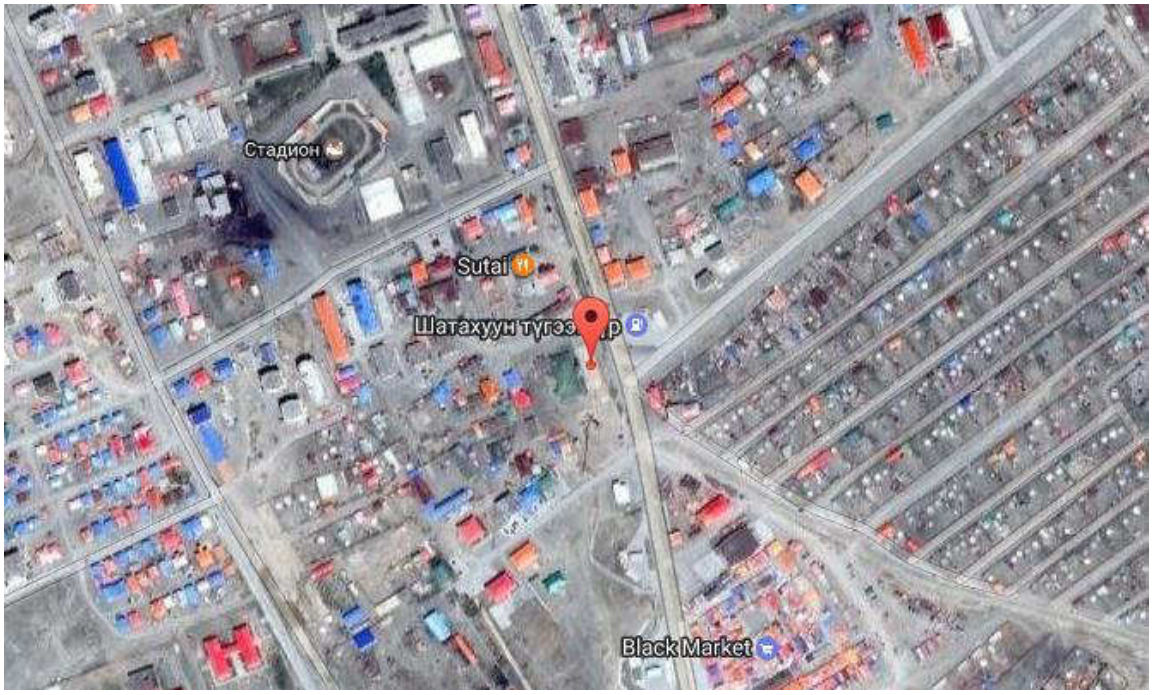


Figure 3.3: Location of Khantaishir school in Gobi-Altai *Aimag*, Altai

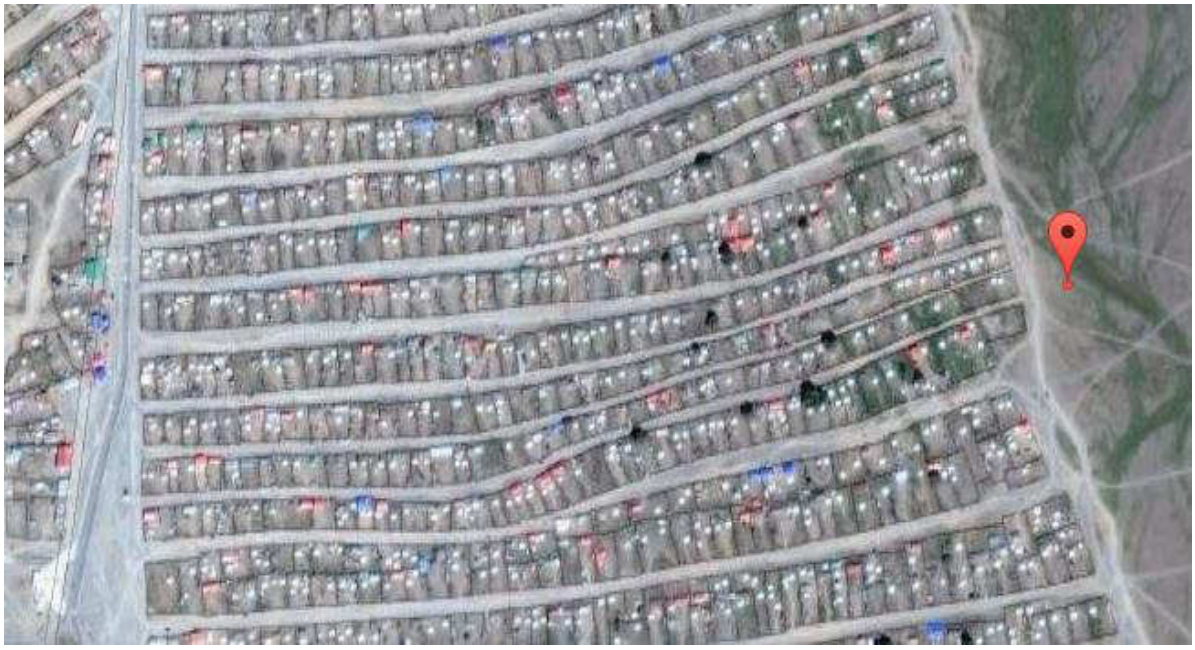


Figure 3.4: Location of new kindergarten in Baynkhongor *Aimag* Baynkhjongor *Soum*

Figure 3.5: Location of school in Bogd *Soum* of Uvurkhangai *Aimag*

Figure 3.6: Location of new kindergarten in Teshig *Soum* of Bulgan *Aimag*

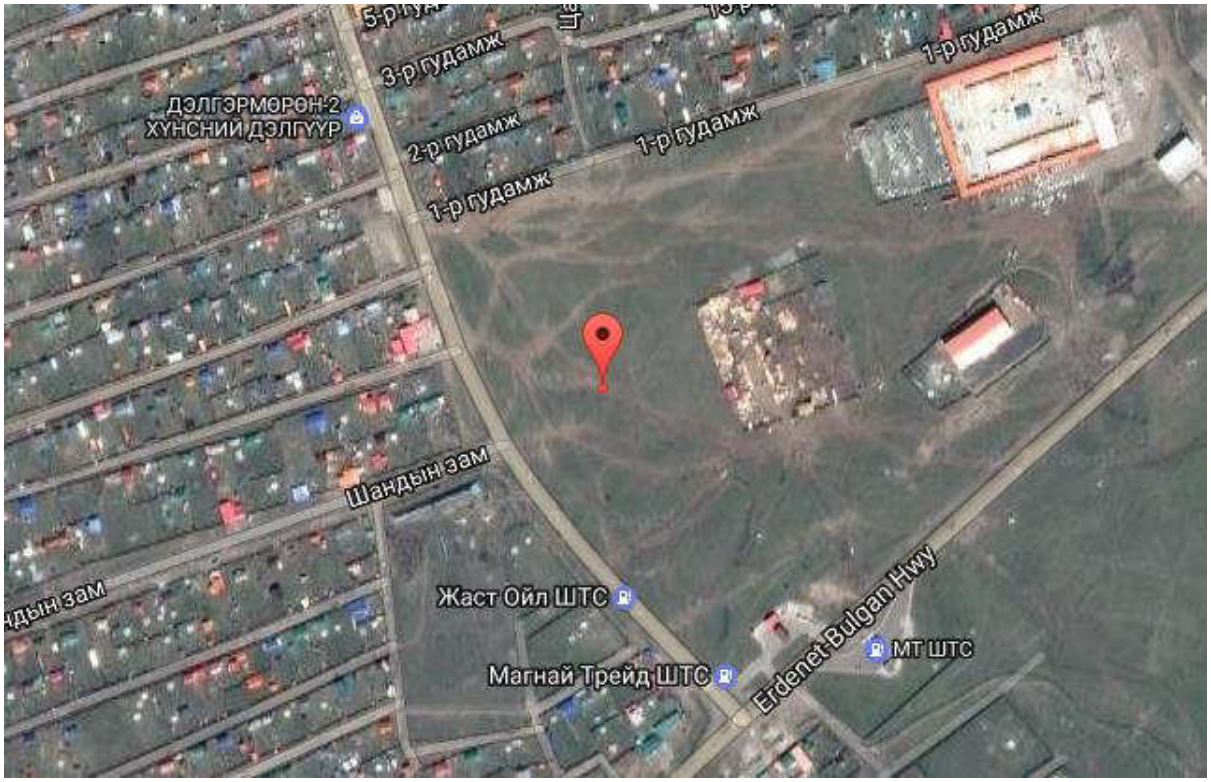


Figure 3.7: Location of new kindergarten in Erdenet city of Orkhon *Aimag*

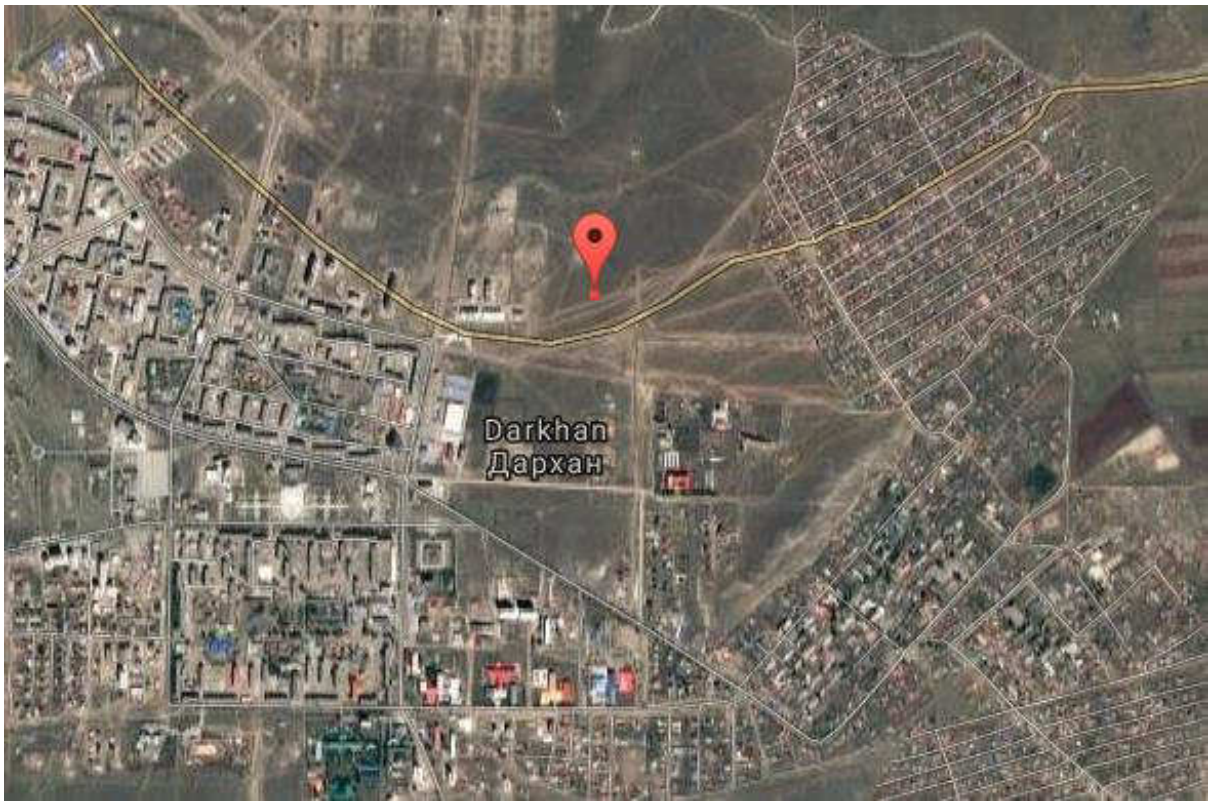


Figure 3.8: Location of new kindergarten in Mangirt bag of Darkhan Uul *Aimag*

Figure 3.9: Location of new kindergarten in Sumber *Soum* of Gobisumber *Aimag*

Figure 3.10: Location of new kindergarten in Sianshand *Soum* of Dornogobi *Aimag*

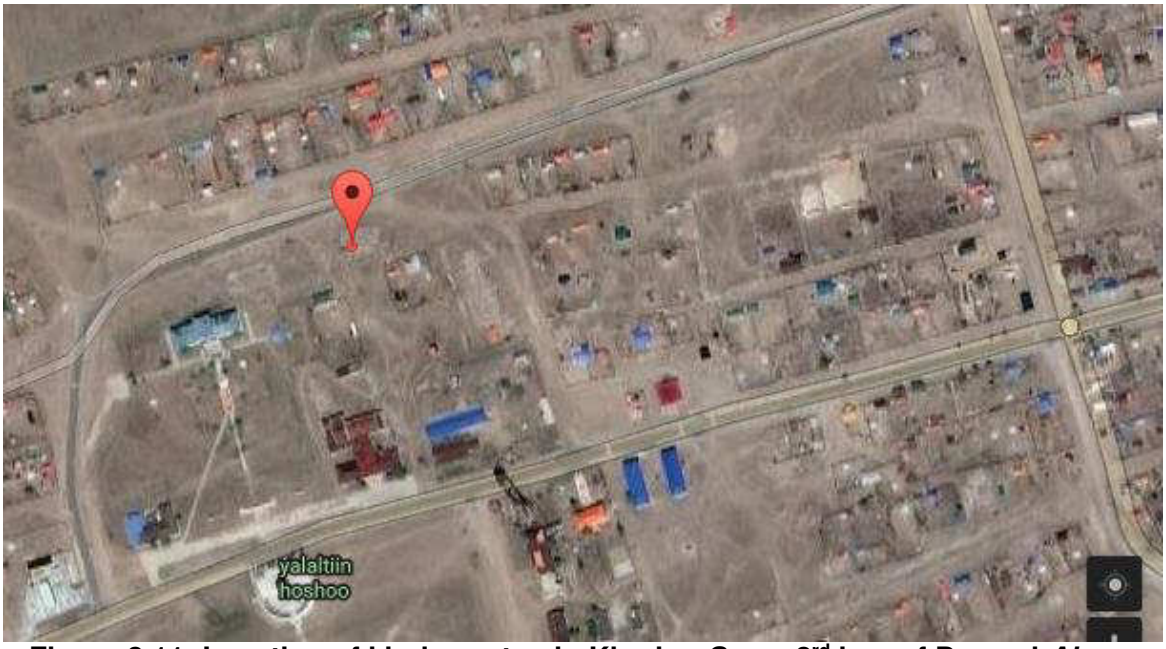


Figure 3.11: Location of kindergarten in Kherlen *Soum* 3rd bag of Dornod *Aimag*

3.4 Size and Magnitude of Operation

Project components

35. Table **3.1** shows sub-projects and their associated key features under funded by ADB.

Table 3.1: Sub-project components and their key features

No	Sub-Project components	Location	Key features of sub-project component
A	**Kindergartens**		
A 1	Kindergartens under expansion		
1	Kindergarten No. 66	UB, Bayngol District, 2nd khoroo.	Existing 3 floor building is established in 1972, connected to central heating, electricity, water and sewage system. "Ikh Zasag" college is using the 3rd floor of this building as a dormitory with entrance through backside. The expansion will be a separate two floor building in the south side of building within the premises.
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	Existing 2 floor building is established in 1985, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so it was losing much heat but after improvements in wall insulation, the heat loss has decreased. KG has enough land space in its premises. The expansion will be a separate two floor new building in the back side within premises.
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	Existing 2 floor building is established in 1973, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The expansion will be a separate two floor new building in the back side within premises.
4	Kindergarten No.88	UB, Bayngol District, 18th khoroo.	Existing 2 floor building is established in 1982, connected to central heating, electricity, water and sewage system. The expansion will be a separate two floor new building in the back side within premises.
5	Kindergarten No.22	UB, Baynzurkh District, 1st khoroo.	Existing 2 floor building is established in 1970, connected to central heating, electricity, water and sewage system. The kindergarten has 3400 m^2 land area and expansion will be a separate two floor new building in the back side within premises.
6	Kindergarten	UB, Baynzurkh	Kindergarten has 2 floor old building constructed in 1957. The

No	Sub-Project components	Location	Key features of sub-project component
	No.8	District, (16th khoroo.	building connected to central heating, sewage and water supply system. The current building washrooms have poor sanitation condition, walls and ceiling of classrooms are breaking down, and water and wastewater plumbing systems have deteriorated. Access road is available. The expansion will be separate new building in the back yard of kindergarten.
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	Existing 2 floor building is established in 1980, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The kindergarten has 7420 m^2 land area and expansion will be a separate two floor new building in the back side within premises.
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	Existing 2 floor building is established in 1978, connected to central heating, electricity, water and sewage system. The expansion will be separate 2 floor building with capacity of 150 children in the back side within premises.
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	Existing 2 floor building is established in 1972, connected to central heating, electricity, water and sewage system. The expansion will be a separate two floor new building in the back side within premises.
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	Existing 2 floor building is established in 1976, connected to central heating, electricity, water and sewage system. The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat. The expansion will be a new two floor separate building in the back side within premises.
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	Existing 1 floor building is established in 1980, not connected to central heating and sewage system and has individual heat only boiler, holding tank, but connected to district public water supply system and central electricity. Kindergarten is using 3 additional Gers for classrooms. The expansion will be a separate building in its premises.
12	Kindergarten No.84	UB, Songinokhairkhan District, 6th khoroo.	Existing 2 floor building is established in 1948, connected to central heating, electricity, water and sewage system. The plumbing systems of current building is too old. Kindergarten has 10172 m^2 area of land. The expansion will be separate building in its premises.
13	Kindergarten No.104	UB, Songinokhairkhan District, 12th khoroo.	Existing 1 floor building is established in 1986, connected to central heating, electricity, water and sewage system. Kindergarten has 10172 m^2 area of land. The expansion will be separate building in its premises.
14	Kindergarten No.107	UB, Songinokhairkhan District, 14th khoroo.	Existing 1 floor building is established in 1986, connected to central heating, electricity, water and sewage system. Kindergarten has 8861 m^2 area of land. The expansion will be separate building in its premises.
15	Kindergarten No.110	UB, Songinokhairkhan District, 15th khoroo.	Existing 1 floor building is established in 1987, connected to central heating, electricity, water and sewage system. Kindergarten has 10026 m^2 area of land. The expansion will be 2 floor separate new building in its premises.
16	Kindergarten No.158	UB, Songinokhairkhan District, 24th khoroo.	Kindergarten has 2 floor building which established in 2011, has not connected to central heating, electricity, water and sewage system and has individual heat only boiler, holding tank and water well. Additionally, the kindergarten has Ger branch in its owned 1100 m^2 area of land. The expansion will be a two floor separate new building in current Ger branch operating area inside the premises. This area has no heating, water supply and sewage infrastructure.
17	Kindergarten No.176	UB, Songinokhairk	Kindergarten has 1 floor building which established in 2005, has no connection to central heating, water and sewage system and

No	Sub-Project components	Location	Key features of sub-project component
		han District, 31st khoroo.	has individual heat only boiler, holding tank and water well. Kindergarten has 1388 m^2 area of land. The expansion will be additional floor on the top of building. The heat
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	Existing 2 floor building is established in 1973, connected to central heating, electricity, water and sewage system. The expansion will be a two floor separate new building in the back side of the premises.
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	Kindergarten has 2 floor old building constructed in 1972. The building connected to central heating, electricity, sewage and water supply system. Access road is available. The expansion will be a separate new building in the back side of kindergarten premises.
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	Kindergarten's existing building is 2 floor and constructed in 1963. Kindergarten has 3950m^2 premises and out of it 810m^2 area is under the building. The existing building connected to central heating, electricity, water supply and sewage system. The expansion will be a two floor separate new building in the own premises in the left side of old building.
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	Existing 2 floor building is established in 1962, not connected to central heating and sewage system, has individual heat only boiler, holding tank for waste water, but connected to water supply system. The current premise is 2400 m^2 area and also, the kindergarten has possession rights for 4500 m^2 area of new land in different area which is 500 m from existing premises. The expansion will be a two floor separate new building in the newly possessed land area. This new land area is very close to main pipelines of central heating, water supply and sewage system and will therefore be connected to all utilities.
A 2	Kindergartens under new construction		
1	New kindergarten **KG deleted from list after due diligence**	UB, Bayngol District, 17th khoroo.	The land allocated for this site is located in between 3 kindergartens (2 of them newly constructed) overlapping with their area and underground utility infrastructure.
2	New kindergarten **KG deleted from list after due diligence**	UB, Baynzurkh District, 17th khoroo	District Government owned 3000 m^2 land is available. The land is surrounded by others owners' fences. There are no any central heating, water supply and sewage system available in the area.
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	The land allocated for this site currently used by branch of kindergarten # 168 using 4 Gers as classrooms. Has individual electric heating, no holding tank for waste water and uses open pit and transported drinking water.
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	Government owned land near the Khoroo Government office. The land can be connected to central heating, electricity, water supply and sewage system. Access road is available.
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	The site is proposed to be built in the premise of existing kindergarten # 165 with 2474m^2 area of land. The kindergarten has 2 floor building, established in 2008, and has individual heat only boiler, deep water well and holding tank for waste water. In 2011, the kindergarten installed new electric heating facility. A two floor new building will be constructed within the premises.
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	District Government owned land has 3,000m^2 area situated near the "Family and Children Development Center", and has boundary with Khashaa plots in left and back side. Access road is available. The area is 400m away from District Heating Plant, water supply

No	Sub-Project components	Location	Key features of sub-project component
			and sewage system.
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	District Government owned land with 1,000m^2 area situated in Ger area surrounded by Khashaa plots and small shops. Access road is available. The area is 400m away from District Heating Plant, water supply and sewage system.
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	District Government owned land 6,000m^2 area situated near the "Sport Complex", close with Khashaa plots in left side. Access road is available. The area is at least 500m away from District Heating Plant, water supply and sewage system.
9	New kindergarten **KG deleted from list after due diligence**	UB, Songino-khairkhan District, 5th khoroo.	The area for new kindergarten is nearby new building of 25th Khoroo Government office. The kindergarten will be built on the remaining old building of Khoroo government demolishing it. The existing Khoroo government building is far from central heating, water supply and sewage system.
10	New kindergarten	UB, Songino-khairkhan District, 25th khoroo.	District Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby main road and surrounded by Ger khashaa plots and small services. Access road is available. There are no central heating, water supply and sewage system available in the area.
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	Aimag Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby the school dormitory and school. Access road is available.
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	Aimag Government owned 300m^2 land area is available. Blue print is developed. The area is located nearby main road and 200m away from Gas station. Access road is available.
13	New kindergarten	Orkhon, Erdenet city	The new construction site is situated in Tsagaan Chuluut bag, having 10,000 m^2 area owned by Aimag Government . The surrounding area is included in city development plan and close to central heating, water supply and sewage system.
14	New kindergarten	Bulgan, Teshig Soum,	The new construction site is planned inside existing kindergarten premises. The kindergarten has possession right for 11,060 m^2 land area. It is surrounded by buildings, households and main street. The new building will connect to central heating, water supply and sewage system. The new kindergarten will have two floors with capacity of 150 children.
15	New kindergarten	Baynkhongor, Baynkhongor Soum, 4th Bag.	The new construction site is situated in the edge of Ger Khashaa Plot area. Total of 4900 m^2 area and owned by Aimag Government. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.
B	**Schools:**		
B 1	Schools under expansion:		
1	School No.51	Bayngol District, UB	Existing 3 floor building constructed in 1974 by brick. Connected to centralized electricity, heating, water supply, sewage system. The expansion will be a separate building behind the existing school building.
2	School No.18	UB, Khan-Uul District	Existing 3 floor building is established in 1979, connected to central heating, electricity, water and sewage system. The expansion will be additional floor on the roof, and have permission of Specialized Inspection Agency to add one more floor on top.
3	"Erdmiin Orgil" Complex	UB, Nalaikh District	Existing 1 floor building is established in 1971, connected to central heating, electricity, water and sewage system. The expansion will be 3 floor separate building with capacity of 640 students, in the school yard inside premises.
4	"Ireedui" Primary	UB, Songino-khairhan	Existing 2 floor building was established in 1983, connected to central heating, electricity, water supply and sewage system. The

No	Sub-Project components	Location	Key features of sub-project component
	School	District.	school has 14281.7 m^2 area. The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top.
5	"Ireedui" Secondary School	UB, Songino-khairhan District.	Existing 2 floor building is established in 1983, connected to central heating, electricity, water and sewage system. The school has 14602.2 m^2 area. The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top.
6	School No.122 (green school)	UB, Songino-khairhan District, 22nd khoroo.	School has 18000 m^2 land area and 4 floor building, constructed in 2013. The existing building has capacity with 640 students but currently 1500 students are enrolled at this school. The school building has individual heat only boiler for heating, water reservoir for keeping transported water and individual holding tank for waste water, connected to central electricity line. The expansion will be 3 floor building with capacity of 640 students and has a blue print for building.
7	School No.6	UB, Sukhbaatar District	Existing 2 floor building is established in 1973, connected to central heating, electricity, water supply and sewage system. The expansion will be additional floor on the roof.
8	Khantaishir	Govi-Altai, Altai town.	The school is in the one floor old building constructed in 1961, which is proposed to be used as office of construction company temporarily. The building is connected to central heating, water supply and sewage system. School has possession of 3567 m^2 land and the expansion will be a new 3 floor building, with capacity of 320 students and can be constructed in front of old building.
9	Bogd Soum, Uvrukhangai	Uvurkhangai, Bogd Soum,	The existing school building is 2 floor and established in 1978. The school has possession of 566.9 m^2 land. It connected to Soum center's central heating, water supply and sewage system. The expansion will be 2 floor separate building with capacity of 320 students and will be constructed behind the old building.
10	Baruunburen Soum, Selenge **School deleted from list after due diligence**	Selenge, Baruunburen Soum.	The existing school building is 2 floor and established in 1981. The school has possession of 1563 m^2 land. It is connected to central electricity line, Soum center's heating, water supply and has individual holding tank for waste water. The expansion will be 2 floor separate building with capacity of 320 students. But there is lack of land for the expansion.
B 2	Schools under new construction :		
1	New school	UB, Baynzurkh District, 14th khoroo.	Land is owned by District Government and is in the new apartment buildings' construction area of MONNIS company. The site if close to central heating, water supply and sewage system.
2	New school	Songino-khairhan District, 7th khoroo.	The new construction site is situated in the edge of Ger Khashaa Plot area. Total of 10000 m^2 area for this site and it owned by District Government. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.
3	New school	Darkhan, Mangirt, 15th Bag.	Construct new school building with capacity of 960 students.1.5 ha area is available with a possibility to connect to central heating, sewage and water supply system. The site is included in new development area and no any other buildings in vicinity of new kindergarten close to this site.

36. For some of the School/Kindergarten sub-projects, location specific blue prints are under development through accredited architects in Mongolia. The data regarding soil, topography, contour, land cutting and filling required, distance from water body and distance from major roads, details of forest/non-forest, fruit/non-fruit trees that can be affected, land

details will be collected by engineering firms. However, if sites are changed other than those indicated here in the IEE, supplementary information will be supplied for each of new location for subprojects proposed by MECSS to ADB for prior to approval before finalizing design drawings.

4.0 DESCRIPTION OF ENVIRONMENT (Baseline Data)

37. The Schools/Kindergartens subprojects funded under the PPTA are situated in districts of Ulaanbaatar city and Baynkhongor, Bulgan, Gobi-Altai, Gobisumber, Dornod, Darkan-Uul, Dornogobi, Orkhon, Uvurkhangai, Selenge provinces. This chapter focuses on the present environmental conditions of the sub-project areas in Ulaanbaatar and other provinces.

38. Most sub-project activities will have minimal impacts to the environment, and will not be influenced by current environment conditions. Thus, the main emphasis of this chapter is the description of physical, biological, and socioeconomic conditions in Ulaanbaatar and at other Aimags, and more specifically the environment at the schools/kindergartens.

4.1 Physical Environment of Mongolia

4.1.1. Topography

39. Although most of the country is flat, with rolling hills, there are several significant mountain ranges, notably the Altai, Khangai, Knentii and Khuvsgul. About half of the land is at an altitude of about 1,400 m or more above mean sea level. The altitudes range from 560 m (above sea level) at the lowest point of Khokh Nuur in the eastern steppes, to the highest of 4,374 m (above sea level) at Khuiten peak in the Altai Mountains.

4.1.2. Climate

40. Mongolia lies in a transitional zone at 42^{o} – 52^{o} N, between the boreal forests of Siberia and the Gobi Desert, spanning the southernmost border of the permafrost and the northernmost deserts of Central Asia. Large distances and high mountain chains separate the country from the oceans. It has an extreme continental climate with marked differences in seasonal and diurnal temperatures and low precipitation. Mean annual observed precipitation ranges from 38.4 mm at Ekhiin gol in Bayanhongor Aimag (province) to 389.3 mm at Dadal in Hentii Aimag. Most of the rainfall occurs in summer, between June and August. Mean monthly temperatures for the last thirty years range from -11.8^{o}C (January) to 25.2^{o}C (July) at Ekhiin gol, the warmest place, and from -32^{o}C (January) to 12.8^{o}C (July) at Rinchinlumbe, the coldest place in Mongolia.

41. Mongolia has a severe continental climate. Ulaanbaatar is the coldest national capital in the world, with temperatures ranging from approximately -37 ^{0}C to +25^{0}C. The country is also prone to severe winters, known as *zud* which means any condition that stops livestock getting to pasture. The winters of 1999, 2000, 2001 and 2010 were *zud* years, which resulted in the deaths of more than 25% of the livestock population. Ulaanbaatar is located at 1,350m altitude in the valley of four mountain ranges which rise to 1,650 to 1,949m altitude. Due to its location, the city experiences many temperature inversions. At least 80% of these inversions occur from October to April when air temperatures are from 7.5 to 11.7 ^{0}C and land temperatures are from minus 21 to minus 39^{0}C. The average depth of the inversions is 650 to 920 m.

Precipitation

42. The country averages 257 cloudless days a year, and it is usually at the centre of a region of high atmospheric pressure. Precipitation is highest in the north, including Ulaanbaatar (average of 200 to 350 mm per year) and lowest in the south, which receives 100 to 200 mm annually. In Ulaanbaatar, 95-97 percent of precipitation falls during the warm season, including 75-80 percent in the summer. In winter, the precipitation ranges from 1 to 3 mm, whereas in July it ranges from 100 to 120 mm. At an average, it rains 40-70 days a year, snow falls on 25-30 days, and land is covered with snow for 140-170 days.

Wind

43. The dry environment exacerbates the frequent dust storms occurring in Mongolia each year. Wind erosion of soil is a dynamic process of soil degradation in which the share stress applied on the ground surface by wind exceeds the ability of the soil particles to resist separation and transportation. The wind erosion depends on the climatic factors, soil properties, landscape characteristics and availability of vegetation. In Ulaanbaatar, wind blows mostly from the north and northwest and average wind velocities are usually lower than in other parts of Mongolia. Monthly wind velocities average 1.6 – 4.4 m/s, with an average of 7 to 9 days per year where wind velocities exceed 10 m/s.

4.1.3 Ecosystems

44. Mongolia's position, size and topography have resulted in a unique assembly of ecosystems or natural zones. Studies of the flora and fauna of the country, together with climatic and geographic data, have resulted in the classification of Mongolia into six broad ecological regions, 16 provinces and 47 bio-geographical zones. Mongolia also has been divided into six broad vegetation zones (Alpine, Taiga, Forest-Steppe, Steppe, Desert-Steppe and Desert). Ecosystems are fragile and extremely vulnerable to many forms of economic exploitation.

45. **Alpine**: High mountains rising above the tree line occur in the Altai, Khangai, Khentii and Khuvsgul ranges. The tops of these mountains are relatively flat, with few sharp peaks. Vegetation consists of low shrubs and herbs, sedges, mosses, algae and lichens, and there are few birds and mammals living at this altitude.

46. **Taiga**: Mountain taiga forest covers areas of the Khuvsgul and Khentii mountains, the area north of the Tarbagatai Mountains, the upper reaches of the Orhon river, and the Khan Khokhii range. It is the southern edge of the Siberian taiga that has the largest continuous forest system in the world.

47. **Forest-Steppe**: This zone lies between the steppe and the taiga, in the Khnagai and Altai mountain chains, including parts of Orhon and Selenge river basins and Khyangan Mountains of eastern Mongolia. Coniferous forests are found on the northern slopes, while the southern slopes are covered with open steppe vegetation.

48. **Steppe**: The steppe zone extends from the western Great Lakes depression past Khangai and the middle Khalkha highlands to the steppes of Khentii, Dornogobi and Dornod. It is characterized by flat plains and rolling hills covered in feather grass and shrubs.

49. **Desert-Steppe**: Mongolia's desert-steppe or semi-desert is characterized by a dry climate with mean annual precipitation of 100-125 mm and vegetation dominated by low grasses and shrubs. Many of Central Asia's endemic plants occur in this zone.

50. **Desert**: Desert occurs predominantly in the south. The Mongolian desert is extremely dry, with mean annual rainfall lower than 100 mm, and some areas remain without rain for several years at a time. High winds and dust storms are frequent in spring and summer. There are oases with poplar, but for the most part the desert consists of bare sandy plains and rocky mountains.

4.1.4. Water Resources

51. Mongolia straddles a major continental watershed aligned east-west across the country. North of the divide, drainage is to the Arctic Ocean via the Lena River and Lake Baikal, and to the Pacific Ocean via the Amur and Yenisei rivers. South of the divide drainage terminates in dry lakes and salt pans with no outlet to the sea.

52. There are more than 3,800 rivers and streams with regular run-off in Mongolia. The

total length of the river network is about 6,500 km. There are 186 glaciers of a total volume of 62.5 km^3 and 3,500 lakes covering total surface area of 15,600 km^2 with a total volume of 500 km^3 and 8,000 river lets. There are three major drainage basins: rivers in the west drain to the enclosed Basin of Central Asia; rivers in the north drain to Arctic Ocean Basin; and rivers in the east drain to Pacific Ocean Basin.

53. The potential water resources of the country are estimated to be about 36.4 km^3. Of this, the surface water resources are 22.0 km^3 and the usable groundwater resources are 12.6 km^3. About 78% of the river run-off is formed on 36 % of the territory in northern, western, and north-eastern mountainous areas and 22 per cent is formed on 64 % of the territory in the south of the country. On an average, the annual amount of water resources per capita is 17,300 m^3. However, it ranges from 4,500 m^3 per capita in the Gobi area to 46,000 m^3 per capita in northern and central areas.

Surface water

54. Ulaanbaatar is located in the Tuul River basin. The Tuul River is 704 km long and drains an area 49,840 square km. Currently the Tuul River is suffering from pollution, some caused by Ulaanbaatar's central sewage treatment facility, as well as heavy mineral and sedimentation pollution caused by gold mining in the Zaamar area. The Selbe River, a tributary of the Tuul River with a catchment area of 303 square km, flows along the Eastern and Southern sides of Ulaanbaatar, eventually meeting the Tuul River approximately 20 km downstream of the City. The principal recharge mechanism for the Selbe River is the rain water in summer and autumn therefore, water levels fluctuate considerably. The river is considered to be of low biological relevance and is not used as a drinking water source or for agriculture. **Table 4.1** provides average water quality in Tuul river of the Ulaanbaatar city.

Table 4.1: **Average Water Quality in the Tuul river in Ulaanbaatar city (1998-2008)**

Summary	DO [mg/l]	BOD_5 [mg/l]	COD [mg/l]	NH_4^+ [mg/l]	NO_2^- [mg/l]	NO_3^- [mg/l]	PO_4^{-3} [mg/l]
Mean	8.68	4.59	5.42	1.47	0.060	0.65	0.12
Min	6.87	1.79	2.96	0.11	0.003	0.15	0.01
Max	9.40	15.79	9.34	6.47	0.220	1.77	0.50
Standard	0.81	4.37	2.22	2.18	0.079	0.51	0.17

Source: Data from analyzing by Environmental monitoring laboratory of MNET, in Ulaanbaatar city, 1998-2008.

Groundwater

55. Groundwater exists in unconfined aquifers (alluvial sediments of late quaternary to recent period) at depths between 4 - 30 m. The static water level in the Tuul River valley is from 2-6 m in winter and 0.5-5 m in summer, if there are no wells in operation. However, extraction of groundwater can cause the static water level to drop from 10 - 13 m in winter and from 15 - 19 m in summer.

Permafrost

56. Two thirds of the population of Mongolia lives in the region with permafrost distribution. With the increasing activity of infrastructure networks, knowledge about the distribution patterns of mountain permafrost helps reducing installation costs, and improves life safety of people in such area.

57. A map of seasonally frozen ground and permafrost distribution of Mongolia at a scale of 1:1500000 is available. This map was compiled by the results of Russian – Mongolian geocryological expedition in 1967 – 1971.

58. On the territory of Ulaanbaatar, annual and seasonal permafrost soil is spread in relation to land surface formation and climate feature. The annual permafrost intermittently and patchily spread here (Tumurbaatar, 1995). The annual permafrost spreads on relatively

small area in intermittently through average high mountains near Tolgoit, Selbe, Uliastai and Gachuurt river outfalls in north part of the Ulaanbaatar. But above mentioned rivers valleys and outfalls of Baruun Salaa and Zuun Salaa rivers in Tolgoit, Belkh and Selkh rivers, Sharga Morit and Khandgait rivers in Selbe river, Zuun gol and Baruun gol, Urd Bayn gol rivers in Uliastain river, Shijir, Shavart and Bugat rivers in Gachuurt river valley, the long-term permafrost spreads patchily. In other parts along or in low parts of land surface, medium bare mountain slopes and low hills relic soil spreads in seasonal permafrost. The annual permafrost spreads mostly in valley bottom and back side of mountains, humid sandy and argillaceous debris. Here phenomenon of cold salient, seasonal and annual cold fraction and overflow is commonly occurred by impact of the permafrost process. Furthermore, various micro types from the permafrost are derived in hollows and convexes. The most occurred phenomenon of the permafrost is the overflow “toshin”. It is related to seasonal freezing and formed in river, stream and sprig beds, and sometimes it occupies even side areas. When it gets warm in spring its ice melts and breaks valley bottom in some extent.

59. Annual absolute thickness of the permafrost is 15-40 m in thick river beds, hollow and convex regions, 25-120 m on top of high mountains and their back slopes and average thickness is 30-100 m. Seasonal freezing of relic soil in natural normal condition of annual permafrost and its melting is 2.7- 3.4 m in alluvia gravel, gravelly sand and sandy soil or in river beds, 4.0- 5.6 m in sandy soil with broken rocks of mountain slopes, 2.8- 3.1 m in mountain back slope soil and 5.1- 5.4 m in mountain top soil and sediment (Sharkhuu S., 2002).

60. Annual mean temperature of the relic soil freezes from zero degrees and its seasonal freezing and melting depth size decreases, when its loamy, fatty and humid feature is increased. In coherent to it, the relic soil seasonal melting average depth does not exceed over 2 m in marsh area of river beds and mountain flat slope and reaches at 3-4 m on valley slope dry area. Dominant average freezing of the relic soil seasonally is 2.5-3.5 m deep in average, but it does not exceed over 1.5-2.0 m in argillaceous debris enriched by humidity and reaches at 4-5 m in broken sandy debris lack of humidity in annual and seasonal permafrost process and phenomenon spongy debris spread is the most common in bottom of valleys and hollows regarding humidity and less distributed to mountain side slope, even in south slope.

61. For the last year’s depth of permafrost relic soil is presumably to decline and annual permafrost to be changed in south line of the relic soil due to natural and human activities, which was mentioned by researchers of Institute of Geography. It is clearly observed in patchily spread areas, where the permafrost depth declined, marshes along rivers dried up and seasonal permafrost is decayed. Due to loss of the permafrost relic soil forestation and reproduction is stagnated and stretches from forest landscape to steppe landscape that affects loss of plant cover and chases wildlife away from its habitat. Therefore, the annual and seasonal permafrost relic soil and its process influence specifically on natural and socio-economic condition of this area. Currently there is no detailed research on permafrost of the Ulaanbaatar available and it is not possible to define changes made on its phenomenon, proves and relic soil freezing and melting in depth. **Figure 4.1** shows the regional distribution of permafrost near Ulaanbaatar.

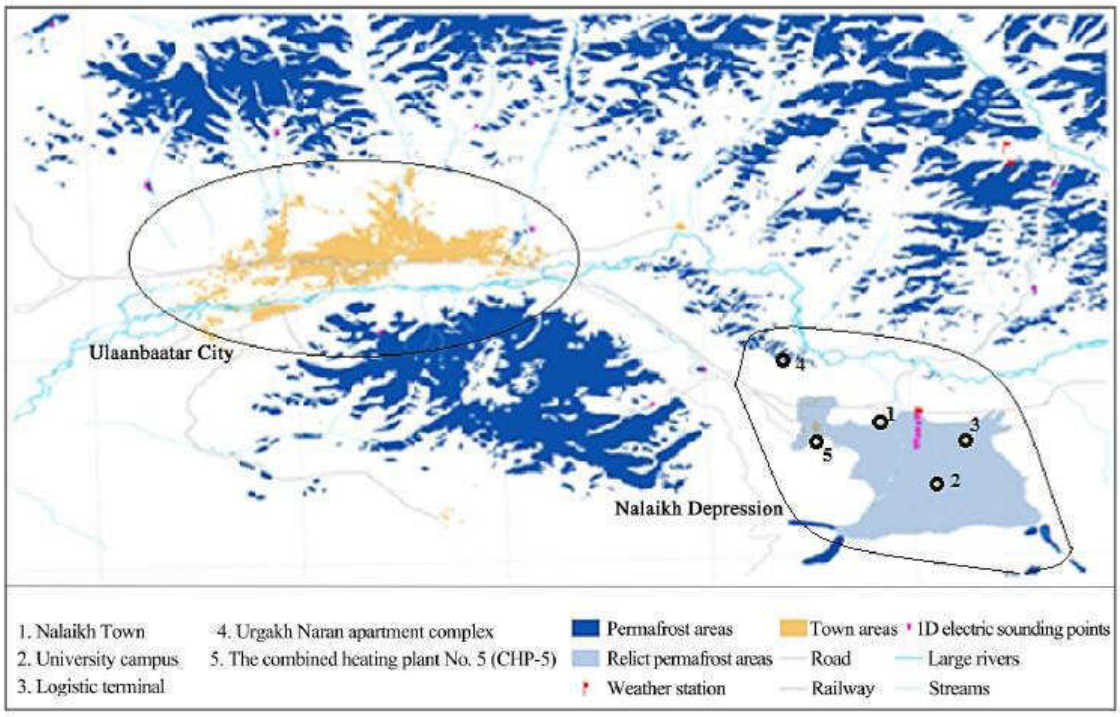


Figure 4.1: Distribution of Permafrost in the area of Ulaanbaatar

4.1.5. Biodiversity

Animals

62. Mongolian fauna is relatively rich in animal species which inhabit different habitats of the country's variable natural zones, such as forests, steppes, deserts, and high mountains. The Mongolian fauna includes many species which are common in Siberian Taiga, European forests, or West Asian and Triennia deserts. But there are also species which are endemic to the steppe and deserts of Central Asia, and are common in Mongolia. In addition, Mongolia is one of the richest countries in the world by prehistoric remains of various animal species.

63. **Mammals**: Altogether 138 mammalian species belonging to 73 genera, 22 families, and 8 orders, out of which, 13 are insectivoruos, 12 chiropters, 6 lagomorphs, 69 rodents, 24 carnivores, 2 perissodectyls, 1 tylopods and 11 artiodactyls, exist in Mongolia.

64. **Birds**: 449 species belonging to 193 genera, 56 families and 17 orders have been recorded so far in Mongolia. More than 330 species from this total are migratory, and the remaining 119 species inhabit Mongolia year-round. 322 species nest in spring in Mongolia, and more than 10 species, nesting in the Tundra and in Arctic Ocean coasts, stay over winter in Mongolia. Approximately, 50 species migrate through Mongolia and 20 species are observed occasionally.

Plants

65. Detailed plant collections have still not been made for some regions so it is likely that there are over 3,000 species of flowering plants in Mongolia. There are 845 species of medicinal plants, 68 species of soil-binding plants, and 120 species of important food plants in Mongolia. The factors threatening the Mongolian biological diversity are climate change, desertification, forest insects and disease; pasture harmful insects and unsustainable human activities.

Forest

66. The recorded forest resources of Mongolia accounts for about 11.6% of its land area. Area actually under closed forest is only about 8.1% equal to about 12.9 million hectares which is a substantial resource compared to that in many countries.

67. The natural regeneration of Mongolian forests is slow, and fires and insects often damage the forests. Mongolia's forest resources consist of more than 140 species of trees and shrubs and bushes, and 81.2% of the forest area is covered by natural coniferous forest, 15.8 % by saxauls (*Haloxylon ammodendron*), and 3.0% by shrubs and bushes.

68. Of the total forest land of Mongolia, 91.2 % or 16.68 million hectares is forest area, and 8.8 % or 1.60 million hectares is non-forest area. Of the total forest resources of 1,379.2 million m^3 in Mongolia, 58.8 % is Siberian larch, 5.2 % is pine, 7.7% is cedar, 8.8 is Siberian spruce and fir, and 16.0% is saxaul. Other species like birch, poplar and willow and shrubs are spread in small quantities.

69. **Figure 4.2** gives the forest map of Mongolia and location of sub-projects.

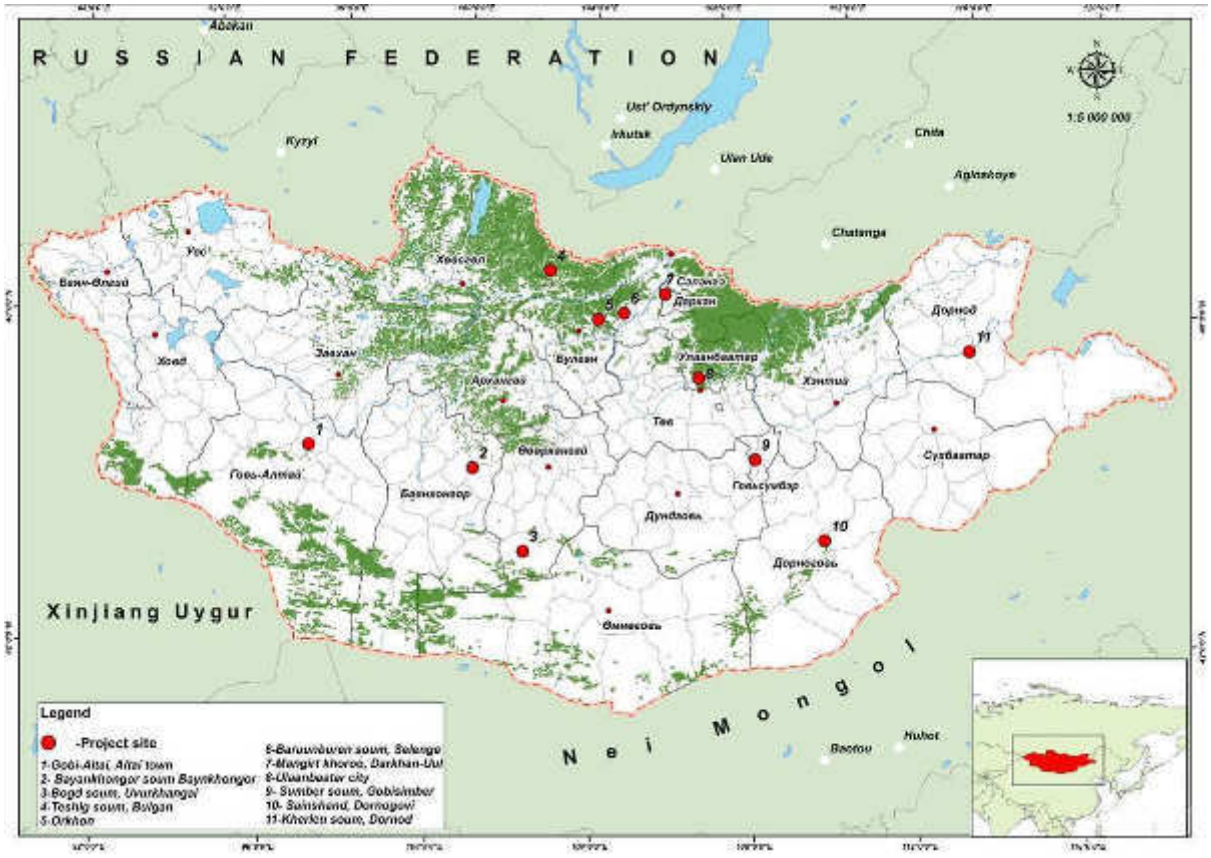


Figure 4.2: Map of forest of Mongolia and location of project sites

4.1.6. Mineral Resources

70. Mongolia is rich in mineral resources: Eight thousand mineral deposits bearing over 600 mining sites have been discovered, including coal, iron, tin, copper, molybdenum, gold, silver, tungsten, zinc, tin, lead, phosphates, fluorspar, uranium and nickel. In addition, over 200 deposits of construction materials such as marble, granite, etc. have been discovered and these are currently in operation.

71. The Erdenet copper-molybdenum mine and ore-processing complex, which produces

annually about 0.4 million tons of copper concentrate for export, dominates the mineral sector.

72. Other substances like oil shale, and semiprecious stones, such as agate, lapis, lazuli, garnet are also found in Mongolia. Of 200 known coal deposits, 32 have been exploited of which 13 sites are now closed. There are many large deposits of low-grade brown coal that cannot be used in some coal-fired installations as it has high sulfur content and air pollution potential. One uranium mine is under exploitation at present in Eastern aimags.

4.2 Sub-project locations

4.2.1 Ulaanbaatar city

73. Ulaanbaatar is the capital and political, business and cultural center of Mongolia. The city lies between north latitude and east longitude. It is bounded by Khentee province in the east, Tuv province in the West and in the South, and in the North. The total length of the Ulaanbaatar territory from north to south is about 30 Kms and from east to west it is about 140 kms and lies at a height of 1350 meters above sea level. Ulaanbaatar has a total land area of 4,704 sq. km (0.3% of the size of the country) and is divided into 9 districts (düüregs), which are further subdivided into 152 sub-districts (khoroos), comprising of micro-districts (khesegs).

74. The city has rapidly grown in size over the last decades as a result of rural to urban migration, attracting people seeking education, employment, services and business opportunities. Currently, the city is home to 1.3 million people, almost half of the nation's population of 3 million. The city has been an engine of innovation, job creation and economic development, being at the center of Mongolia's economic growth and responsible for over 60% of national Gross Domestic Product.

75. The city is proud to be a center of attraction and an engine of innovation, job creation and economic development. However, the rapid rate of urbanization also presents various challenges which negatively impact the environment and the livability of the city. Air pollution is severely affecting public health and constitutes one of the biggest challenges, especially in winter, covering the city in a thick layer of smog as a result of the burning of coal. Almost 60% of the population lives in low density peri-urban Ger areas, residents continue to lack access to basic urban services. Inadequate public transportation means that residents endure long and uncomfortable commutes to school, work or elsewhere in the city. Increasing numbers of vehicles on the road causing serious congestion and contributing to air pollution. The Tuul River, the main source of water supply for the city, is heavily polluted by under- and untreated sewage and sullage, damaging to the land and livestock it waters. Solid waste is mostly disposed of in three land fill sites, only one of which is sanitary.

76. Poor urban planning has meant many city development activities have been implemented near the Tuul River and in its watershed including the Selbe River. This has led to the degradation of water quality, exacerbated by pollution (sewage and garbage) from unplanned settlements, particularly in the *Ger* areas. While long term average water quality in the Tuul and the Selbe remain of satisfactory quality but rapidly deteriorates during low flow periods.

4.2.1.1 Projects in Ulaanbaatar city

77. **Table 4.2** provides list of sub-projects in Ulaanbaatar city.

Table 4.2 List of Subproject in Ulaanbaatar

No	Sub-Project components	Location	Infrastructure requirements (additional)
A	**Kindergartens**		
A 1	Kindergartens under expansion		
1	Kindergarten No.66	UB,Bayngol District, 2nd khoroo.	The expansion will be 2 floor separate new building in the back yard.
2	Kindergarten No. 100	UB,Bayngol District, 3rd khoroo.	The expansion will be 2 floor separate new building in the back yard.
3	Kindergarten No.164	UB,Bayngol District, 4th khoroo.	The expansion will be 2 floor, separate new building in the back yard.
4	Kindergarten No.88	UB,Bayngol District, 18th khoroo.	The expansion will be 2 floor, separate new building in the back yard.
5	Kindergarten No.22	UB,Baynzurkh District, 1st khoroo.	A separate 2 floor new building in the back yard.
6	Kindergarten No.8	UB,Baynzurkh District, (16th khoroo.	The expansion will be separate new building in the back yard of kindergarten.
7	Kindergarten No.82	UB,Baynzurkh District, 16th khoroo.	The expansion will be separate 2 floor new building in the back yard.
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	The expansion will be separate 2 floor separate building with capacity of 150 children in the back yard.
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	The expansion will be separate 2 floor new building in the back yard.
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	The expansion will be 2 floor separate new building in the back yard.
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	Not connected to central heating and sewage system and has individual heat only boiler, holding tank and connected to public water supply system and central electricity. Kindergarten is using 3 additional Gers for classrooms. The expansion will be separate building in its premises.
12	Kindergarten No.84	UB, Songinokhairkhan District, 6th khoroo.	The expansion will be separate building in its premises.
13	Kindergarten No.104	UB, Songinokhairkhan District, 12th khoroo.	The expansion will be separate building in its premises.
14	Kindergarten No.107	UB, Songinokhairkhan District, 14th khoroo.	The expansion will be separate building in its premises.
15	Kindergarten No.110	UB, Songinokhairkhan District, 15th khoroo.	The expansion will be 2 floor separate new building in its premises.
16	Kindergarten No.158	UB, Songinokhairkhan District, 24th khoroo.	Not connected to central heating, electricity, water and sewage system and has individual heat only boiler, holding tank and water well. Additionally, the kindergarten has Ger branch in its owned 1,100 m^2 area of land. The expansion will be a separate 2 floor new building in current Ger branch operating premises.
17	Kindergarten No.176	UB, Songinokhairkhan District, 31st khoroo.	Not connected to central heating, electricity, water and sewage system and has individual heat only boiler, holding tank and water well. The expansion will be an additional floor on the top of building.

No	Sub-Project components	Location	Infrastructure requirements (additional)
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	The expansion will be 2 floor separate new building in the back yard.
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	The expansion will be separate new building in the back yard of kindergarten.
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	The expansion will be 2 floor separate new building in the own premises in the left side of old building.
A 2	Kindergartens under new construction		
1	New kindergarten **Deleted after due diligence**	UB, Bayngol District, 17th khoroo.	The land allocated for this site locates in between 3 kindergartens (2 of them newly constructed) overlapping with their area and underground infrastructures.
2	New kindergarten **Deleted after due diligence**	UB, Baynzurkh District, 17th khoroo	There are no any central heating, water supply and sewage system available.
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	The land allocated for this site currently used by branch of kindergarten # 168 using 4 Gers as classrooms.
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	land has possibility to be connected in central heating, electricity, water supply and sewage system. Access road is available.
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	The site is proposed to be built in the premises of existing kindergarten # 165 with 2,474m^2 area of land. The new construction of kindergarten will be 2 floor new building.
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	District Government owned land with 3000m^2 area situated near the “Family and Children Development Center”. Access road is available. The area is far away from District Heating Plant, water supply and sewage system.
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	District Government owned land with 1000m^2 area situated in Ger area surrounded by Khashaa plots and small shops. Access road is available. The area is little far away from District Heating Plant, water supply and sewage system.
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	District Government owned land with 6000m^2 area situated near the “Sport Comple”. Access road is available. The area is far away from District Heating Plant, water supply and sewage system.
9	New kindergarten **Deleted after due diligence**	UB, Songinokhairkhan District, 5th khoroo.	The area for new kindergarten is nearby new building of 25th Khoroo Government office. The kindergarten will be built on the remaining old building of Khoroo government demolishing it. The existing Khoroo government building is far from central heating, water supply and sewage system.

No	Sub-Project components	Location	Infrastructure requirements (additional)
10	New kindergarten	UB, Songinokhairkhan District, 25th khoroo.	District Government owned 300m^2 land area is available. Blue print is developed. Access road is available.
B	**Schools:**		
B 1	Schools under expansion:		
1	School No.51	Bayngol District, UB	The expansion will be 3 floor separate building behind the existing school building.
2	School No.18	UB, Khan-Uul District	The expansion will be additional floor on the roof.
3	"Erdmiin Orgil" Complex	UB, Nalaikh District	The expansion will be 3 floor separate building with capacity of 640 students, in the school yard.
4	"Ireedui" Primary School	UB, Songinokhairhan District.	The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top.
5	"Ireedui" Secondary School	UB, Songinokhairhan District.	The expansion will be additional floor on the roof of building. Has permission of Specialized Inspection Agency to add one more floor on top. Has permission of Specialized Inspection Agency to add one more floor on top.
6	School No.122 **(Green school)**	UB, Songinokhairhan District, 22nd khoroo.	The school building has individual heat only boiler for heating, water reservoir for keeping transported water and individual holding tank for waste water, connected to central electricity line. The expansion will be 3 floor building with capacity of 640 students and has new blue print of Green school.
7	School No.6	UB, Sukhbaatar District	The expansion will be additional floor on the roof. Has permission of Specialized Inspection Agency to add one more floor on top.
B 2	Schools under new construction :		
1	New school	UB, Baynzurkh District, 14th khoroo.	Land is owned by District Government in the new apartment buildings.
2	New school	Songinokhairhan District, 7th khoroo.	The new construction site is situated in the edge of Ger Khashaa Plot area. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.

4.2.1.2 Physical Environment in Ulaanbaatar city

Geology

78. Geologically the Ulaanbaatar region belongs to the Khentii geosynclinals depression. Ulaanbaatar City is mainly underlain by Cambrian, Devonian, and Carboniferous sandstone and mudstone. Ulaanbaatar City is located on an alluvial plain. MNET confirmed that in the City, soil is low in permeability and gullying and erosion is visible on steep slopes in the *Ger* areas to the North of the City.

4.2.1.3 Environment in Ulaanbaatar city

Air quality

79. Air pollution in Mongolia is severe. Air pollution in the capital Ulaanbaatar surpasses standard levels with the adverse effect on the population's health and well-being as well as environmental balance. A World Bank study states that Particulate Matter (PM) is the largest and relatively most severe air pollution problem in the City. In terms of PM, Ulaanbaatar is ''among the most polluted cities in the world. The main sources of air pollution including PM2.5 (fine particulates) are from heating and cooking, traffic and industrial sources such as coal fired power stations. Many of the diesel and petrol-run vehicles are outdated and do not meet environmental and safety standards.

Noise

80. WHO[22] states that guidelines on community noise (not industrial work place noise, therefore including traffic) should be based on the following:

a. **Indoor sound levels**, thresholds for guidelines should be based on a combination of values of 30 dB (average equivalent over 8 hours LAeq) and 45 dB (maximum for an individual noise event);
b. **Outdoor sound levels** should not exceed 50 dB LAeq to protect the majority of people from being moderately annoyed during the daytime. Most countries in Europe have adopted 40 dB LAeq as the maximum allowable level for new developments;
c. **Hospital** patients have less ability to cope with stress, the equivalent noise level should not exceed 35 dB LAeq in most rooms in which patients are being treated or observed; and
d. **Schools** the background sound pressure level should not exceed 35 dB LAeq during teaching sessions.

81. It is clear from the noise measurements in Ulaanbaatar that in the majority of locations, ambient noise exceeds the WHO recommendations for community noise outside. However, with regards to the noise within sensitive receptors such as households, schools and hospitals, the data are of limited value as the distance from the source is not given and measurements are not taken within buildings.

4.2.2 Baynkhongor, Bulgan, Gobi-Altai, Gobisumber, Dornod, Darkan-Uul, Dornogobi, Orkhon, Uvurkhangai, Selenge provinces

82. **Table 4.3** provides list of sub-projects situated in the local provinces.

Table 4.3: List of subprojects in local provinces

No	Sub-Project components	Location	Infrastructure requirements (additional)
A	**Kindergartens**		
A 1	Kindergartens under expansion		
1	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	The expansion will be a 2 floor separate new building in the under possession land area. This land is very close to main pipelines of central heating, water supply and sewage system.
A 2	Kindergartens under new construction		
1	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	Blue print is developed. The area is located nearby main road and surrounded by Ger khashaa plots and small services. Access road is available.
2	New	Dornogobi,	Blue print is developed. The area is located nearby

[22] World Health Organisation (1999) Guidelines on Community Noise. Available at: http://www.who.int/docstore/peh/noise/guidelines2.html

No	Sub-Project components	Location	Infrastructure requirements (additional)
	kindergarten	Sainshand Soum, 7th Bag.	main road and surrounded by Ger khashaa plots and small services. Access road is available.
3	New kindergarten	Orkhon, Erdenet city	The surrounding area is included in city development plan and close to central heating, water supply and sewage system.
4	New kindergarten	Bulgan, Teshig Soum,	The new kindergarten will be a 2 floor with capacity of 150 children.
5	New kindergarten	Baynkhongor, Bayan-khongor Soum, 4th Bag.	The new construction site is situated in the edge of Ger Khashaa Plot area. The area is empty but included in town development plan, has no central heating, water supply and sewage system infrastructure.
B	**Schools**		
B 1	Schools under expansion:		
1	Khantaishir	Govi-Altai, Altai town.	The expansion will be a 3 floor building in front of old building.
2	Bogd Soum, Uvrukhangai	Uvrukhangai, Bogd Soum,	The expansion will be a 2 floor separate building constructed behind the old building.
3	Baruunburen Soum, Selenge **Deleted after due diligence**	Selenge, Baruunburen Soum.	The expansion will be a 2 floor separate building. Unfortunately, there is lack of land availability.
B 2	Schools under new construction :		
1	New school	Darkhan, Mangirt, 15th Bag.	The site is included in new development area and no other buildings besides the new kindergarten close to this site.

4.3 Human and Economic Development

83. Economic activity in Mongolia has traditionally been based on herding and agriculture. Mongolia has extensive mineral deposits. Copper, coal, molybdenum, tin, tungsten and gold account for a large part of industrial production. Soviet assistance at its height, one-third of GDP, disappeared almost overnight in 1990 and 1991 at the time of the dismantlement of the USSR. The following decade saw Mongolia endure both deep recession due to political inaction and natural disasters, as well as economic growth because of reform-embracing, free-market economics and extensive privatization of the formerly state-run economy. Severe winters and summer droughts in 2000-2002 resulted in massive livestock die-off and zero or negative GDP growth. This was compounded by falling prices for Mongolia's primary sector exports and widespread opposition to privatization. Growth was 10.6% in 2004 and 5.5% in 2005, largely because of high copper prices and new gold production. Mongolia's economy continues to be heavily influenced by its neighbors. For example, Mongolia purchases 80% of its petroleum products and a substantial amount of electric power from Russia, leaving it vulnerable to price increases. China is Mongolia's chief export partner. Mongolia settled its $11 billion debt with Russia at the end of 2003 on favorable terms. Mongolia, which joined the World Trade Organization in 1997, seeks to expand its participation and integration into Asian regional economic and trade regimes.

Agriculture and Crops

84. Agricultural sector in Mongolia has been and is still holding a weighty share in the

country's economy. The agricultural sector produces over 25 per cent of GDP and 13 per cent of the national hard currency income is generated from exports of products of food and agricultural origin.

85. The agriculture sector therefore remains heavily focused on nomadic animal husbandry with 75% of the land allocated to pasture, and cropping only employing 3% of the population. Crops produced in Mongolia include corn, wheat, barley, and potatoes. Animals raised commercially in Mongolia include sheep, goats, cattle, horses, camels, and pigs. They are raised primarily for their meat, although goats are valued for their hair which can be used to produce cashmere.

86. In 2009, 388,122 tonnes of wheat (area harvested: 248,908 ha), 1,844 tonnes of barley (area harvested: 1,460 ha) and 1,512 tonnes of oat (area harvested: 1,416 ha) were produced. Vegetables like tomatoes, carrots, peas, beans, onions and cucumbers are grown in several oases in the South of Mongolia.

Existing Industrial Status

87. Main industry in Mongolia constitute of construction and construction materials; mining (coal, copper, molybdenum, fluorspar, tin, tungsten, gold); oil; food and beverages; processing of animal products, cashmere and natural fiber manufacturing.

4.4 Climate Change Risks in Mongolia

Climate change

88. In order to address the issue of global climate change and its effects on people and the economy, Mongolia affirmed the United Nations Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto Protocol in 1999. The Government of Mongolia has taken considerable steps toward the implementation of the UNFCCC, by accomplishing the required commitments such as the Initial National Communication, Technology Needs Assessment and the National Action Plan on Climate Change to address climate change and other legal commitments

89. In 2007, Mongolia was ranked 96th in the list of CO_2 emitting countries, contributing around 0.04% to the global emission[23]. UNEP[24] states that in Mongolia, the energy sector (including stationary energy, transportation and fugitive emissions) was the largest source of greenhouse gas (GHG) emissions comprising 65.4% of total emissions. The second largest source of GHG emissions was the agricultural sector (41.4%). The report also states that total CO_2 removal was more than total CO_2 emissions in 2006 due to an increase in the area of abandoned lands and a reduction in newly cultivated land. However, by 2020, it is predicted that Mongolia's GHG emissions will be more than 5 times that of 2006.

90. Climate modeling for Mongolia is projecting changes which include increased air temperatures, increased precipitation in some areas and a reduction of water resources in other areas25. Potential evapo-transpiration increase would be higher than precipitation amount increase. Future climate changes are expected to negatively impact Mongolia, mostly in the agricultural and livestock sectors. This in turn will affect the society and economy, meaning climate change adaptation is a significant issue for the country.

[23] United Nations Statistics Division, Millennium Development Goals Indicators. Available at http://mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749&crid=

[24] United Nations Environment Program (2009) Mongolia: Assessment Report on Climate Change 2009

[25] Ibid.

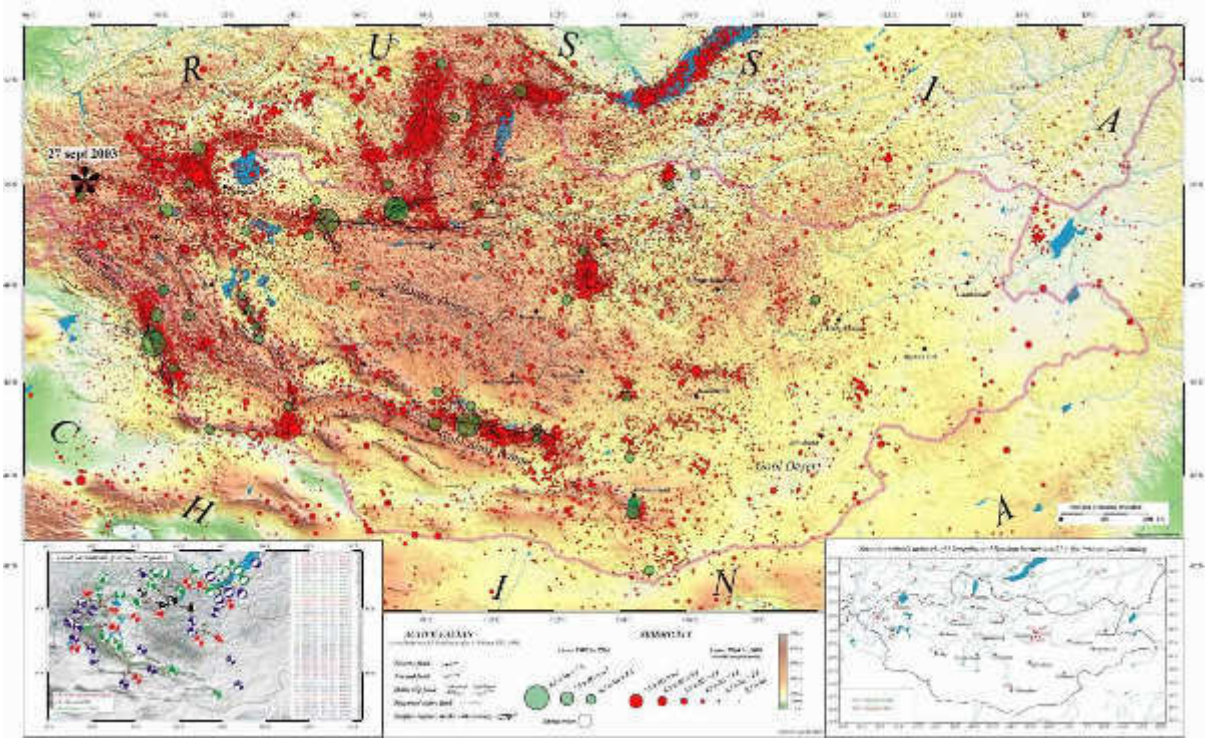
4.5 Seismology in Mongolia

Natural disasters

91. Natural disasters in Mongolia are mainly caused by forest fires, floods, extreme cold, snow storms and disease outbreaks. Forest fires accounted for 49% of the disaster events during the period 1990-2000. During this period, floods, disease outbreaks and extreme cold and snow storms accounted for 11%, 13% and 5%, respectively[26]. Floods and earthquakes are the natural disasters of potential relevance to the project and thus further discussed below.

Earthquakes

92. Mongolia has experienced four major earthquakes (Msk>8) and many more moderate earthquakes (Msk 5.3-7.5) in the last century. The seismic activity in Mongolia is related to its location between the compressive structures associated with the collision of the Indian-Australian plate with the Eurasian plate on the one hand and the extensional structure associated with the Baykal rift system on the other. The historical records (1903 onward) of the seismicity in Mongolia show a high concentration of seismic activity along the Mongolian-Altay and Gobi-Altay ranges and the north-western border with Russia and around Mogod east of Hangay mountain. The multi-organizational Global Seismic Hazard Assessment Program classifies Ulaanbaatar as “low” to “moderate” earthquake risk areas shown in **Figure 4.3.**



Source: Research Center for Astronomy and Geophysics of Mongolian Academy of Science.

Figure 4.3: **Seismicity in Mongolia from 1900 to 2000**

Flooding.

93. Localized flooding can be caused in most areas of the country, especially in built-up areas through heavy rain events because of poor surface water drainage. This flooding is ephemeral and the water subsides rapidly. More than 75% of precipitation in Ulaanbaatar occurs in July and August. Serious floods, mainly caused by the Tuul River, occurred in 1915, 1939, 1959, 1966, 1967, 1971, 1973, 1982 and 2003. In 1966, the Tuul water level

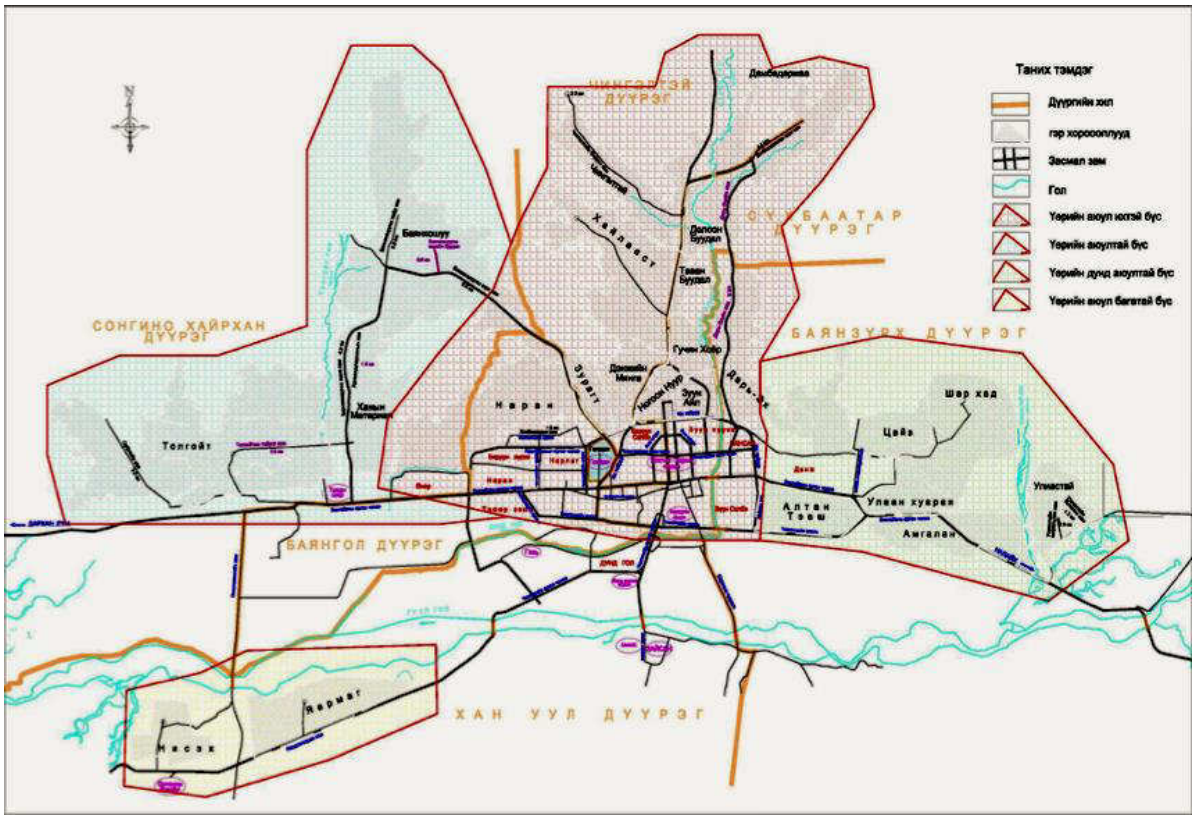
[26] Source: National Center for Emergency, 2002.

reached 3.2 meters with a flow of 1500-1800 cubic meters per second and the flood killed over 100 people.

Table 4.4: Major Flood and Drought Experiences in Tuul river basin (Catchment area 49,766 km^2)

Major Floods					
Date	**Peak discharge [m^3/s]**	**Rainfall [mm] Duration**	**Meteorological cause**	**Dead and missing**	**Major damages [Districts affected]**
1966.07.10-11	1700	103.5	Storm caused rainfall flood	13000 household	239617$
1982.08.15-16	-	44	Storm caused flash flood	87 people died 119 households	91447 $
Major Droughts					
Period	**Areas affected**	**Major damage and counteractions**			
1972	Whole catchment	Livestock loss and hay making			
1999-2002	Whole catchment	Livestock loss and hay making			

94. **Figure 4.4** shows flood prone areas of the city.



Source: Emergency Management Department of Ulaanbaatar Municipality

Figure 4.4: **Flood prone areas of Ulaanbaatar**

4.6 Ecological Resources

95. Ecological resources of the potentially impacted environment are defined to include the area's flora and fauna, and specially protected areas. The sub-project sites include areas which have very little vegetation or exposed ground which may form habitats for fauna. However, there are a limited number of bird species observable in the Ulaanbaatar city, such as crows and sparrows, common to many urban environments. The project will not encroach on legally protected sites; the closest protected site is the Gorkhi Terelj National Park. This

park is outside the city and not within the project's area of influence. There are no rare, threatened, or endangered species within the construction boundaries of the sub-projects.

4.7 Protected areas in Mongolia

96. Mongolia was probably one of the first countries in the world to recognize the importance of conservation. In 1778, the Bogd Khan Mountain, which is located outside Mongolia's capital, was officially designated by the State. The values and the knowledge leading to the establishment of Protected Areas (PAs) have varied throughout the years with the on-going development of scientific knowledge and increasing involvement of stakeholders. To date, Mongolia's PA network consists of 89 Protected Areas covering 17.4% (27.2 million hectares) of the Mongolian territory. The number of PAs has increased drastically over the past two decades following the National Programme on Protected Areas adopted by the Mongolian Parliament (1998) that set the goal of establishing a system of PAs that would cover 30% of the territory before 2015. The number of PAs, for instance, has increased from 71 to 89, which constitutes an increase of 4.5 million hectares just within the last two years. Simultaneously, it is, however, critical to improve the representativeness of ecosystems within the national PA system.

97. The Protected Areas which were established in accordance with the Law on Protected Areas fall into five different categories, subject to their protection and management arrangements.

98. 14 areas of altogether 12.4 million hectares were designated by the Parliament as Strictly Protected Areas (SPAs). These are areas "that represent unique features and characteristics of natural zones, have preserved their original conditions, and are of a special scientific and cultural significance."

99. The second category, National Parks (NPs), includes 30 areas of altogether 11.9 million hectares. These are areas "whose natural original condition is relatively preserved and which have historical, cultural, scientific and ecological importance". Under the current legal framework both SPAs and NPs fall under the jurisdiction of the National government, i.e. MET, and are thus designated by the Central Parliament, financed through the State budget and managed through Protected Area Administrations (PAA).

100. The third category is Nature Reserves (NRs). To date 31 areas covering 2.8 million hectares of land are designated to "create conditions for protecting, preserving and restoring specific natural features as well as one of any natural resources and wealth".

101. The fourth category, Natural, Cultural and Historical Monuments (NCHMs), encompasses 14 areas covering 125,000 hectares. These are areas of unique natural formations and areas designated to protect historical and cultural monuments. Although designated by the National Parliament, Nature Reserves and Natural, Cultural and Historical Monuments are supposed to be managed and financed by the local governments (*Aimags*). In light of limited public finance for environmental conservation, especially at the local level, the management of these types of PAs tends to be kept at a bare minimum, unless the areas have attracted international projects and programmes.

102. The fifth category of protection includes Local Protected Areas (LPAs) which can be designated by the *Aimag* or *Soum* level Citizens Khural (local Parliament) for protection and conservation purposes independently from the Central Government's administrative body. To date *Soum* and *Aimag* Citizens' Khurals have designed some 937 Local Protected Areas in the last decade – covering nearly 17 million hectares – or over 10% of Mongolia's territory.

103. The first four categories are State PA, designated by the National Parliament, whereas category 5 is a Local PA, designated by *Aimag* or *Soum* Parliament. Management responsibility is with the 29 State Administrations for SPA (cat.1) and NP (cat.2) but given to *Aimag* and *Soum* not only for the Local PA (cat.5), but also for Nature Reserves (cat 3) and Monuments (cat.4). However, *Aimag* and *Soum* often lack capacities and resources for proper management of NRs and NCHMs. Therefore, their management is sometimes supported by international donors, NGOs or the State Administration (especially if they are in proximity to SPAs and NPs)

104. In accordance with the Law on Protected Areas, all Specially Protected Areas may have a Buffer Zone (BZ). The establishment and management of Buffer Zones are regulated by a separate Law on Buffer Zones. It aims to reduce, mitigate and prevent the actual and/or potential adverse impacts experienced in their respective PA by way of (i) increasing local communities' participation in the conservation of protected sites, by (ii) providing livelihood means to local communities and (iii) by ensuring the appropriate use of natural resources. Currently the Government actively advocates the establishment of Buffer Zones around SPAs and NPs. Iif properly managed the LPAs will in principal offer a good protection and they will also provide for an expansion zone of the Protected Areas. **Table 4.5** lists all protected areas in Mongolia.

Table 4.5: List of Protected Areas of Mongolia

№	Names of PA	Province name	Classification	Size	Total size (hectares)
1	Gobi Ikh/B/	Baynkhongor	SPA	927111.8222	963834.9905
2	Alag Khairkhan	Gobi-Altai	NP	36723.16831	
3	Gobi Ikh /A/	Gobi-Altai, Baynkhongor	SPA	4633299.775	4656395.739
4	Eej Khairkhan	Gobi-Altai	NM	23095.9647	
5	Khukh Serkhi Nuruu	Bayan-Ulgii, Khovd	SPA	75749.75203	242940.3987
6	ChiGertein river valley	Bayan-Ulgii	NP	167190.6466	
7	Bogdkhan mountain	Tuv	SPA	41322.27316	41322.27316
8	Khasagt Khairkhan	Gobi-Altai	SPA	26760.57436	298073.9928
9	Mongol Els	Gobi-Altai	NP	271313.4184	
10	Numrug	Dornod	SPA	320982.1815	320982.1815
11	Dornod Mongol	Dornod	SPA	589905.6506	1453809.886
12	Mongol Daguur /A/		SPA	92880.45414	
13	Mongol Daguur /B/		SPA	15273.1854	
14	Yahi Lake		NR	251217.9575	
15	Ugtam		NR	46022.85092	
16	Toson Khulstai	Dornod, Khentii	NR	458509.7875	
17	Uvs lake	Uvs	SPA	441223.2166	597234.8923
18	Tsagaan Shuwuut		SPA	25537.7004	
19	Turgen mountain		SPA	130473.9754	
20	Tes river		NR		
21	Khan Khukhii	Uvs	NP	221598.2789	713144.2672
22	Hyargas lake		NP	341301.7869	
23	Altan els		SPA	150244.2014	
24	OtgontenGer mountain	Zankhan	SPA	90498.66441	349902.0528
25	Ulaagchin Khar lake	Zankhan	NP	259403.3884	
26	Tsambagarav	Bayan-Ulgii	NP	113749.2134	928352.2948
27	Altai Tavan Bogd		NP	656106.3865	
28	Siilhem Nuruu /A/		NP	69935.4433	
29	Siilhem Nuruu /B/		NP	77942.5287	
30	Devel aral		NR	10618.72285	
31	Khangain nuruu	Arkhangai,	NP	906604.5447	1040155.534

№	Names of PA	Province name	Classification	Size	Total size (hectares)
		Baynkhongor			
32	Khorgo-Terkh Tsagaan lake	Arkhangai	NP	76893.00337	
33	Noyon Khangai		NP	56657.98638	
34	Onon-Balj /A/	Khentii	NP	294079.7835	400466.775
35	Onon-Balj /B/		NP	106386.9926	
36	Khugnu Tarna	Bulgan , Uvurkhangai	NP	84143.05686	84143.05686
37	Dariganga	Sukhbaatar	NP	64547.60536	88788.83834
38	Shiliin Bogd		NM	18136.91995	
39	Khorgiin khundii		NM	6104.313042	
40	Khustain nuruu	Tuv	NP	48400.56794	48400.56794
41	Gobi Gurvan Saikhan	Umnugobi	NP	2697170.845	2697170.845
42	Khan Khentii	Tuv , Selenge, Khentii	SPA	1748103.891	1762660.811
43	Undurkhaan uul	Khentii	NP	8820.0	
44	Binderya uul		NM	5736.92	
45	Khangal nuur		NM	3913.0	
46	Gorhi-Terelj	Tuv	NP	291838.556	
47	Nagalkhaan mountain		NR	1860.721221	
48	Khar us lake	Khovd	NP	852997.2452	935804.6195
49	Mankhan		NR	82807.37429	
50	Tarvagatain nuruu	Zankhan	NP	547629.8987	547629.8987
51	Little Gobi /A/	Umnugobi	SPA	1147812.066	1830429.418
52	Little Gobi /B/	Dornogobi, Umnugobi	SPA	682617.3514	
53	Ikh bogd mountain	Baynkhongor	NP	262855.8119	379164.3547
54	Zag Baidgar river		NP	116308.5428	
55	Tujiin nars	Selenge	NP	70804.71976	70804.71976
56	Orkhon river valley	Arkhangai, Uvurkhangai	NP	92717.98585	103867.05
57	Khuisiin naiman lake	Arkhangai	NM	11149.06413	
58	Ikh gazar chuluu	Dundgobi	NR	175906.1387	175906.1387
59	Khuvsgul	Khuvgul	NP	1175602.174	1206879.379
60	Dayan deerkhi cave		NM	31277.20524	
61	Ulaan taiga	Khuvgul	SPA	431694.4634	1534077.778
62	Khoridol Saridag		SPA	226672.0417	
63	Tengis-Shishged		NP	875711.2729	
64	Zed-Khantai-Buteeliin-nuruu	Bulgan	SPA	604265.563	604265.563
65	Myangan Ugalzat	Khovd	NP	303775.0681	303775.0681
66	Bulgan river- Ikh Ongog	Khovd	NP	92743.66388	598840.3653
67	Munkhkhairkhan mountain Uyench		NP	506096.7014	
68	Ikh Nart	Dornogobi	NR	66752.0	66752.0
69	Khar Ymaat	Dornod	NR	50691.0	50691.0

105. **Figure 4.5** provides location of Protected Areas of Mongolia and sub-project sites.

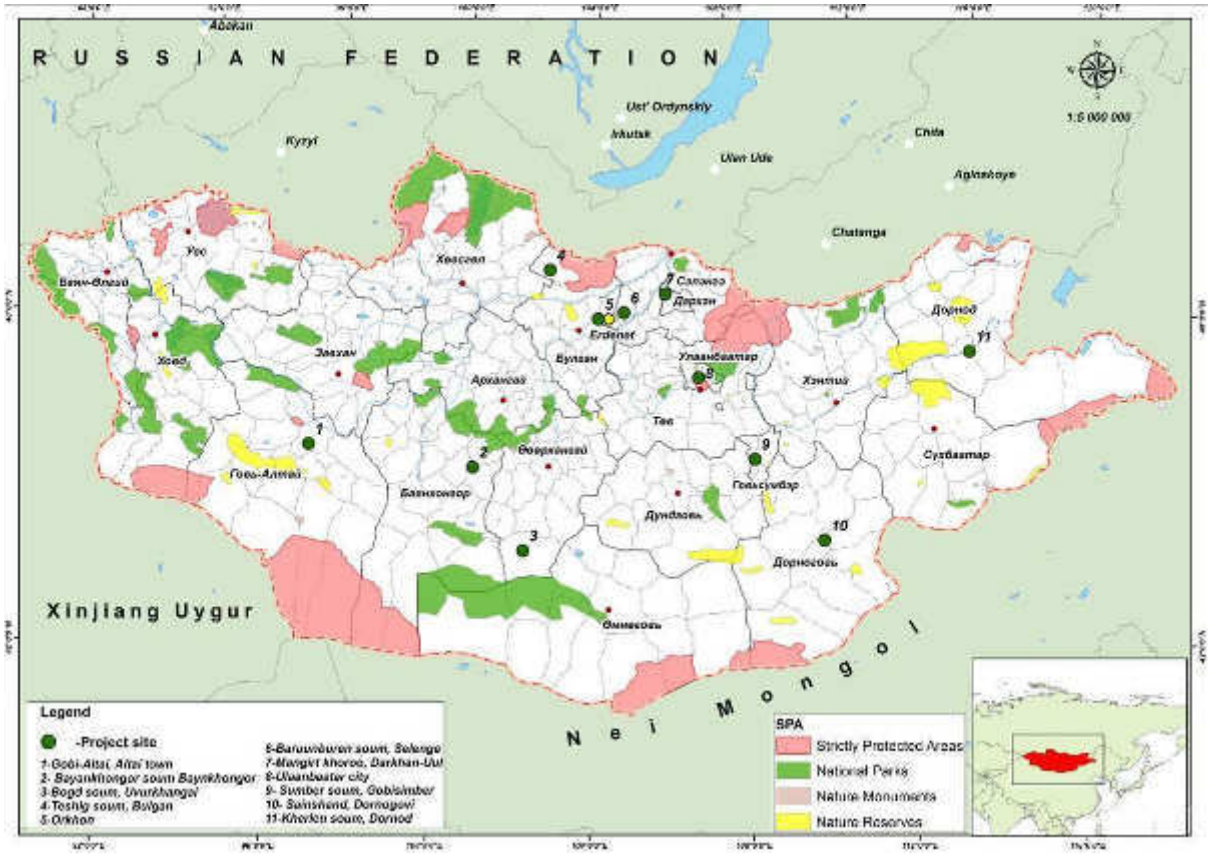


Figure 4.5 Location of Protected Areas of Mongolia and sub-project sites.

106. None of the proposed sub-projects are located inside or near or passing through the designated core and/or buffer zones of national parks, sanctuaries, biosphere reserves, and reserved forests. The nearest Protected Area to the project site is the Bogd Khan Mountain SPA which is situated about at a distance of 5-18 km from the proposed UB Schools/Kindergartens site and about 10 km away from kindergartens in Teshig *Soum* of Bulgan province.

107. Zed Khantain Nuruu SPA is situated 10 km away from the kindergartens in Teshig *Soum* of Bulgan province is one of the largest protected area; covering an area of 604,265.563 ha is an excellent example of ecosystem of the Khuvsgul lake basin and its diverse fauna.

4.8 Environmental Parameters: Air, Ground Water, Soil, Noise Quality

4.8.1 Current Conditions and Major Problems

General Conditions

108. The country's environment resources offer great potential for expanding economic opportunities in mining, forestry, animal husbandry and tourism. However, many areas of concern are emerging highlighting the need for integrating comprehensive policies of sustainable development into the national development strategy and most importantly, ensuring effective implementation considering both the economic development and environmental conservation. The priority issues recognized are as follows.

Air Pollution

109. Air quality is a significant environmental problem in urban areas of Mongolia, particularly in Ulaanbaatar. Primary sources of air pollution in Ulaanbaatar are three thermal power plants, about 200 small and medium sized heating boilers, about 60,000 traditional

Gers and wooden houses, and over 40,000 automobiles. Topography and meteorology exacerbated ambient air quality conditions in the country, and particularly in Ulaanbaatar. Mountains surround Ulaanbaatar up to 2,250 meters in height inhibited dispersion of pollutants. To compound the situation, a stable atmospheric inversion forms during the winter season. As a result, ambient pollutant concentrations often remained for days or weeks at a time to exceed Mongolian and other international ambient air quality standards. Burning of coal and woods in the households in urban cities has been identified as major sources of air pollution, which affects ambient air quality and human health.

110. **Energy**: During the winter season, three large diesel power plants in Ulaanbaatar release 4.5 million cubic meters of gaseous pollutants, 4.14 tonnes of particulate matter, and 6.76 kilograms of carbon monoxide into the air every hour. The energy sector accounts for around 64% of Mongolia's greenhouse gas emissions. More than 250 steam boilers burn over 400,000 tonnes of coal every year. Gers and wooden houses with manual heating (in which 48% of the city population lives), use over 200,000 tons of coal and more than 160,000 cubic meters of fuel wood each year. For the cold seasons, the atmospheric content of carbon monoxide exceeds the permissible norm by 2-4 times.

111. **Transportation**: Transportation is a major source of air pollution in urban cities. The number of motor vehicles has increased vary rapidly in big cities and settlements in a short period of time. In 1995, it was estimated that over 60% of the vehicles emitted pollutants exceeded the maximum allowable limits.

112. **Industry**: Industrial activities are also one of the major sources of air pollution in Mongolia. As estimated approximately one fourth of greenhouse gas emission is emitted from industrial activities.

Water Pollution

113. Water shortage is one of Mongolia’s major socio-economic and ecological problems. Though adequate in the north it is clearly a constraint on development in the south and particularly serious in urban areas including Ulaanbaatar, where water supplies are pumped from groundwater.

114. Little care has been taken over water supply and use. Water supply in pasture areas was improved over the period 1960/90 by construction of many wells to provide water to more than 60 percent of the rangeland, but only 40% of the existing 48,000 wells are currently functioning. Most wells drilled during the Soviet era are out of production.

115. Effluent from factories, tanneries, processing plants, households, waste disposal sites and road runoff has polluted the main rivers where people and industry are concentrated, particularly the Tuul, Yuro, Selenge and Orkhon Rivers. Of 102 centralized wastewater treatment plants built only 35 were in operation in 2002.

116. The pollution problem is due not just to domestic waste effluent, but also to the high levels of chromium used in the tannery process.

117. Even there are 5,500 rivers, 9,600 streams, 300 hot springs, 4,000 lakes and 30,000 wells registered in Mongolia, 3,000 rivers and streams had dried up by year 2000 and 1,200 wells are no longer in use because of depletion, deterioration of facilities or abandonment after the nomad’s migration to the city. As a consequence, the use of water resources is limited, causing water shortage.

Land Degradation

118. Causes of land degradation in Mongolia can be divided into two categories: human-induced and natural causes.

119. Natural causes include droughts with frequency of 2-3 years, natural drying, deficit in soil moisture, very thin layer of fertile soil, specifics of mechanical composition of soils, and strong wind in spring and autumn and dust storms.

120. Human causes include effects raised from rapid development of farmland, mining industry, changes in traditional livestock husbandry, and overgrazing, specially around settlement areas and water points.

121. Farmland degradation in Mongolia is one of the serious issues, which should be urgently tackled. A considerable amount of farmland has been degraded or abandoned because of slow action on transferring farmlands to individuals and economic entities for their long-term use or possession. As of today, most of the farmland is out of use and abandoned.

122. Producing over 50% of the country's total exports, mining is one of the rapidly growing and leading industrial activity in Mongolia. Mining is causing substantial soil destruction. No proper rehabilitation measures are being taken by enterprises during or after mining.

Solid Waste Nuisance

123. In Mongolia, solid wastes are disposed in the open air near the city. These wastes are scattered about and the disposition for soil to be polluted is becoming remarkable. Particularly, there is a big gap between city enlargement and city planning projects in Ulaanbaatar. Moreover, it doesn't have the good city planning project. There is much household garbage (33.8%), paper (18.9%), and plastics (15.2%) in summer. Ashes occupy no less than 60.2% in winter.

124. In Mongolia, there are no proper wastes treatment facilities. Therefore, the wastes are thrown away across the township. Particularly, Ulaanbaatar city has the serious wastes problem. Now, the proprietary company of public establishment private management and civilian enterprises which were entrusted from the municipal government prefecture are carrying out drawing in and disposal of the wastes of Ulaanbaatar city.

125. Solid wastes generated from factories, commercial establishment, and construction sites are collected by third party agencies. However, the solid wastes generated so much is over a wastes collection trader's interested collection capacity.

Soil Contamination

126. Mongolia's tanning industry generates soil pollution due to widespread drainage of chemicals from the leather tanning process; the waste oil from cars and mining process, employment of agricultural chemicals, etc. Utilization of coal is the biggest causality of air pollution. Soil is polluted due to coal handling as well as scattering of ashes on the ground.

127. The number of cars have increased dramatically in recent years in Ulaanbaatar. Petrol stations within the city have risen to about 100 in numbers. Furthermore, there are 10 backlog appliances of coal oil and small car garages numbering hundreds. Many of them are located in the place where drainage arrangements are not fixed. They throw away used oil in the drains leading to oil contaminating the soil. In addition, various medicines, such as disinfectant, insecticide, and agricultural chemicals, medical wastes, architecture scrap woods, etc. are increasing being used to spur productivity and economic growth.

128. In Mongolia, gold mines are being exploited in the northern Orkhon river and the Selenge river by 120 business corporations. These gold ores have high level of Mercury contamination which contributes as a material factor to widespread soil pollution. Moreover,

leaching of chemicals happen during heavy rains from various unscientifically designed waste disposal sites and sewage disposal plants.

Deforestation

129. The total remaining forest covers 10.4 million hectares in the north, 2.0 million hectares saxual forest and 3.6 million hectares of depleted forest, mainly near transport corridors. Statistics on deforestation are confusing but the causes are known to include legal and illegal unsustainable logging, wildfire, insect and disease infestation, animal grazing, and climate change.

130. Through the 1960s to 1990 average official harvest figures were approximately 1,500-2,000 million m^3 per annum, very roughly 50% roundwood and 50% fuelwood. In 2002, official figures recorded a harvest of 620 million m^3, almost all fuelwood. Other issues in forest management are the many forest fires and problems of disease control. The periodic infestations in the coniferous forests are natural disasters with serious local impacts.

Desertification

131. Mongolia is a country, which experiences serious drought and desertification. More than 40% of the territory is composed of arid and desert areas. There are estimates that 90% of Mongolia's territory is vulnerable to desertification and about 70% is already degraded to varying extents.

132. Desertification is characterized by (i) desertification of vegetation cover, (ii) desiccation of wetland ecosystems and (iii) increase of sand area. Causes of desertification can be divided into natural causes and anthropogenic causes.

133. Among the major cases are mentioned climatic variations which may lead to natural disasters that, through interaction with human factors, will lead to accelerated degradation at local level. For instance, desertification in the Gobi ecological zone is reported as being caused primarily by increasing aridity of climate and grazing impacts associated with livestock. The anthropogenic causes are overgrazing, wind and water erosion of cultivated soils and abandoned farmlands, intentional burning and vehicle tracks.

Loss of biodiversity

134. Growing population coupled with urbanization, economic development, and an increasing per capita demand for natural resources, have put enormous pressure on land and natural resources. At the same time, the recent transition from a centrally controlled economy to a free market economy has opened the country's natural resources to free enterprise and market forces. Increasing economic activity such as mining, land cultivation and crop farming, and the production of wild and domestic animal products for internal consumption and export, have resulted in the disturbance hitherto undisturbed natural areas and the loss of wildlife habitat. Inadequately controlled or illegal hunting, and predator eradication programs also contribute to pressures on wildlife and on the natural balance in many areas.

135. **Climate change**: During the last 50 years or so, the average annual temperature in Mongolia has increased by 0.7ºC. This drop in the average temperature has resulted in a variety of changes including serious impacts on the growth of natural and cultivated plants. The annual growing season in Mongolia lasts for only about 120 days which is not sufficient for the stable growth of plants, and if the growing season becomes shorter, many plant species will be threatened with extinction and this condition will pose a threat to the survival of many herbivores.

136. **Desertification**: Desertification deteriorates the environment and reduces its biological resources. It worsens the environment and conditions for the normal propagation

of plants, hence reducing resources for rare animals and plants in the desert and desert-steppe zones.

137. **Harvesting**: Nomadic herdsmen and urban Mongolians utilize wildlife in a variety of ways, including direct use of meat, skins, and other animal products. Other activities include commercial marketing of skins, commercial marketing of fish and fish meat, large-scale harvest of gazelles for the commercial market (till mid-1990s), and sport hunting of game and trophy species by Mongolian and foreign sportsmen.

138. **Industrialization**: Since the 1960s, the increasing use of energy, construction of new power stations, and the intensive use of strip mining methods have seriously been contributing to the deterioration of the habitats of various species

4.8.2 Monitoring of Air, Noise, Soil and Water along the project location

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

140. **Table 4.6** shows the types and responsibility of NAMEM and its *Aimag* level Departments of Hydrology, Meteorology and Environmental Monitoring for environmental monitoring.

Table 4.6: NANEM's main monitoring responsibilities for Mongolia

Monitoring types	Site
Air quality in urban area /SO2, NOx, CO, O3, HC, PM10, PM2.5/	35 points
Acid rain /NH4, SO2, HCI, HNO3, NH3/	2 points
Greenhouse gas monitoring	1 laboratory
Sand /yellow/ dust storm observation /To define dust PM10, PM 2.5 dispersion in horizontal and vertical direction/	9 stations
Water quality	
Water quality /91 rivers, 16 lakes pH, EC, O2, etc./	188 points
Gray water monitoring /5 in Ulaanbaatar city and 28 in the countryside/	33 water cleaning facility
Soil quality in urban areas	340 points
Environmental radiation monitoring	35 points

Source: Introduction on National Agency for Meteorology and Environmental Monitoring, MET, 2016

4.8.2.1 Ambient Noise

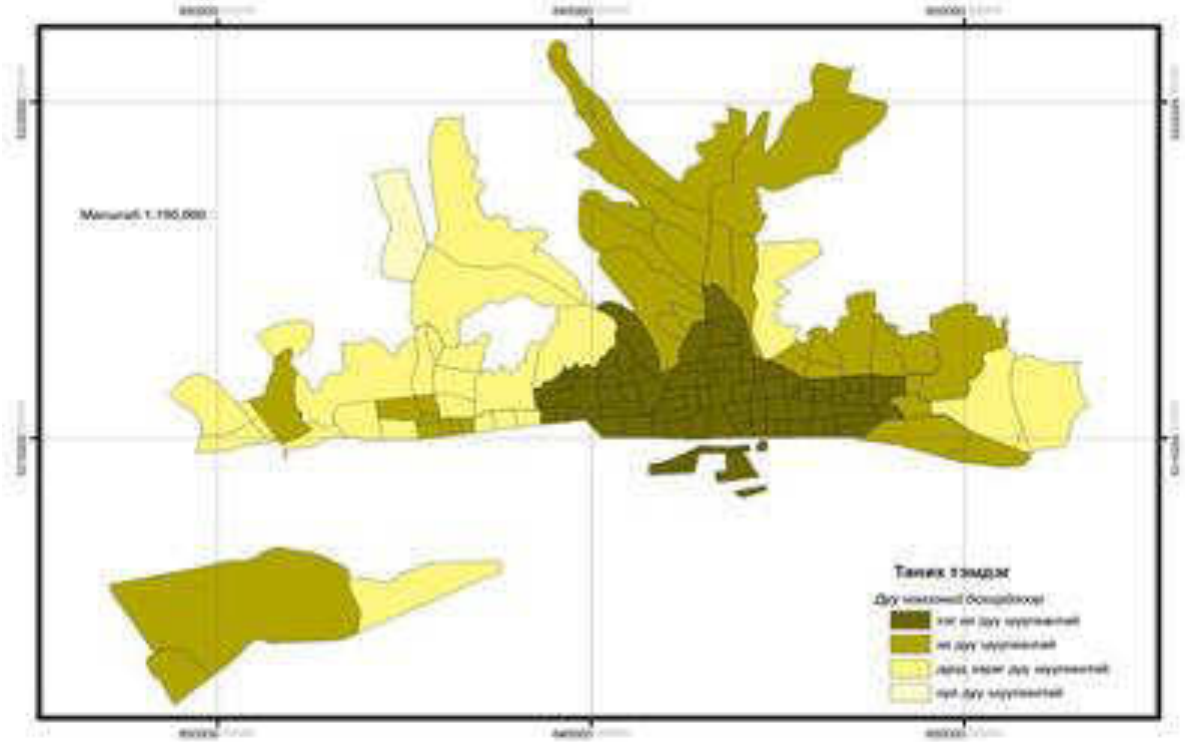
141. Ambient Noise can seriously harm human health and interfere with people's daily activities at school, at work, at home and during leisure time. The main health risks of noise

identified by the World Health Organisation (WHO) are - pain and hearing fatigue, hearing impairment including tinnitus, annoyance, interference with social behavior (aggressiveness, protest and helplessness) and speech communication, sleep disturbance and all its consequences on a long and short term basis, cardiovascular effects, hormonal responses (stress hormones) and their possible consequences on human metabolism (nutrition) and immune system, and poor performance at work and school.

142. In project sites out of Ulaanbaatar city, in provinces there is no estimation about noise measurement. Allowable level of vibration caused by noise according to the “Standard of Mongolia MNS5002-2000” which was renewed in 2000 was normalized and set at the factory levels. At all other sectors, the standard are set as being in compliance with the standard of its technological safety procedure.

143. Noise pollution estimation of Ulaanbaatar city has been done according to the complex assessment of urban development in 2000 (**Figure 4.6**).

Figure 4.6. Noise pollution estimation of Ulaanbaatar city



Source: Journal published by Eurasian Union of Scientists, “International Conference on Science and Practice” March 2016.

144. To identify influence of noise pollution for the ecological assessment of the urban territory, the research work has dominantly used the comparison method and noise has been measured at the 2 objects of Ulaanbaatar city at the railway until the train passed and for 30 minutes on the highway according to the Standard of Mongolia MNS 5003-2000 using SLM 8925 tool at 12 points with 100 m intervals. Noise estimation (shown in **Table 4.7** below) has been set pursuant to the complex assessment of urban development and the Standard of Mongolia MNS 5002-2000.

Table 4.7: Noise estimation

#	Estimation	Indicators		
		Noise level guideline of World Bank EHS Guideline*		Complex estimation of Urban development of Mongolia **
		Equivalent value	Maximum value	
1	Residential; Institutional; educational	55 db	45 db	<60 db
2	Industrial; commercial	70 db	70 db	60-80 db

*Source: General EHS Guideline of WB and Noise volume has been measured by Eurasian Union of Scientists, 2016

**Source: Journal published by Eurasian Union of Scientists, "International Conference on Science and Practice" March 2016.

145. Noise volume has been identified by Eurasian Union of Scientists at 12 points near to railway and highway where loudest noise is caused in Ulaanbaatar city using above estimation. The result of that estimation explained in following **Table 4.8.**

Table 4.8: Result of noise estimation

No	Places measured	Noise value (in db(A))			Evaluation
		Minimum	Maximum	Average	
Length which became distant from the railway					
1	At the railway	70.8	101	85.9	Unsuitable
2	100 m from the railway	68.4	98.3	83.35	Unsuitable
3	300 m from the railway	66.8	96.2	81.5	Unsuitable
4	400 m from the railway	60	85.2	72.6	Limited suitable
5	500 m from the railway	58	79.1	68.55	Limited suitable
6	600 m from the railway	50.4	62.2	56.3	Suitable
Highway					
7	On the highway	74	96.7	85.4	Unsuitable
8	100 m	46.5	81.5	64	Limited suitable
9	200 m	40	76.6	58.3	Suitable
10	300 m	40	59.9	49.95	Suitable
11	400m	40	55.3	47.65	Suitable
12	500m	40	51.4	45.7	Suitable

Source: Data of noise volume measured by Eurasian Union of Scientists, 2016

146. In 2000, 4 estimation zones of noise have been categorized for the urban planning of the urban territory according to the "Complex assessment or urban development" and noise estimation research has been conducted rarely since this research.

147. According to the research work done by Eurasian Union of Scientists, construction area of the center of Ulaanbaatar city has extreme noise, 41.8 percent of all settled area has too much or great noise, 36.9 percent has an average noise and 21.3 percent has low estimation. Moreover, there is an estimation that it was 81.5-85.9 db(A) or unsuitable in the distance up to 300 m from the railway, 68.55-72.6 db(A) or limited suitable in the distance of 300-500 m, 56.3 db(A) or suitable in 500-600 m distance.

148. But, it has been estimated that 64 db(A) or limited suitable was in the distance up to 100 m from the central highway of the city and 45.7-58.3 db(A) or suitable was in 100-500 m distance.

149. As described in the urban planning and construction norm, it has been determined that settled zone will be planned in the distance not less than 100 m from railway and further, it is required to plan to be in distance not less than 300 m from railway and 100 m from highway.

150. Noise measurements were made by the Central Laboratory of MNET at 14 locations using mobile equipment. Ambient noise levels throughout the city centre are consistent with little fluctuations (**Table 4.9)**. Average noise levels comply with Mongolian standards (the Standard of Mongolia. Sorting code 13.100. Occupational safety and hygiene. General requirement for the measurement of noise. MNS 5003-2000), but periodically exceed the standards especially along transport corridors, as traffic is a major source of noise in the urban area along with construction noise. These data are further supported by monitoring for a domestic EIA report which observed noise levels in the City at 62 dB at the curbside in peak hour traffic, dropping slightly to 61 dBA at the wall of the closest building at ground level. This figure reduces to 59 dB at 4 meters above ground.

Table 4.9: Noise Measurements in Ulaanbaatar

No.	Monitoring point	2009 average (db(A))	2010 average (db(A))
1	Tolgoit	53.7	49
2	Devshil	56.7	No Data
3	Yarmag	56.5	49.25
4	Bayankhoshuu	54.5	50.25
5	Zuragt	57	No data
6	3rd Hospital	56.4	No data
7	Tsengeldeh	55.8	No data
8	Duuri	59	No data
9	4th school	61.3	No data
10	17th school	57.2	No data
11	Ulaankhuaran	53.2	59
12	Amgalan	52.5	51.75
13	Sansar	55.6	57.5
14	5 buudal	No Data	55.75
Mongolian National Noise Standards: MNS 2007-4585 allowable limits: daytime is 60 dBA, night is 45 dBA. Night is 10pm-6am according to the Act on Labor.			

Remarks: 1. 2009 based on 5 months (morning and evening) data
2. 2010 based on 2 months morning and evening data

Source: Central Laboratory of MET, 2010.

4.8.2.2 Air Quality

151. Air quality is a significant environmental problem in urban areas of Mongolia, particularly in Ulaanbaatar. Primary sources of air pollution in Ulaanbaatar are three thermal power plants, more than 1,000 small and medium sized heating boilers, about 130,000 traditional Gers and wooden houses, and over 190,000 four-wheel combustible driven vehicles. Topography and meteorology exacerbated ambient air quality conditions in the country, and particularly in Ulaanbaatar. Mountains surround Ulaanbaatar up to 2,250 meters in height inhibited dispersion of pollutants. To compound the situation, a stable atmospheric inversion forms during the winter season. As a result, ambient pollutant concentrations often remained for days or weeks at a time to exceed Mongolian and other international ambient air quality standards. Burning of coal and woods in the households in urban cities has been identified as major sources of air pollution, which affects ambient air quality and human health.

152. **Energy**: During the winter season, three large diesel power plants in Ulaanbaatar release 4.5 million cubic meters of gaseous pollutants, 4.14 tons of particulate matter, and 6.76 kilograms of carbon monoxide into the air every hour. The energy sector accounts for around 64% of Mongolia's greenhouse gas emissions. More than 250 steam boilers burn over 400,000 tons of coal every year. Gers and wooden houses with manual heating (in which 48% of the city population lives), use over 600,000 tons of coal and more than

160,000 cubic meters of fuel wood each year. For the cold seasons, the atmospheric content of carbon monoxide exceeds the permissible norm by 2-4 times.

153. **Transportation**: Transportation is a major source of air pollution in urban cities. The number of motor vehicles has increased vary rapidly in big cities and settlements in a short period of time. In 1995, it was estimated that over 60% of the vehicles emitted pollutants exceeded the maximum allowable limits.

154. **Industry**: Industrial activities are also one of the major sources of air pollution in Mongolia. As estimated approximately one fourth of greenhouse gas emission is emitted from industrial activities.

155. The following **Table 4.10** shows the results for Air Quality monitoring or spot sampling measurement of sulfur dioxide and nitrogen dioxide at various points along the proposed Schools/Kindergarten are within the permissible limits prescribed by the Department for Hydro Meteorology and Environmental Monitoring of MET for project involved provinces and cities.

156. Because of lack of unified data, it was used several references as cited in the source reference. It can be shown that no parameters surpassed the maximum value established, but for the daily mean indexes; specially, in the household areas is higher with maximum values in 2014-2016 December measurement.

Table 4.10:Spot sampling measurement of sulfur dioxide and nitrogen dioxide in project involving provinces in 2014-2017.

Name of monitoring point	Date of sampling	Time of sampling	SO_2 mg/m^3	NO_2mg/m^3
Erdenet city of Orkhon Aimag	2014.01.10	21^{20}-21^{40}	117	108
	2014.02.14	21^{00}-21^{20}	29	103
	2015.12.08	22^{38}-22^{58}	33	137
	2015.12.29	22^{10}-22^{30}	24	134
	2016.01.11	21^{44}-22^{04}	29	84
	2016.02.18	22^{10}-22^{30}	53	107
	2016.12.26	21^{44}-22^{04}	74	232
	2017.01.27	20^{20}-20^{40}	104	129
Kherlen Soum of Dornod Aimag	2013	I, V, XII	9	18
	2014	III, VII	9	18
	2015	II, XI	11	17
	2016	II, IV	8	12
Sumber Soum of Gobisumber Aimag	2014	average	1	18
	2015	average	7	14
	2016	average	9	26
Baynkhongor Aimag	2016	average	204	81
Bulgan Aimag	2014	average	09	19
	2015	average	10	19
	2016	average	10	17
	2017.02.03	10^{30}-11^{00}	102	151
Ulaanbaatar city	2015	January	118	62
	2016	January	124	75
	2017	January	98	78
Standard MNS4585:2016			**50**	**50**
WHO Ambient Air Quality Guidelines reflected in World Bank guideline of EHS			**50**	**40**

Source: Monitoring result of Environmental Monitoring Laboratories of department of Hydrology, Meteorology and Environmental Monitoring in Baynkhongor, Bulgan, Dornod, Gobisumber, Orkhon aimags, 2016.

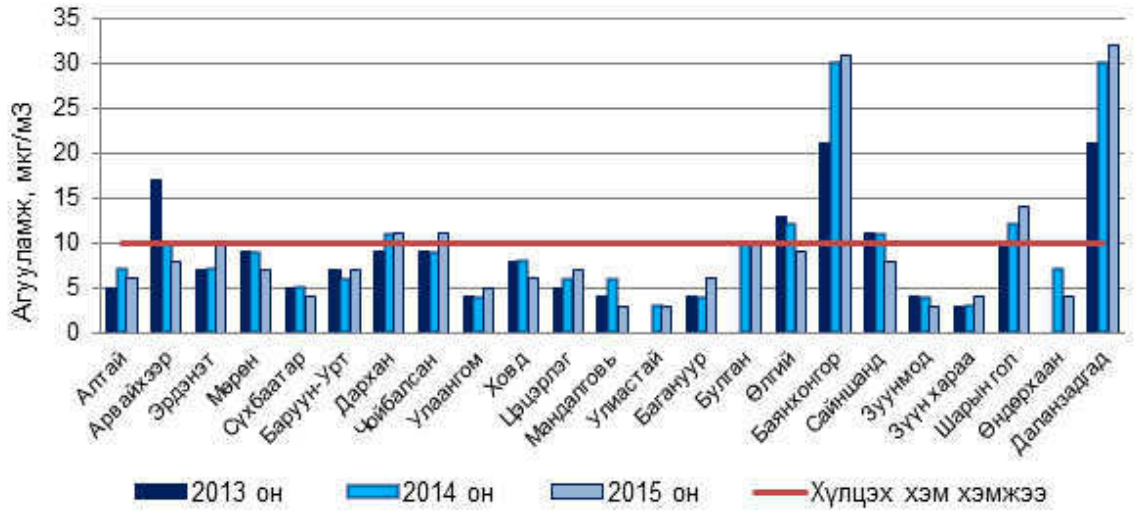
157. Concentrated road traffic or presence of air polluting industries in the area can result in a significant decline in air quality. Since most of the Schools/Kindergartens locations are located in several khoros, the Ambient Air Quality measurements along the project locations are within the limits of National Ambient Air Quality Standards. Particulate Matter (PM2.5)[27] is produced by combustion, including vehicle exhaust, and by chemical reactions between gases such as Sulphur dioxide, nitrogen oxides, and volatile organic compounds. Adverse health effects from breathing air with a high PM2.5 concentration include premature death, increased respiratory symptoms and disease, chronic bronchitis, and decreased lung function particularly for individuals with asthma.

158. The National Air Quality Office operates a network of 11 air quality monitoring stations situated in Ulaanbaatar. Data are collected and coordinated by the National Air Quality Office.

159. Further measurements at monitoring stations conducted in June 2008 (under World Bank's Air Monitoring and Health Impact Baseline Study) give even higher PM10 concentration levels. Recorded levels exceeded the Mongolian air quality standard (100 µg/m3), World Health Organization (WHO) guideline value10 (50 µg/m3 24 hour mean PM10) and the European limit value (40 µg/m3). In addition, extremely high concentrations of PM were found at the mobile PM stations under World Bank's Air Monitoring and Health Impact Baseline Study in the Ger areas. Mostly during winter months, some days recorded levels of up to 4000 µg/m^3, although the report states that this value should be revised down by 40%11 due to interference in the results by the relative humidity at the time of sampling.

160. More recent data of annual average air quality of Aimags for 2013-2015 given in Figure **4.9**. The data show the annual average estimation of Sulfur dioxide comparing with Mongolian standard, that presented to Parliament Standing Committee by the Central Laboratory of MET.

Figure 4.9: Air Quality Measurements in 2013-2015 and Mongolian Standards
(Estimation of sulfur dioxide)



Source: Air Quality Authority of Mongolia, 2015.

4.8.2.3 Surface and Ground Water

161. The results of water analysis (**Table 4.11**) shows level of indicators of water quality in rivers passing nearby project areas.

[27] Fine Particulate Matter with a diameter smaller than 2.5 microns. (Human hair diameters range from 40 to 120 microns.)

Table 4.11: **Average Water Quality in the rivers in project city and towns (1998-2008)**

River Location	pH [-]	SS [mg/l]	DO [mg/l]	BOD_5 [mg/l]	NH_4^+ [mg/l]	PO_4^{-3} [mg/l]	SO_4^{-2} [mg/l]
Selbe River in Ulaanbaatar city	8.1	30.9	9.4	2.9	0.3	0.02	24.6
Tuul river in Ulaanbaatar city	7.63	18.7	1.6	3.6	0.4	0.1	7.8
Eren river in Teshig Soum of Bulgan	7.31	-	4.7	2.0	0.2	0.01	5.22
Kherlen river in Dornod Aimag	8.04	50.9	8.69	1.77	0.06	0.009	24.1
Khovd river in Bogd Soum Uvurkhangai	6.95	35.5	3.9	2.56	0.2	0.1	50.2
Tuin gol river in Baynkhongor Aimag	7.8	-	7.8	3.8	0.49	-	-
MON standard for ambient water quality (MNS 4586-1998)	6.5-8.5	-	6.4	3.0	0.5	0.1	100
Indicative Values for Treated Sanitary Sewage Discharges in the WB EHS guideline.	6.0-9.0	50	125	30	10	2	-

Source: Data from analyzing by Environmental monitoring laboratories in Bulgan, Dornod, Uvurkhangai aimags and Ulaanbaatar city, 2012-2016.

Remark: The EHS guideline of WB explains that discharges of process wastewater, sanitary wastewater, wastewater from utility operations or storm-water to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria or, in the absence of local criteria, other sources of ambient water quality.

162. Water quality results by Aimags' Departments for Meteorology and Environmental Monitoring show the ground water has high amount of hardness. However, all other parameters such as copper, manganese, sulphate, nitrate, fluoride, phenolic compounds as C6H5OH, mercury, cadmium, selenium, arsenic, cyanide, lead, zinc, anionic detergents, chromium, mineral oil, alkalinity, aluminium and boron are found within permissible limits. Based on the above information, it can be inferred that both the ground water and surface waters are safe for consumption after simple purification methods such as purifying tablets, or bottle with inbuilt filter.

4.8.2.4 Soil Analysis

163. A soil test chemically extracts and measures the elements essential to plant nutrition. It also measures soil acidity and pH. These factors are indicators of nutrient availability, and the potential of the soil to produce crops and presence of metals like chromium, cadmium, copper etc. before beginning of any project related activities. **Table 4.12** gives the site test results for soil analysis.

Table 4.12: Results of Soil Analysis Monitoring

Parameters	WB EHS guidelines	MNS-Detectable limits	Altai	Baynkhongor	Gobi-sumber	Uvurkhangai	Orkhon	Bulgan
PH	-	-	-	7.56	8.24	7.7	8.18	7.94
Moisture (%)	-	-	-	1.28	1.01	1.2	2.09	37
Sulphates (SO_4) (mg/kg)	-	-	-	50.0	169.9	71.2	315.5	223.4
Ammonium nitrate (NH_4)	-	-	-	78.5	18.8	18.3	30.0	32.8
Total Organic Matter (%)	-	-	-	0.68	1.51	1.36	1.15	
Nitrogen (NO_3) mg/kg	-	-	-	5.3	22.5	36.0	18.4	29.8
Phosphorus ($P_2 0_5$) (mg/kg)	-	-	-	42.1	21.3	39.4	36.8	64.8

Parameters	WB EHS guidelines	MNS-Detectable limits	Altai	Baynkhongor	Gobi-sumber	Uvurkhangai	Orkhon	Bulgan
Chlorides (%)	-	-	0.0	-	0.0	-	0.0	0.0
Lead (Pb) (mg/kg)	-	100	14.3	-	9.9	-	1.0	30.9
Zink (Zn) (mg/kg)	-	300	126.0	-	117.8	-	1.3	164.3
Cuprum (Cu) (mg/kg)	-	100	29.1	-	27.98	-	3.9	25.6
Cobalt (Co) (mg/kg)	-	800	36.2	-	12.0	-	1.4	434.4
Mercury(Hg) (mg/kg)	-	2.0	0.0	-	0.0	-	-	0.4
Chromium (Cr) (mg/kg)	-	150	134.3	-	0.0	-	0.9	2.2

Source: Data of measurement by Laboratories of Departments for Meteorology and Environmental Monitoring of Gobi-Altai, Baynkhongor, Gobisumber, Uvurkhangai, Orkhon, Bulgan aimags. 2016.
Remark: No estimation in the EHS guideline, it concerns to contaminated land.

164. Other metals like zinc, copper, chromium, cadmium, nickel, lead are found below detectable limits signifies the low productivity of soil with no traces of any pollutants before start of project activities. **Table 4.13** gives locations for soil monitoring points that were studied by Institute of Geography, while preparing Report of Ulaanbaatar soil pollution study, 2014. **Figure 4.10** depicts the following locations on a geographical map of Ulaanbataar city.

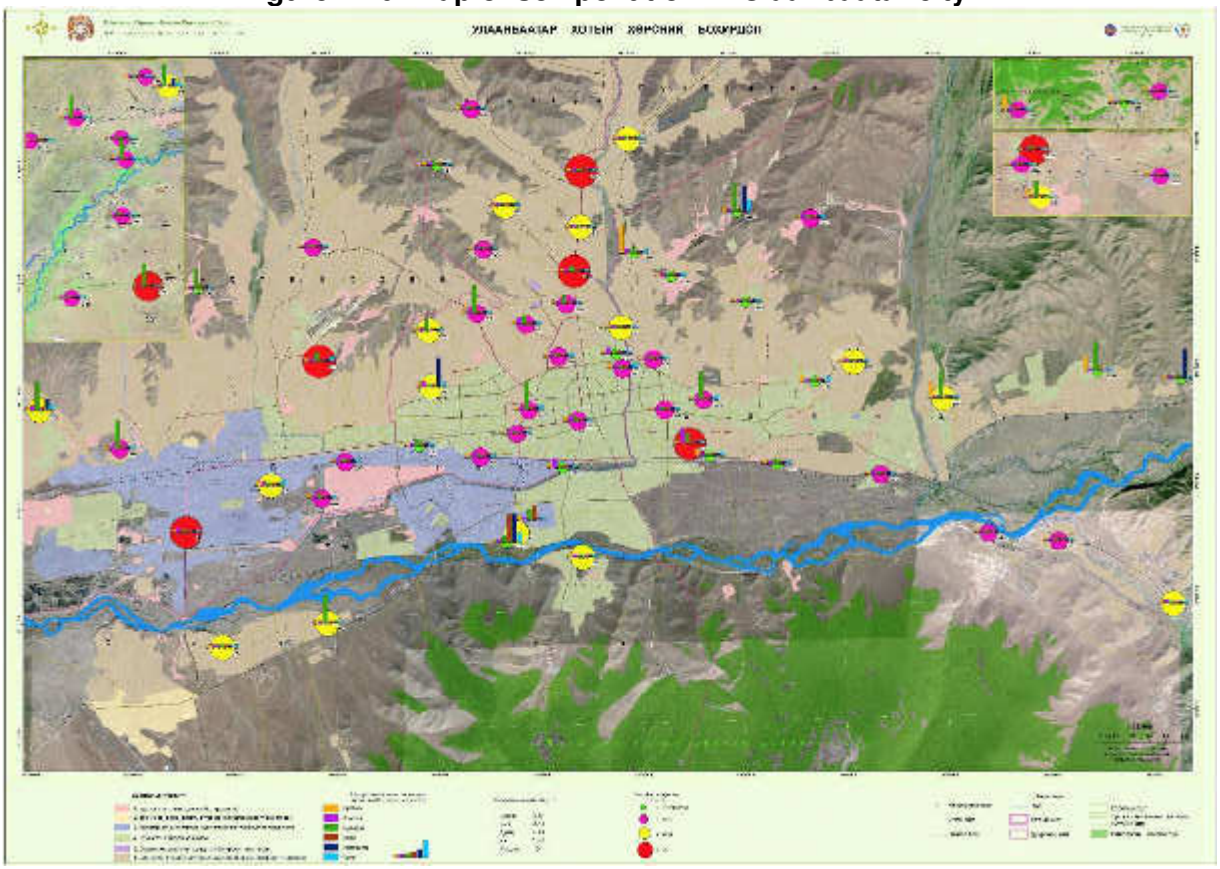
Table 4.13. Locations of Soil monitoring points in Ulaanbaatar city

Number	Name of Places	Longitude (ddd.ddddd)	Altitude N (dd.ddddd)
1	Sonsgolon road	106.78545	47.89442
2	Termo Power Plant-4	106.81353	47.90423
4	Railway Station	106.88237	47.90941
5	10th microdistrict, Tsetsuukh market	106.86243	47.91202
6	Termo Power Plant-2	106.83003	47.90110
7	Khar Khorin Market	106.83812	47.90908
8	School #113	106.86662	47.92515
9	Sambalkhundev Market in 3&4th microdistrict	106.86639	47.93749
11	Bulag valley in Gachuurt	107.11208	47.92276
12	Back side entrance of Naran Tuul market	106.95076	47.91119
14	Sky resort willage	107.04767	47.88998
15	Chuluun ovoo	106.97914	47.90636
16	Amagalan Railway station	107.01292	47.90342
17	Baynzurkh traffic checking point	107.07044	47.88778
18	Landfill of Khonkhor willage	107.15969	47.80360
19	Dari Ekh landfill	106.94604	47.94811
20	Front side of Da Khuree market	107.00502	47.92830
21	Front side of Tsaiz market	106.95571	47.92077
22	Landfill in Tsagaan davaa	106.99215	47.96012
23	Baast river in Nalaikh	107.26919	47.78727
24	Waste collecting point near Gorodok willage	107.40025	47.76633
25	Landfill of Nalaikh district	107.27438	47.75422
26	Urgakh Naran microdistrict	107.10736	47.87333
27	Glass factory of Nalaikh	107.25539	47.77715
28	South side of Emeelt	106.59183	47.88569
29	Songino resort center	106.69173	47.87111

Number	Name of Places	Longitude (ddd.ddddd)	Altitude N (dd.ddddd)
30	Willage in the north side of Songino resort	106.68717	47.88612
31	Near the office of 32nd Khoroo of Songinokhairkhan district	106.63995	47.90090
32	Eastern valley of Takhilt	106.71414	47.92900
33	Baynkhoshuu east valley	106.81660	48.01138
34	Orbit microdistrict in Bayngol	106.73847	47.92199
35	End of Undur Denj	106.83030	47.93130
36	End stop of buses in Orbit	106.76452	47.91306
38	Waste collecting point in Selkh	106.96524	48.02210
39	Selbe resort	106.92810	48.01472
40	Western cross road	106.89436	47.91440
41	Green lake	106.90868	47.93107
42	Dambadarjaa	106.93302	47.97853
43	Institute of Geography	106.92935	47.92811
44	Morin davaa	106.68692	47.83161
45	Bukhug river	106.56861	47.74761
46	8th khoroo of Khan Uul District, Yarmag	106.79658	47.86892
47	Leader Factory	106.89352	47.89256
48	Sens hill	106.63200	47.77431
49	Ulziit willage	106.71208	47.78158
50	Dalan Davkhar	106.88211	47.94104
51	Flood protection channel near Bumbugur market	106.89843	47.91958
52	Central post	106.91433	47.91685
53	TV Broadcasting Centre	106.89823	47.93835
54	Denjiin Myanga	106.91151	47.94256
55	Khailaast	106.91439	47.94975
56	6 Buudal	106.91670	47.95944
57	7 Buudal	106.91758	47.97172
61	Termal Plant in Uliastai	107.03403	47.91979
62	School number 34 in Yarmag	106.83103	47.87367
64	Khonkhor	107.18623	47.81302
65	Chingeltei bulag, Nargui well	106.88196	47.98588
66	Sogoot 57th street in Khailaast	106.89224	47.96446
67	Zaisan	106.91494	47.88690
68	East cross road	106.94289	47.91878
69	Selbe river near State Registration Center	106.92936	47.93713
70	Tsagaan Davaa	106.97039	47.94201
71	Mamba Datsan, FM-104.5	106.93961	47.93000
72	Khailaast	106.87022	47.97377
73	Denj 1000	106.88480	47.95497
74	Cross road in Baynkhoshuu	106.82913	47.95630
75	Ulaanchulaat landfill	106.79127	47.94794
81	Train repair center	106.90896	47.90668
82	Khargia WWTP	106.89016	47.89048
83	Dari-Ekh, Selbe auto repair centre	106.93406	47.95339
84	Gants Khudeg	106.96797	47.96194
85	SHar Kahd auto repair centre	106.99222	47.92419
86	Khujir Bulan	107.08489	47.92486
87	Gachuurt drinking water supply centre	107.19328	47.89939
88	Uguumur auto market	106.95728	47.90844
89	100 ail road	106.92737	47.93139

Source: Institute of Geography, Report of Ulaanbaatar soil pollution study, 2014

Figure 4.10: Map of soil pollution in Ulaanbaatar city



Source: Institute of Geography, Report of Ulaanbaatar soil pollution study, 2014

165. Environmental baseline standards for air, water, soil and noise are attached as **Annexure 4.** A regular monitoring of all above parameters during construction, operation, and maintenance phase will further describe the pollutants loads in the ambient environmental conditions. This tracking will lead to an effective use of Environment Management and Monitoring Plan in ensuring compliance with design parameters.

4.9 Socio-Economic Development

Population

166. The population of Ulaanbaatar, the capital city of Mongolia, has been increasing rapidly from 0.78 million (Mongolia: 2.40 million) in 2000 to 1.08 million (Mongolia: 2.67 million) in 2008 with an average annual growth rate of 2.8%. This rapid increase of population is chiefly due to a rapid migration from rural area to urban area. The average number of population migrated in the past 10 years is estimated at around 20,000 per year which cause the expansion of Ger area surrounding the apartment area of Ulaanbaatar. At present Ulaanbaatar accounts for 40% of the total population of Mongolia. The projected urban population of 2030 is 1.87 million or 1.7 times larger than the population in 2008.

Economy

167. The economy of Mongolia has grown rapidly at average annual growth of around 5.6% and transition to market economy has proceeded at remarkable speed as well. The economic growth has been pushed by increased international commodity price as well as expansion of copper output until the global financial crisis occurred in 2008. Meanwhile, the regional domestic production of Ulaanbaatar City accounts for around 56% of the National gross domestic production (GDP), as the city has historically been the centre of the economy as well as of the administration.

168. In Mongolia, mining and quarrying are the biggest financial contributors to industrial output (58%) with manufacturing second (32%). The Tavan Tolgoi area is the world's largest untapped coking coal deposit. Manufacturing includes metals (such as copper and steel foundries) as well as woolen products such as cashmere and carpets. Ulaanbaatar has some manufacturing plants but is also the base for offices of international and national companies; because of the current infrastructure constraints, it is considered difficult to operate a significant and effective business outside Ulaanbaatar.

Unemployment

169. According to the Mongolian Statistical Yearbook 2009, the 'Registered Unemployment Rate' for Ulaanbaatar is 1.6%. However, this is the rate of people that are officially registered unemployed. The book also provides an 'unemployment rate' which is 14% for the City, derived from a new methodology of calculation based on the results of a Labor Force Survey.

Poverty

170. The Mongolian Statistical Yearbook 2009 provides background data on poverty levels within the City. The Poverty Headcount Index is a widely-used poverty measure, giving the percentage of the population whose consumption is below the poverty line. For Ulaanbaatar, this rate is 36.7% in 2009, which compares to 38.7% nationally. This increases to over 49% in rural areas, showing that relatively speaking, Ulaanbaatar is wealthier than the rural areas. This translates to an average household income of nearly 455,000 MNT in urban areas, and 332,000 MNT in rural areas.

171. The following **Table 4.13** gives overview of selected key development indicators gives a first indication of the poverty situation in Mongolia:

Table 4.13: Key Development Indicators in Mongolia

Key Development Indicators	Measure	Year
Total population	2.7 million	2010
% under 15	27.3	2010
Population Distribution (% Rural)	36.7	2010
Human Development Index (HDI)	0.653	2011
HDI Rank. out of 187 countries	110	2011
Gini Coefficient	36.5	2000-2011
Total Health Expenditure (% of GDP) (USA 15.4%. Germany 9.1%. Russia 5.4%)	3.0	2010
Government spending on health as % of total Government expenditure	8.7	2010
Gross National Income (GNI) per Capita USD	2,247	2010
GDP per Capita. USD	3,522	2009
Literacy rate (15+)	97.8%	2010
Multi-dimensional poverty index	0.065	2005
% population with improved drinking water access	51	2011
Life Expectancy at Birth	68.5	2011
Infant Mortality Rate (<5)	19.4 per 1.000 live births	2010
Maternal Mortality Rate	45.5 per 10.000 live births	2010

Sources: UNDP 2011. WHO CHIPS 2011. Health indicators. 2010. Human Development report. 2011. WHO / UNICEF (2012)

172. The analysis of the first Living Standard Measurement Survey (LSMS) in 1996 provided a profile of the poor and identified the most vulnerable groups in the country. More than 800,000 people or 36 % of the population were reported as poor. The assessment showed that female-headed households had a higher incidence of poverty as do

unemployed and rural households owning less than 15 animals. Urban poverty is marginally higher than rural poverty particularly in provincial capitals that have been hard hit by the closing of state enterprises. These observations are most probably still valid, although no new data exist.

173. Income comes from different sources and varies according to location as shown in **Table 4.14.**

Table 4.14: Monthly Average Income per Household (by sources of income and by location)

Types of income	National average (%)	Ulanbator (%)	Aimag centers (%)	Soum centers (%)	Rural areas (%)
Income Total	100.0	100.0	100.0	100.0	100.0
Monetary Income Total	91.5	97.0	94.6	89.4	70.9
Wages and salaries	48.5	57.0	52.5	49.3	13.8
Pensions. allowances and compensation*	20.0	18.3	22.2	20.5	22.1
Income from livestock products	5.3	0.2	1.9	5.7	26.6
Income from crop products	0.5	0.0	0.3	2.4	0.8
Income from nonagricultural production and services	10.7	14.0	11.2	5.9	3.4
Other income	6.5	7.5	6.5	5.6	4.2
Food and nonfood products received from others free of charge	3.1	2.8	2.9	1.4	5.7
Food consumption from own business	5.4	0.2	2.5	9.2	23.4

(Source: NSO 2012)

174. Private transfers by family members living in the capital or abroad provide a significant source of income in poor households accounting for nearly 20 % of total income. Without these private transfers the poverty rate would increase to 46 % of the population.

175. The survey found that there was a strong correlation between unemployment and poverty with 58 % of the unemployed being poor. Unemployment was a particularly difficult problem in both the urban and rural areas. In addition to the 100,000 already unemployed the civil service reform will create another 30,000-unemployed former public service employees. In addition, over 25,000 people enter the labor market annually finishing their education. Among the rural poor 35 % of the very poor and 14 % of the poor were unemployed. Among the urban poor, the situation was even worse with 55 % of the very poor and 34 % of the poor being unemployed.

176. Mongolia is experiencing a growing difference between the living conditions of rich and poor herders, about 37 % of livestock-owning households struggle to subsist.

Ethnic minorities

177. Ethnic Mongols account for about 85% of the population and consist of Khalkha and other groups, all distinguished primarily by dialects of the Mongol language. The Khalkha make up 90% of the ethnic Mongol population. The remaining 10% include Buryats, Durbet Mongols and others in the north and Dariganga Mongols in the east. Turkic peoples (Kazakhs, Tuvans, and Chantuu (Uzbek) constitute 7% of Mongolia's population, and the rest are Tungusic peoples, Chinese, and Russians. Most but not all Russians left the country following the withdrawal of economic aid and dissolution of the Soviet Union in 1991.

Education

178. The educational system of Mongolia is composed of nursery, kindergarten, primary

school, secondary school and university facilities. Every Soum has at least one nursery school and kindergarten. There are often also privately run nursery schools and kindergartens (for children over the age of 3). Each Soum centre has schools with boarding facilities, where children from the more remote herder families are accommodated. Primary and secondary schooling used to be for 10 years, but was extended to 11 years. The school year of 2008-2009 marked the beginning of the 12-year system. In Mongolia, the school year begins in September. Pupils who want to complete secondary school often need to attend schools in the Aimag centres. Generally, men and women in rural areas have attended school up to year 8 and can read and write. 84%of the 35,228 pupils, who went to school in rural areas and stayed in dormitories, come from herder families (2009). Girls and boys have equal access to schools, vocational training and other state services.

179. With the advent of the free market economy and increasing urbanization primary education has experienced some ups and downs. As more families move to the cities with their children, urban schools are suffering from overcrowding while rural schools suffer from low attendance. After the communist regime stepped down and free markets were introduced, the Mongolian education system was reformed through decentralization by handing over management to the local provincial governments. Prior to this, the government heavily subsidized education in Mongolia. Education consumed 27% of the national budget in 1985, but by 1999 this had dropped to below 15% of the total budget. Every child, no matter how remote their location, was able to attend well-equipped schools that had some of the lowest student to teacher ratios in the world.

180. The situation changed when the economic downturn of the 1990s put pressure on the financial stability of families and strained the school budgets. This led to an increasing number of children being taken out of school and put to work helping their families. The introduction of capitalism put more than 36% of the Mongolian population below the poverty line by 1995. At one point, more than 15% of rural children were being put to work, mostly with herding. Furthermore, over 8% of urban children were working instead of attending school.

181. In addition, herders may question the need for education, as the aging parents had to herd the flocks themselves if their children were going to school. The dropout rate was exacerbated by the fact that many children needed to attend boarding school a long way from home. At one point the schools implemented a ‘Meat Requirement’ to help cover the cost of feeding students. This meant that a family had to provide 70 kg of meat per child per year. The ‘Meat Requirement’ was in essence a school fee that some families could not afford. Boys had the highest dropout rates because they were more likely to be needed for tending herds and were often seen as problem students. Fortunately, primary education in Mongolia has largely rebounded and school dropout rates are decreasing. However, the quick growth of the dropout rate during the economically turbulent 1990s does illustrate how fragile access to education can be in Mongolia.

182. In contrast, the reform of higher education has always had high priority. As part of the educational reform of 1995 courses and degrees were transformed to a Bachelor/Masters system based on the system used in the USA. The development of competitive private education providers was encouraged by the introduction of university fees with such success that Mongolia was considered a worldwide model. The new opportunities were taken up on a large scale, not only by Mongolian institutions, but also by foreign universities with bases in Russia, Kazakhstan and the USA, among other countries. More than 100 private universities have been established up to date. The most important funding source for the universities is university fees, which reach astronomical proportions particularly for prospective students at the lower end of the income scale. On the other hand, there are scholarship opportunities for poorer students. In the 2001/2002 academic year, the State paid the study fees for about 5% of the circa 90,000 students and over one-third of students received State loans. However,

the internationalization of tertiary education has largely remained a one-way road. Preferred target countries of Mongolian students are the USA and Germany. In Mongolia itself, foreign students and visiting scientists come mostly from East Asia.

183. A total of approximately 210,000 students were registered in 2010 with the country's universities, higher educational institutions, colleges, technical and vocational schools. One peculiarity of Mongolian education is the disproportionate involvement of women. This inequality starts with the first day of school and widens with the increasing length of education such that the proportion of women university graduates reaches 63% (2009).

184. Among the population aged 10 and above the percentage of people with at least primary education is 92.5% (2010), with an increase of 4.6% compared to 2000. The percentage of males with higher education has increased twice between the two censuses, whereas the same figure has increased 2.8 times among females. Literacy level among population aged 15 and above is 98.3%, which has increased by 0.5% since 2000.

Health Care

185. During the Socialist Period health services were publicly funded, but despite achievements in facilities and improved health status, the system was inefficient. In the mid-1990s, the health sector reform focused on improving primary health care and disease prevention. This, along with economic development, contributed to improvements in health status over the last 15 years.

186. The leading causes of mortality are non-communicable diseases (cardiovascular diseases and neoplasms) and external causes (injuries and poisonings). Respiratory and digestive system diseases are the main causes of morbidity, along with external causes (injuries and poisonings) in urban areas and urinary tract diseases in rural settings.

187. The health system is decentralized to the level of the Aimag. The majority of health services are delivered by the public sector.

188. Mongolia has more than twice the average number of hospitals of EU countries and other transition countries, although the numbers have been declining since 1998. At the same time there has been a decline in the number of in-patient beds, though Mongolia still has a high number of beds at 68.1 per 10,000 inhabitants in 2011.

189. However, there are more and more reports that the quality of health services is deteriorating. Thousands of people who urgently require medical care are at risk not to get adequate care. According to doctor's reports there is a general lack of functioning anaesthesia devices and medication. There is also a lack of medical information, e.g. in 2008, in average only 12% of women were aware and had a correct understanding about transmission modes of HIV/AIDS and only 22% had at least a basic understanding transmission modes of HIV/AIDS.

190. The deteriorating state of the national health care system has clear negative impacts on the health situation of the population. Infant mortality, for example, has not only increased in several regions (Western, Khangai and Eastern) but also in the national average.

191. Also, infectious diseases are spreading/increasing: In the first 11 months of 2012 the total number of cases reached 39,301, an increase by 873 cases or 2.3% compared to same period of the previous year. The increase in the number of infectious disease cases was mainly due to increases of 7,408 (9.3 times the previous figure) in mumps and 466 (11.8%) in syphilis - although there were decreases of 6,228 (49.4%) in viral hepatitis.

192. To improve the situation, the government has established a National Quality

Programme and a National Programme on Improving Hospital Quality Management (2008-2013), but as yet there are no reports about the extent to which these plans have been implemented and no actual evidence whether they have actually enhanced quality.

193. The State funding of primary health care aims to provide access for everyone. Vulnerable groups are exempt from co-payments (mothers, children under 5 years, the elderly and youth). However, there is still an urban-rural disparity in access. Provision of services favours urban and non-poor areas. Rural areas suffer from a shortage of health workers. These days, when someone has a medical emergency, they are more likely to seek contact to the next urban centre.

194. The Government of Mongolia has placed a high priority on achieving the Millennium Development Goal 5. Some of the major achievements in moving towards this goal are the high coverage of antenatal care (87.7%) and delivery by skilled birth attendants (99.8%). However, providing maternal services to a mobile and migrant population is a challenge and the infant mortality rate stays high, especially in remote areas – where the herders live.

195. There are international NGOs like “Nomadicare” which recognize that the nomadic lifestyle is at risk due to its extreme remoteness, compounded by the lack of infrastructure like roads, electricity, and water. If nomads get sick and need to go to a provincial hospital with adequate diagnostic and treatment capacity, it can be many hours away. To support their cultural survival, nomads need effective health care close to their homes. Nomadicare works on this problem.

Land use pattern

196. The land use pattern map of Ulaanbaatar is shown below in **Figure 4.7** which shows the new land use classification and zoning scheme of Ulaanbaatar and **Table 4.15** gives the details of Control of building use by Land Use Zones. With its territory of 156.412 million ha, Mongolia occupies 17th place by the size of territory and first place by per capita land resources (65 ha) in the world. Per capita agricultural land in Mongolia (53.8 ha) accounts for 20 times over the world's average.

Table 4.15. Control of building use by Land Use Zones

Examples of buildings	Residential zones					Commercial zones			Industrial zones			Suburban zones			Mixed used zones			Open spaces		
	R1	R2	R3	R4	R5	C1	C2	C3	I1	I2	I3	S1	S2	S3	M1	M2	M3	O1	O2	O3
House, houses with other small scale function (store, office, etc)	E	D	C	B	F										D	D				
Kindergarten, Schools (primary, secondary, high)																				
Shrines, temples, churches, clinics											D									
Hospital, University																				
Stores, Cafe, Pub																				
Markets, Restaurant	F	E	E	E	E										E	D	D			
Offices, etc. not specified above						A	B	B												
Hotels, Inns						A	B	B												
Cinema, other entertainment																				
Ger, summer little house																				
Theaters, movie theaters, stores, restaurants, amusement facilities and so on, with more than 10000m² of floor area																				
Bathhouses, Sauna, barbershop, washhouses, beauty salon																				
Auto park, garage, technical market,		F	F	E																
Warehouses of warehousing company, independent garage of other types than specified above	F	F	F	F	F	E	E	E	F	E										
Auto repair shop, Petroleum station										E										
Factory with some possibility of danger or environmental degradation									E	E										
Factory with strong possibility of danger or environmental degradation									E	F										

Legend

R1 Single family housing zone	R5 Ger district	I1 Danger industry zone	S2 Traditional agricultural zone	M3 Semi industrial zone
R2 Low rise residential zone	C1 Central business zone	I2 Heavy industry zone	S3 Natural conservation zone	O1 Green built
R3 Middle rise residential zone	C2 Satellite business zone	I3 Light industry zone	M1 Semi residential zone	O2 Avenue, road
R4 High rise residential zone	C3 Neighborhood com-cial zone	S1 Farmer zone	M2 Semi commercial zone	O3 Restriction zone & area

A	Floor area must not exceed 1000 m²	C	Floor area must not exceed 500 m²	E	Floor area must not exceed 150 m²
B	Floor area must not exceed 700 m²	D	Floor area must not exceed 300 m²	F	Floor area must not exceed 50 m²

Can be built | Conditional can be built | Usually cannot be built

Source: Gantulga Gombodorj and Chinbat Badamdorj. Urban land use classification and functional zoning of Ulaanbaatar city, Mongolia, 2010.

197. The land, except that given to the citizens of Mongolia for private ownership, as well as the subsoil with its mineral resources, forests, water resources and wildfowl shall be the property of the State. The State may give for private ownership plots of land, except pasturage and land under public utilization and special use, only to the citizens of Mongolia. This provision shall not apply to the ownership of the subsoil thereof. Citizens shall be prohibited to transfer the land in their ownership to foreign citizens and stateless persons by way of selling, bartering, donating or pledging as well as from transferring it to others for their possession and use without permission from competent State authorities. The State shall have the right to hold landowners responsible for the land, to exchange or take it over with compensation on the grounds of special public need, or confiscate the land if it is used in a manner adverse to the health of the population, the interests of environmental protection or national security. The State may allow foreign citizens, legal persons and stateless persons to lease land for a specified period of time under conditions and procedures as provided for by law. Also, in provision 16.2 of the Constitution was indicated that the citizens of Mongolia are guaranteed to enjoy the following rights and freedoms: the right to a healthy and safe environment, and to be protected against environmental pollution and ecological imbalance.

198. In the provision 17.2 it was indicated that “1. Citizens of Mongolia, while upholding justice and humanity, shall fulfil in good faith the following basic duties: 2) to respect dignity, reputation, rights and legitimate interests of others;” and in the provision 19.1 “The State shall be responsible to the citizens for the creation of economic, social, legal and other guarantees ensuring human rights and freedoms, to fight against violations of human rights and freedoms and to restore infringed rights.”

199. As per the Provision 10 of Law on Land of Mongolia, land is classified in six categories as stated below in **Table 4.16**:

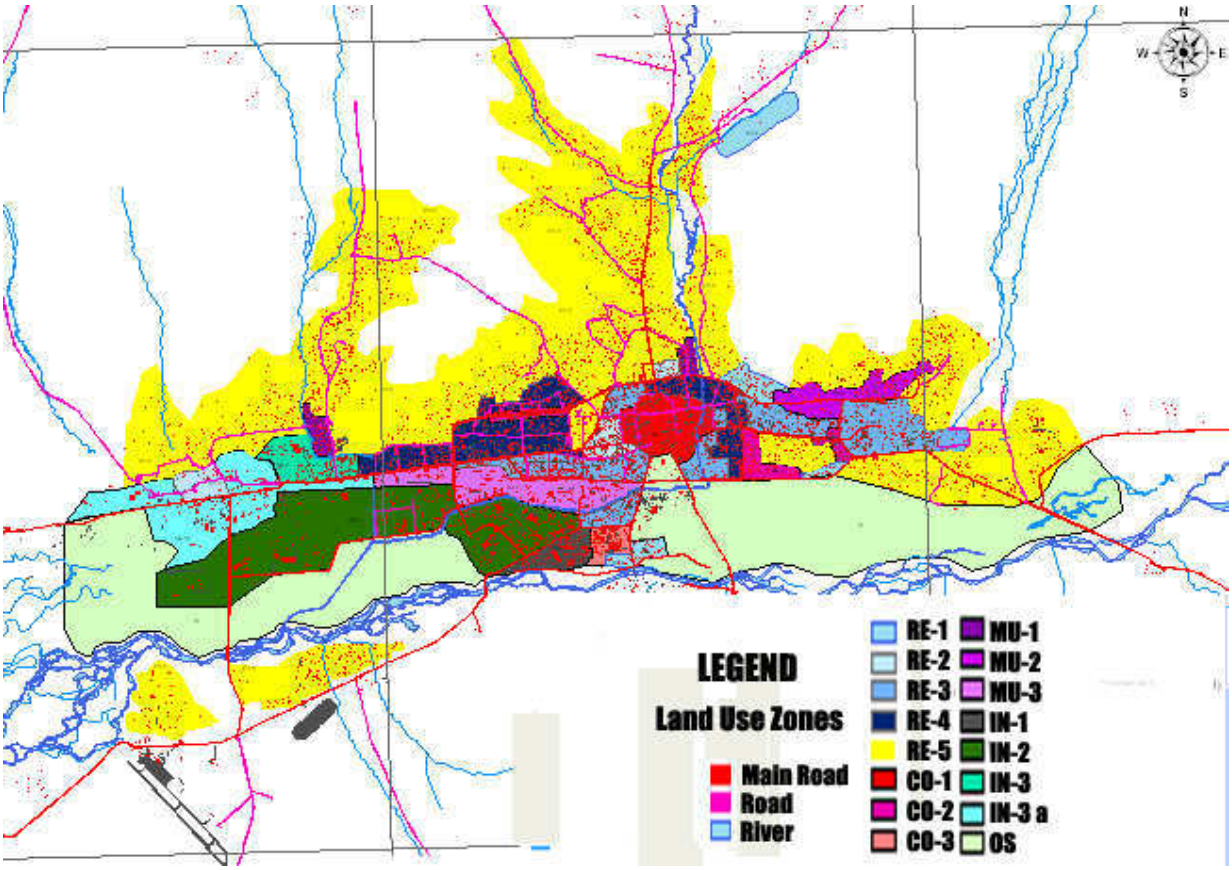
Table 4.16: Classification of Land Use of Mongolia

No	Classification of Land Use	2013	2014	Changes
I	Agricultural land	115361.4	115008.6	-352.8
1	Pasture land	111026.1	110646.7	-379.4
2	Hay making area	1712.3	1717.6	5.3
3	Crop land	986.8	1012.8	26.0
4	Abandoned land	304.9	304.9	0.0
5	Land under Agricultural building and facilities	71.4	76.8	5.4
6	Land unsuitable for agricultural use	1259.7	1259.7	0.0
II	Urban Land	699.6	712.1	12.5
7	Land for Construction and facilities	73.1	75.3	2.2
8	Public land/area	330.1	330.3	0.2
9	Industrial area	40.4	41.1	0.7
10	Mining land	200.9	206.2	5.3
11	Ger area	54.5	59.3	4.8
III	Roads and Communication Land	437.3	454.8	17.5
12	Road	319.7	329.7	10.0
13	Railway	27.8	29.9	2.1
14	Land for air transport	8.8	8.9	0.1
15	Communication land	80.8	86.2	5.4
16	Land for port of water transport	0.0	0.0	0.0
IV	Forest Land	14295.4	14320.5	25.1
17	Forest covered area	12138.6	12181.3	42.7
18	Logged area	142.4	142.0	-0.4
19	Land for forest nursery	46.5	50.9	4.4
20	Forest restoration area	744.0	743.6	-0.4
21	Other land area of forest	1223.7	1202.7	-21.0
V	Water Land	686.8	686.7	-0.1
22	Rivers	228.5	228.5	0.0
23	Lakes and founds	444.7	444.3	-0.4
24	Creek and springs	12.4	12.4	0.0
25	Glaciers and	1.1	1.6	0.5
VI	Land for State Special Needs	24931.1	25228.9	297.8
26	Protected Areas	20948.3	21140.9	192.6
27	Border zone area	3111.9	3111.9	0.0
28	Land for National Defense	124.1	124.1	0.0
29	Land for International Diplomatic Consulates	0.0	0.0	0.0
30	Land for Scientific experiment and meteorological observation and monitoring	22.9	22.9	0.0
31	Inter-Aimags reserve pastureland	586.2	691.4	105.2
32	Hay making area of State Forage Foundation	110.9	110.9	0.0
33	Oil and petroleum contracted land	24.4	24.4	0.0
34	Land for economic free zone	2.1	2.1	0.0
	GRAND TOTAL	56411.5	56411.5	0.0

Source: Report on Mongolian Environmental status in 2013-2014.

200. **Figure 4.7** depicts the map of land use pattern or Land use classification and zoning scheme of the Ulaanbaatar

Figure 4.7: Land use pattern in Ulaanbaatar



Source: Gantulga Gombodorj and Chinbat Badamdorj. Urban land use classification and functional zoning of Ulaanbaatar city, Mongolia, 2010.

4.10 Historical, Cultural and Archaeology Sites/Places

201. Ulaanbaatar is rich in physical cultural resources. The list of important heritage, cultural and religious sites of Mongolia and its provinces revised in 1994, 1998 and 2008. In this list, total of 460 objects were registered and out of them 175 have to be under State protection and 285 have to be under provincial protection. There are no any heritages, cultural and religious sites in or close to the project involved sites in Ulaanbaatar city and aforementioned provinces.

Table 4.17. Number of heritage, cultural and religious sites in Mongolia

#	Name of Provinces	Number of heritage, cultural and religious sites		Number of heritages, cultural and religious sites in/nearby project sites	
		Under State protection	Under Provincial protection	Under State protection	Under provincial protection
1	Arkhangai	14	24	-	-
2	Bayn-Ulgii	16	13	-	-
3	Baynkhongor	10	10	None	None
4	Bulgan	10	25	None	None
5	Gobi-Altai	8	29	None	None
6	Gobisumber	0	2	None	None
7	Darkhan Uul	3	2	None	None
8	Dornogobi	5	8	None	None
9	Dornod	3	8	None	None

#	Name of Provinces	Number of heritage, cultural and religious sites		Number of heritages, cultural and religious sites in/nearby project sites	
		Under State protection	Under Provincial protection	Under State protection	Under provincial protection
10	Dundgobi	7	16	-	-
11	Zavkhan	6	5	-	-
12	Orkhon	0	1	None	None
13	Uvurkhangai	9	26	None	None
14	Umnugobi	8	15	-	-
15	Sukhbaatar	8	4	-	-
16	Selenge	2	5	None	None
17	Tuv	15	6	-	-
18	Uvs	5	8	-	-
19	Khovd	9	8	-	-
20	Khuvsgul	9	26	-	-
21	Khentee	13	23	-	-
22	Ulaanbaatar	15	11	None	None
	TOTAL	**175**	**285**		

Source: “Guideline for registration of cultural heritages” by MECSS and Centre for Cultural Heritages of Mongolia, 2014.

5.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Environment Impacts and Mitigation Measures

202. During site visits, the officials and consultants made numerous observations and held discussions with school managements concerned which would be helpful for project design (summarized below):

(i) noted location of proper access roads, laydown area for materials to be used by the construction companies to use without disturbing the school working and minimizing utilization of playground areas,
(ii) proper discussion on avoidance of underground existing pipes for water, heating, sewage etc. at these proposed work sites,
(iii) discussions on ensuring right of way for construction vehicles and provide traffic safety during construction to local residents living adjoining these schools,
(iv) traffic caused by construction of new buildings/expansion projects by use of concrete, dump trucks etc. transporting materials inside school premises;
(v) discussed traffic safety for children and their parents during operations of school in normal work hours (September 2017 onwards),
(vi) lack of safety equipment such as smoke alarms in most old buildings and the need for adequate firefighting extinguishers and imparting evacuation drills and emergency response procedures training,
(vii) review the distances of these schools from non-sensitive biodiversity areas and cultural heritage sites to ensure no impact,
(viii) dust and noise emissions from the construction subprojects and their impacts on school children and apartment dwellers adjoining the school area,
(ix) noises from any surroundings areas during construction and operations,
(x) review if any shadow is produced onto adjoining buildings due to new structures to be constructed as part of this project,
(xi) use of any banned substances generated as part of any expansion project such as asbestos etc.,
(xii) managing emissions from coal based heating and water boilers (some cases), review if insulation works are required in schools to ensure energy efficiency, i.e. Loss of heat due to old walls
(xiii) if any associated facilities are present, and
(xiv) review locations for climate change vulnerability.

203. The team along with district officials and schools shall also conduct group discussions with the public residing in these subproject areas to sensitize them about project activities, their impacts and get their suggestions.

5.1 Environment Problems due to Project Location and Design

204. All buildings shall be designed in compliance with relevant the Government of Mongolia's design standards and codes for energy-efficient, safe buildings, including but not limited to: Mongolian national standards (MNS) 3838: 2008 and Construction standard package # 91.040. World Bank's EHS guidelines 2007 standards will apply in-case where the Mongolian standards are less stringent.

205. Potential adverse environment impacts associated with schools/kindergarten has been avoided or minimized through careful location selection. Subproject location sites have avoided geologically unstable areas, which can also pose foundation related problems. No land acquisition is required for schools as the government public or existing school land is

available. Shrubs and trees may be uprooted and transported to locations inside the school premises.

206. **Green Building and Energy Efficiency**: The building design must include green building and energy efficiency features as listed in Section 4. Use of more energy efficient smokeless heat only boilers (HOBs) may have to be mandated in bidding documents. Alternatively, the design must include alternatives to HOBs such as electric floor heating that can be controlled using heating control regulators.

207. Type and scale of insulation to be installed in the building will be designed by the Construction Company as per norms followed in Mongolia. The design must lead to introduction of other energy efficiency elements (heat meters; heat insulation that meets the requirements on Mongolian Energy Efficiency Regulations; LED lighting; triple glazed windows) etc.

208. **Linked facilities**: The PIU must confirm from concerned authorities of various linked facilities such as landfills to accept solid waste, and power, heating, water, wastewater facilities to each of the school/kindergartens on their ability to deliver required services and without interruptions. Any underground utilities such as heating pipes, sewage drainage, water pipeline etc. if disconnected to the premises will be restored before school reopens after vacation.

209. **Rehabilitation of old buildings**: **Annexure 1** lays out details of infrastructure that requires rehabilitation such as installation/provision of modern fire control systems/firewalls, smoke alarms, building insulation, possible plumbing and/or heating systems upgrades. The PIU and the construction company must ensure proper design be implemented in the expansion schools/kindergarten so that the infrastructure become coherent, and complies to national and international health and safety norms

210. **Ambient Air Quality**: Given the low ambient air quality (noticeable in Section 4), it is proposed to introduce Air conditioners, air purifiers inside the kindergartens and schools to provide safe ambient air quality inside the buildings. High Efficiency Particulate Air (HEPA) purifier, Anion Air Purifier etc. can be used. HEPA filters, as defined by the USA Department of Energy (DOE) standard adopted by most American industries, remove at least 99.97% of airborne particles 0.3 micrometers (μm) in diameter. The operation and maintenance costs of HEPA purifier which includes replace of filters periodically would need to be borne by schools/kindergartens' operational budgets.

211. **Sanitation Systems**: The design improvements in the project require upgrade of sanitation facilities where access to the municipal sanitation system is not possible, septic systems are to be installed to reduce the requirement for vacuum truck clearance to a minimum. A "septic tank system" is a small-scale sewage treatment system common in areas that lack connection to main sewage pipes provided by local governments or private corporations. The term "septic" refers to the anaerobic bacterial environment that develops in the tank which decomposes or mineralizes the waste discharged into the tank. Septic tanks can be coupled with other onsite wastewater treatment units such as bio filters or aerobic systems involving artificially forced aeration. Since septic systems require large drain fields, they are not suitable for densely built cities. Periodic preventive maintenance is required to remove solids that remain and gradually fill the tank, reducing its efficiency.

212. Several kindergartens are using holding tanks due to physical limitations. "Holding tanks" are used exclusively for those areas where shallow ground water and saturated soil represent a real threaten and vehicle for pollutants migration from pits. In fact, the Ger Districts of Ulaanbaatar are characterized by areas environmentally not suitable for human

settlements but due to lack of protection zones or law enforcement many of these areas are densely populated resulting in an environmental and public health threat due to migration of pollutants from pit latrines directly into water sources or via saturated soil. The low cost facility does not allow the use of holding tanks installed for grey water disposal.

213. **Restoration**: Associated impacts on any play area outside each school building inside its premises used for storage and workmen office will be restricted to the construction phase and will be temporary in nature. After construction is complete, the playground or any other play areas within the premises will be repaired and can be used again.

214. **Climate Change**: All facilities shall be properly sited to minimize the risk of scouring that may result from increase intensity of precipitation as a result of climate change.

5.2 Environmental Impacts Associated with Pre-Construction Stage

5.2.1.1 Land acquisition

215. The proposed project site in the school premises doesn't require any relocation of homestead since the project would be implemented at the school's own vacant land. No precious ecological issue is involved with this project since the project site is barren land, has no natural habitat and is not immediately adjacent to watercourses. However, following measures will have to be taken prior to the project activities:

- Ensure existing drainage facilities are maintained in working condition,
- Protect /preserve topsoil and reinstate after construction is completed, and
- Repair /reinstate damaged play areas etc. after construction is completed.

5.2.1.2 Impacts on Temporary Use of Land

216. The mobilization of construction equipment and construction materials will require space for storage and parking of construction vehicles and equipment, construction material storage yards, disposal sites, and labor camps for human resource to avoid environmental impact and public inconvenience. These locations must comply with the local laws and regulations and need approval from authorities to utilize these facilities (access roads, telecommunication, and pipe borne water supply). It is important that selection of temporary lands does not infringe upon adjoining residential areas, water bodies, natural flow paths, access roads to garages, schools and other amenities in the area. Removal of trees should be minimized during preparation of construction area, access road and other facilities.

5.2.1.3 Banned substances – Asbestos generated in Expansion projects.

217. Mongolia recently banned the use of asbestos building products, but the management of asbestos containing materials (ACM) remains fairly poor.

5.2.1.4. Volatile Organic Compounds

218. Only low or no volatile organic compound (VOC) emitting materials shall be used (including paints, coatings, adhesives, carpet and furniture's) to ensure high indoor air quality. Water-based nontoxic, no allergenic paint for drywall or plaster surfaces shall be preferred to latex or oil-based paints.

5.2.2 Environmental problems associated with construction and operation stage

219. The project activities during construction phase will involve construction of school buildings, which will involve excavation for building and equipment foundations, concreting, civil works and erection of equipment, clearing of area including transplanting trees wherever required, and restoring top soil in all playground areas within the school premises. During the operation phase, most of the construction phase impacts will get stabilized and the impacts will be restricted only to the operation and maintenance of the school building.

220. The impacts on the environment from various activities of the project can be

categorized as follows:

- Impact on Physical Resources
  - Impact on Topography
  - Impact on Climate
- Impact on Environmental Resources
  - Impact on Air Quality
  - Impact on Noise Levels
  - Impact on surface Water Quality
  - Impact on ground Water Quality
  - Impact on Soils and Geology
- Impact on Ecological Resources
  - Terrestrial Ecology
  - Wild Life
  - Aquatic Ecology
- Impact on Human Environment
  - Health and Safety
  - Agriculture
  - Socio-economics
  - Resettlement and Rehabilitation
  - Cultural sites
  - Traffic and Transport
  - Interference with other utilities and traffic
- Waste Disposal
  - Solid waste disposal
  - Liquid waste disposal
  - Hazardous waste disposal

221. The impacts of the project activities on various environmental attributes are discussed in subsequent sections.

5.2.2.1 Impact on Physical Resources

Impact on Topography

222. During the construction of the schools/kindergartens, the most prominent impact on the surface topography will be due to the excavation for foundations, removing of the trees (if any) and erection of buildings. The impact will be irreversible as the present feature of the site as well as the land use will change due to construction of new buildings for the schools/kindergartens.

223. The construction phase involves site preparation, clearing of existing vegetation and some earthworks for levelling the surface. These activities may cause some negative impacts such as:

- Change in Landscape;
- Emission of Dust;
- Associated noise; and
- Improper management of construction debris and solid waste may pose risk to the neighbours.

224. No topographical changes are envisaged during the operation phase of the schools and kindergartens.

Impact on Climate

225. Design and construction of School buildings should consider ‘climate proofing design’ since the occurrence of earthquakes is gradually increasing in Mongolia. Earthquake

resistant design should be incorporated in design consideration of the building. Alternative solutions and final designs should be subject to expert and community consultation.

226. However, the overall impact on the climate conditions from the proposed sub-projects both during operation phases will not be significant.

5.2.2.2 Impact on Environmental Resources

Impact on Air Quality

227. During the construction phase, the activity would involve excavation for the erection, movement of transporting vehicles carrying the construction materials etc. along the access road. All these activities would give rise to emission of dust particles thereby affecting air quality marginally at the site which although will be transitory in nature. Though the emissions are temporary and not expected to contribute significantly to the ambient air quality and will be within prescribed limits for industrial regions by National Ambient Air Quality Standards, necessary measures are to be taken.

228. The air quality in the project area may slightly deteriorate for the time being during construction mostly due to dust emission. Dust produced will potentially negatively affect the following:

- School students, teachers and general public; and
- Adjoining apartment dwellers and other buildings in the vicinity
- Community areas – playgrounds, parking areas etc.
- Construction workers;

229. Regular sprinkling of water on open surface and dust emitting grounds should be done regularly until paving is done during dry season and keeping all soil, sand, and aggregate piles covered (whether on the site, or on trucks) to minimize the air pollution during the construction stage. If there is any complain of dust emission from students, teachers and neighbours, should be given proper attention.

230. The construction of Schools/Kindergartens will not have any negative impact on the air quality of the region during the operation phase.

Impact on Noise Levels

231. During the construction phase, the major sources of noise pollution are movement of vehicles transporting the construction material and equipment within and outside the construction site. Most of the access roads along the location are wide enough and can be used to bring construction material without obstructing the neighbourhood roads. The major work of the construction is expected to be carried out during the day time however the movement of trucks and concreting may happen in the night to avoid congestion in the area in the day time. There residents living nearby will be exposed to noise generated during day and night during the construction phase.

232. Construction works may cause objectionable noise nuisance to workers, students or teachers. School authority and students must be notified in writing on the date of commencement of construction work at least one month in advance. Following measures will help to keep noise and vibration in acceptable level during construction phase:

- Contractor shall equip their heavy construction equipment and plants with exhaust silencers to limit the engine noise not to exceed 75 db(A) (compacters/rollers, loaders and cranes) and regularly maintain all construction vehicles and machinery that should meet the Mongolian National Standards for Noise Emission.
- Contractor shall preferably limit working time for activities that create noise within normal waking hours of the public except for construction site near public sensitive receptors. Construction related activities closer to sensitive receptors have to be

scheduled in coordination with the residents and relevant authorities.

- Contractor and its suppliers of construction materials should strictly implement noise control regulations stipulated for Noise pollution for all construction vehicles and equipment. All machines will be fitted with noise reduction devices. Ulaanbaatar has many construction sites, some of which operate 24 hours a day. Mongolian standards currently establish a maximum environmental noise goal for residential receptors of 60 decibels (A-weighted) (dB(A)) during the daytime and 45dB(A) during the night time, with night being defined as between 22:00-06:00 hours. Depending on noise attenuation and proximity to the construction works, 24 hour a day construction may breach the National Standard for Noise (MNS 4585:2007). World Bank EHS guidelines 2007 for noise limits will apply as they are more stringent than the Mongolian noise standards.

233. For managing noise nuisance, construction works should be limited to daytime hours and all employees likely to be exposed to ear noise must use ear protectors. However, the noise impacts will be local limited to the premises and very short term. Loud noise may disturb the local resident apartment dwellers during normal hours of waking as well. Due consideration must be given by the Construction Company in consultation with local residents. Noise barriers may be installed by the Construction company to ensure residents are not inconvenienced.

234. During the operation phase of the project, the ambient noise level meets the World Bank EHS guidelines for residential areas (55 dB(A) during daytime and 45 dB(A) during night time).

235. During normal school hours, noise from play grounds may also disturb some residents, but they have been consulted prior to the start of construction.

Impact on Surface Water Quality

236. The construction and operation of the schools/kindergarten will not have any major impact on the surface and ground water quality in the area. Contamination of water bodies, if any in that area, may result due to spilling of construction materials and surface runoff from the construction site adjoining the water body. There may be increase in the turbidity levels temporarily where the surface runoff during construction meets the drainage of the area. This can be avoided by careful selection of the raw material and waste material storage at the construction site.

237. Proposed activities will create temporary impacts to the existing drainage system in the area including in earthen and line drains. Thus, it will create temporary inundation closer to the above locations during rainy season. Stagnation of water will create direct impact on public health. Thus, incorporation of following measures will minimize anticipated impact due to obstruction of natural flow paths and existing drainage:

- Provisions of temporary drainage facilities to the particular locations if existing drains are obstructed due to construction activities.
- Maintenance of all drainage paths by avoiding blockages at all times.
- Contractor should minimize excavation of drainage systems in the project affected area.
- If any school is situated in immediate vicinity of the waterbody/river, adequate reinforcement of embankment will be done to ensure no surface runoff gets discharged into the waterbody/river.

238. Care shall be taken to locate the temporary construction worker sheds away from the drainage/water bodies. Adequate drinking water facilities, sanitary facilities and drainage in the temporary sheds of the construction workers should be provided to avoid the surface

water pollution. Provision of adequate washing and toilet facilities should be made obligatory. This should from an integral component in the planning stage before commencement of construction activity.

Impact on Ground Water Quality

239. Ground water pollution can take place, if chemical substances and oily waste get leached by precipitation of water and percolate to the ground water table. For schools/kindergartens construction activity, no chemical substance or oil is used hence there is no impact on ground water quality. The silt discharge from the earth work around water bodies, oil, grease and fuel release from the construction vehicles / equipment and spoil from construction and other construction related activities such as raw sewerage from worker accommodation sites will mix with runoff water. This situation will increase during the rainy season and have a critical impact on surface and ground water. Thus, following measures will be required in order to prevent deterioration of water from the construction and construction related activities:

- All construction vehicles and equipment should be maintained in proper conditions without any leakages,
- Contractors shall use silt traps and erosion control measures where the construction is carried out in close proximity to the water bodies to avoid entering of cement particles, rock, rubbles and waste water to the surrounding drains,
- Construction activities requiring digging should be preferably done in the dry season,
- Waste oil should be collected properly and disposed to the approved location.

Impact on Soil and Geology

240. Project activities including excavation, cut and fill operations, removal of trees and green cover vegetation etc. will enhance the soil erosion during the rainy season. The excavation activity and land clearance in the erosion prone areas have been minimized. Levelling and stabilization of construction sites will be done after completion of construction activity. Also, increased acceleration of surface runoff will damage the topsoil. The impacts associated with excessive erosion and other civil works can be avoided or minimized by following mitigation measures:

- Effort should be taken to minimize removal of trees and green cover vegetation.
- Minimize obstruction or destruction to natural drainage pattern of the surrounding area.
- Proper treatment of clearing and filling areas against flow acceleration.
- Contractors shall restrict cut and fill operation around sharp/deep slope areas.
- Top soil which are removed during construction must be stored separately for future utilization.

5.2.2.3 Impact on Ecological Resources

241. Since schools/kindergartens are constructed in government lands, there is no displacement of people or animals. It is also not causing any disturbance to the life of people and local animals and birds movement. There is no dynamic equipment and moving machinery causing noise pollution, water and air pollution. There is no national wildlife park, bird sanctuary, wetland in the location of the proposed schools/kindergartens. The ecological impacts are briefly described in the following sections.

Effect on Flora and Fauna

242. On visual inspection, it seems that small number of trees will need to be removed at only a few schools. None of the declared environmentally sensitive areas is located within the project area. It is not expected that any flora and fauna that are rare, endangered, endemic or threatened will be affected - no migratory paths of small mammals and reptiles may be affected due to construction activities. Also, noise, vibration and emission from

construction vehicles, equipment will occur during construction and pre-construction stages in temporary manner. The impacts related to above activities are temporary and can be mitigated through following measures:

- Strict attention on worker force regarding disturbance to surrounding areas.
- Selection of approved locations for material storage yards and labor camps away from the environmental sensitive or populated areas.
- Avoid entering of construction waste (cement particles, rock, rubbles and waste water) and sanitary waste to the surrounding water bodies.

Impact on Terrestrial Ecology

243. There is no sensitive ecological area / protected forest area such as national wildlife park, bird sanctuary crossing the proposed sub-project locations. The removal of herbaceous vegetation from the soil and loosening of the top soil generally causes soil erosion. However, such impacts would be primarily confined to the project site during initial periods of the construction phase and would be minimized through adoption of mitigation measures like paving and surface treatment and water sprinkling.

Removal of Trees

244. The construction works along the location involves land clearance, cutting, filling and levelling that may cause loss of trees. About 51 trees may be affected by the construction works within the compounds of 10 schools and kindergartens. All these trees are owned by the particular school or kindergarten. The exact number of trees affected will be known during the final location survey and construction. This will be an irreversible impact. However, any tree that will be cut may be transplanted depending on its type and its suitability for transplantation within the school or kindergarten premises. This will minimize the tree loss.

245. It is highly recommended to establish a tree replanting programme which should be undertaken e.g. where two trees will be planted when a single tree is cut. This was accepted and supported by school/kindergarten managements, city, Soum and Aimag Governments concerned. The construction company would be responsible for replantation of trees cut from the construction area within the school/kindergarten premises.

Effect on Local Road Network

246. Iron bars, concrete materials, piling equipment, etc. will be transported through the local road network to the project site. Transporting of large quantities of materials using heavy vehicles could exceed the carrying capacity of the road. This would lead to physical damages to local road network. Thus, it will be necessary to obtain consent from the road/highway authorities to use local/national highway roads prior to transportation.

247. The Construction Company should properly maintain all road sections, install road signs warning of children crossing etc. which will be utilized for the construction related activities. In presence of multiple school/kindergarten sites in the vicinity of construction area, the Construction company will ensure free and safe access roads to each school and install appropriate road safety signs as necessary in the area.

Effect on Visual Aesthetics

248. The proposed project site has some grass and scrub vegetation that will be affected due to the land development. But with completion of the school building and replanting of new vegetation and trees around the building, the school building site should recover the visual aesthetics.

Disposal of Debris

249. As a result of construction related activities, spoil and debris will be generated during

the construction stage. Improper disposal of the debris will have an impact on the surrounding ecology, public health and scenic beauty. Following measures will minimize the impacts associated with disposal of debris:

- Spoil materials (soil, sand, rock etc.) generated from construction activities shall be used wherever possible for site levelling, back - filling etc. Any dismantled and demolished structural materials, if any, should be dumped in accordance to government norms.
- Preparation of Disposal Management Plan for the project and selection of the disposal site by excluding locations, which are closer to residential, commercial and public sensitive areas, is necessary by the construction company. Prior approval should be obtained for linked facilities such dumping grounds / land fill sites from relevant local authorities.
- Dumped materials will interfere with the drainage pattern of the area, any water bodies, agricultural lands, marshlands and down slope or any environmental sensitive areas if not planned properly.

250. During operation phase, there is no requirement for disposal of debris.

Wild Life

251. For selected the sub-project locations, no wild life locations have been included as far as possible during the field visits. National Park or Protected Areas near Ulaanbaatar and other provinces which are around 7-80 km away from the nearest project Schools/Kindergarten.

Impact on Aquatic Ecology

252. There are no major rivers or tributaries in the location of subprojects. No significant impacts on aquatic ecology of the river are envisaged and will not have any impact due to subproject activities.

5.2.2.4 Impact on Human Environment

Traffic and Transport

253. During the construction phase, traffic disturbance needs to be minimized by avoiding heavy traffic hours, ensuring proper access roads and avoiding road blockage. Increase in vehicular traffic in the area is likely to be experience during construction phase of the school building because of trucks ferrying in off construction material and carrying waste material from site. Following are the impacts likely to occur due to increased traffic:

(i) Slightly more congestion near the main entrance to the school.
(ii) Increased number of vehicles on local roads will result in increased wear and tear of local roads thus reducing lifespan of affected roads.
(iii) Pedestrians and cyclists using local roads will have to exercise more care with increase of vehicular traffic on the said roads.
(iv) There will be an increase of exhaust emission from vehicles, which will pollute local atmospheric air.

254. The Construction Company may have to carry the construction material into the site at night or during least congestion period. So, the traffic related congestion and air pollution would be least affected in this case.

255. Slightly more congestion near the main entrance to the School could exist at the gates due to limited entry available at the school site until entire construction is complete. The construction company will post traffic managers at all access roads at of the school/kindergarten sites and will ensure parking places are not encroached by placing any construction/waste material or parking of construction vehicles.

Health and Safety

256. Health and safety impacts will be in terms of risk of accidents and exposure to electric shock at the construction site. Necessary training regarding safety aspects to the personnel working at the schools will be provided by the construction company. The workers should wear PPE (Personal Protective Equipment), safety goggles, and other necessaries during construction period and during the maintenance work. First aid facilities will be made available with the labor gangs and doctors called in from nearby towns when necessary. Article 16 of the National Constitution of Mongolia states that every employee has the right to 'suitable conditions of work'. The government adopted a National Program for Occupational Safety and Health Improvement in 2001 and national standards are also adopted such as the National Standard on Occupational Health and Safety MNS 5002:2000.

257. In addition, when construction work takes place in a public environment, safety measures are often lacking to protect the public. Project activities may create accidental damage to general public and the construction workers. Therefore, Construction Company should take necessary action to enhance personal safety during the construction through following measures:

- Organize awareness programmes relevant to personal safety of the workers and general public in the area;
- Installation of warning signs to particular locations such as transverse points of local road network by Schools/Kindergarten;
- Provide protective safety belts, footwear, helmets, goggles, eye-shields and clothes to workers depending on their duty; and
- Arrangement of proper first aid unit and transport facilities to take injured people to the hospitals.
- Health and safety issues due to construction activities will be an issue for workers, students, teachers and others. Accident can happen occur during earth cutting, casting, construction works and installation of heavy machinery if care is not taken in their operation.
- The whole work site will have to be fenced off and marked, so as to prevent the access of school children and neighbours to the construction site. When land clearing is complete, the work area is finished, and facilities are in place, all of the above impacts and risks will be neutralized

Sanitation Hazard & Drinking Water

258. The health of the project personnel, construction workers and laborers at the site could be impacted if arrangement of sanitation and drinking water is not ensured adequately and properly. The project activities shall make higher demand on the local utilities and service facilities particularly construction and drinking water, health and sanitary facilities.

Emergency response during construction

259. The Construction Company must train its project personnel, construction workers and laborers, school teachers and staff to have knowledge of sufficient emergency response systems put in place. Fire safety management training and mock drill should be practiced periodically and emergency equipment and facilities like fire extinguisher/water hose, first aid etc. must be available to manage fire hazard or any medical emergency.

Temporary Outage of the Electricity

260. Temporary disconnection of power supply will occur during the construction activities. Thus, general public and the apartment dwellers, who live in the vicinity of the sub-project area, will face inconvenience for short periods of time. Thus, following measures will have to be taken:

- Advance notice to the public about the time and the duration of the utility disruption, and

- Restore the utilities immediately to overcome public inconvenience.

5.2.2.5 Socio Economics

Agriculture

261. There will not be any land acquisition for the school projects.

Local Employment

262. Construction of Schools/Kindergartens will generate local employment, as number of unskilled laborers (both men and women) will be required at the time of construction activities. Local employment during this period will increase socio-economic standards.

Resettlement and Rehabilitation

263. For the construction of schools/kindergartens, no land acquisition is required, hence there is no resettlement and rehabilitation involved in the project.

Cultural sites

264. There are no archaeological, historical or cultural important sites along the location; hence the impacts on these sites are not envisaged.

5.2.2.6 Waste Disposal

Solid Waste Disposal

265. The solid waste generation will be at the location of the construction site which will include metal scraps, wooden packing material etc. Wooden waste and metal scrap will be collected and disposed of in compliance with applicable regulations and rules.

Sanitary Waste Disposal at Construction Sites and Labor Camps

266. The labor camps at the site of construction will be temporary in nature and the human excreta will not be significant to cause contamination of ground water. Those places where most labor will be staying will be near apartments which may use some community or school facilities for solid waste, water and sanitation. Adequate drinking water facilities, sanitary facilities and drainage in the temporary sheds of the construction workers should be provided to avoid the surface water pollution.

267. There should be proper solid waste disposal procedure to enhance sanitation of workers who stay in camps. Thus, possibilities of infecting water borne diseases or vector borne diseases (Parasitic infections) will be eliminated by adopting proper solid waste disposal procedure. Unacceptable solid waste disposal practices such as open dumping of solid waste and poor sanitation facilities will lead to pollution of surrounding environment, contamination of water bodies and increase adverse impact to the general public inhabited in the area. Surrounding of labor camps, garbage disposal sites and material storage yards provide favourable habitats for diseases. Improper dumping of spoil materials and solid wastes may cause environmental degradation of the school area and students, teachers and neighbouring people will face problems like: bad smell, aesthetically unpleasant environment, diseases etc.

268. Thus, following measures are needed to protect and enhance the quality of environment during the construction stage:

- A better way to overcome garbage disposal as mentioned above by reducing or avoiding the construction of labor camps, thus the selection of majority of skilled and unskilled workers from the project influence area will be a proper measure in this regard.
- Proper sanitation system should be provided and at the same time, regular, proper and safe disposal of human waste should be ensured. Contractors and workers

should obey appropriate means of waste removal and sanitation measures. Adequate number of toilets and bathrooms should be made for the workers, and proper disposal system (septic tank) of sewage waste should be implemented for sanitation purpose and the workers should be aware to use those facilities. Contractor should provide adequate facilities to manage its wastes in accordance with the guidance given by the Mongolian law on Solid Waste and Law on Construction, and related regulations.

- Provision of the solid waste disposal, sanitation and sewage facilities at all site of the construction/labor camps to avoid or minimize health hazards and environmental pollution.
- Contractor should handle and manage waste generated from the construction/labor camps without contamination to natural environment and it will reduce risk to general public who stay close to sites. Also, Construction Company should be responsible to enhance the quality of environment.
- Adequate supply of water should be provided to the urinals, toilets and wash rooms of the workers' accommodation
- Contractor should provide garbage bins to all worker's accommodation and construction sites, for dumping wastes regularly in a hygienic manner in the area.

Liquid Waste Disposal

269. There will be no oil or chemical waste generated during the construction of Schools/Kindergartens, hence no mitigation is required.

Hazardous Waste Disposal

270. During the Schools/Kindergartens construction generation of any hazardous waste generation is not expected. Any Asbestos, batteries, and solar panels (if used) would constitute waste material that needs to be disposed of as per Mongolian law on Solid Waste and regulations and guidelines related to Hazardous Wastes.

5.3 Environmental Impacts Associated with Operational Stage

Impact on School Environment

271. During operations, the school building must ensure a better quality of school infrastructure for students (both interior and outside) besides better quality of education facilities. Improper heating, washrooms, inconvenient classroom arrangement, poor condition of classrooms, unsatisfactory teacher-student ratio, absence of separate washrooms for boys and girls, suffocation problem etc. are possible adverse impacts that will eventually lead to a poor school environment. The building would be designed to ensure the suitable heating, water, lighting, storage areas, proper ventilation, sufficient toilets & washrooms and support infrastructure.

Disadvantaged children

272. The new schools/kindergartens would incorporate certain design improvements required for the disadvantaged children. These would include: (i) disabled access, sanitation and signage (wheelchair access ramps to be included above ground level if deemed appropriate by MECCS; wheelchair access to one toilet cubicle per sanitation block (male and female) to be included; Dual handrails on stairs for small children and adults; Brightly coloured and braille signage to be included). The construction company will ensure proper design to ensure that these are free from any encumbrances, obstruction and defect free in their installation.

Increased demand of utilities-electricity, heating, sewage and drinking water

273. The new/expansion buildings will require services (notably sewage, water, heating and electricity), which could cause additional demand during periods of low water availability

and load-shedding. The proposed building design features that address water and energy conservation would help considerably in this regard.

274. The schools/kindergartens must design a management procedure in coordination with PIU to maintain the septic tanks, individual heat only boiler, water heater, electricity generators (if any) on the premises. They also need to ensure proper funds are available for regular upkeep and maintenance of these facilities.

Impact Due to Solid Waste

275. Operation of the school building will result in production of solid waste, which will require careful storage, separation and handling. Properly marked waste containers should be available at each floor and outside the building. All solid waste will be segregated properly, disposed to the safe places carefully. The PIU, the City Public Service Company and the Construction Company will provide training on solid waste management to both staff/students to segregate waste by placing separate containers stating waste type before being collected by the City Public Service Company.

276. Sweeping and washing should be done to provide students a waste free healthy environment. It is important that solid waste and sewage from the School/kindergarten building should not be nuisance to the community.

Impact due to Liquid Discharge

277. The school building will not create any process liquid. The liquid discharge will be mainly water used for domestic and toilet uses. The domestic liquid waste will be disposed through a septic tank. The project will have planned drainage system to discharge the surface runoff.

278. **Chemistry laboratory waste**: New schools will have chemistry classes' chemicals and they will manage chemical wastes according to the "Guideline on Methodology and Technology to Dispose, Storage, Transportation, Collection of Chemical Wastes; (2009). Currently, all schools collect and keep chemicals used for chemical classes which is disposed of by the District Branch of Emergency Management Agency. The Specialized Inspection Agency monitors this procedure regularly and also registers all chemicals used by schools.

Emergency response during operations

279. The school management will have sufficient emergency response systems in place. The stairs of the building will be well designed and adequate for easy passage of the occupants. Fire safety management training and mock drill should be practiced periodically and emergency equipment and facilities like fire extinguisher/water hose, first aid etc. must be available to manage fire hazard or any medical emergency.

Electric Shock

280. This may lead to death or injury to the school staff, students and public in the area if facilities are not constructed properly. This can be minimized or avoided by providing security enclosures, establishment of warning signs, and careful design using appropriate technologies to minimize hazards.

Noise Generation

281. There will be minimal nuisance to the community around the school/kindergartens due to operations.

6.0 ANALYSIS OF ALTERNATIVES

6.1 MECSS Approach for Planning of a subproject

282. At the planning stage itself, one of the factors that govern the establishment of the Schools/Kindergartens is the availability of scarce land available in the cities concerned. Preliminary location selection is done by MECSS based on the interpretation and walk over survey.

6.2 Alternatives for Subproject Components

No "Build" Alternative

283. The 'No Build' alternative in the present case would mean there would be shortage of classrooms and other facilities at proposed schools/kindergartens and hence, the development of education in Mongolia will be hampered. Hence, the 'No build' alternative is unacceptable, and the potential socioeconomic benefits of implementation of such a project far outweigh the adverse impacts, all of which can be controlled and minimized to an acceptable level.

284. **Education Sector Development.** New building construction for schools/kindergartens will ensure more access of education to students and availability of such facilities at affordable prices. Thus, it will help in development of secondary education sector in Mongolia and will contribute in building of a more efficient nation.

To "Build" Alternative

285. The project has been designed to provide extra space to schools at its own vacant space adjacent to existing school building, thus involved no resettlement issues. So, there is no logic to find alternative site for the project since it is in the existing school premises.

6.3 Methodology for sub-project site selection: environmental view

286. Site selection among alternatives consider requirements of environmental parameters, availability of logistic support during construction, operation and maintenance of Schools/Kindergarten and specific feasible locations that were identified based on the relevant site maps and walkover surveys.

6.3.1 Schools/Kindergarten

287. For selection of appropriate site for Schools/Kindergartens, the following points are taken into consideration:

- Site selection should consider seismicity and geography of the local area; the area should not be prone to landslide or be unstable.
- Construction activities do not adversely affect the population living near the proposed Schools/Kindergarten and does not create any threat to the survival of any community with special reference to tribal (herder) community etc.
- The location of schools/kindergartens does not affect any monument of cultural or historical importance.
- No resettlement of households by the schools/kindergartens site, no loss of livelihoods, siting of schools away from sensitive receptors with due consultation with the community and local government units concerned.
- Construction techniques and machinery selection shall be made with a view to minimize ground disturbance.
- While planning for schools/kindergarten, all underground infrastructure – drainage, sewage heating etc. shall be marked and to avoid seepage/leakages and pollution of

water sources.

- Construction Company to ensure that noise will not be a nuisance to neighbouring properties. Provision of noise barriers near Schools/Kindergartens sites will be made if required.
- Security fences will be erected around Schools/Kindergarten construction sites. Warning signs shall be displayed at site and road signs to be installed at appropriate locations.
- MECSS shall incorporate the best technical practices to deal with environmental issues in its working.
- Design of schools/kindergarten shall be made so as to include modern fire control systems/firewalls. Provision of fire-fighting equipment would be made at locations easily accessible etc.
- The location of schools/kindergartens does not affect any public utility services like power, heating and gas lines, sewage and drainage pipes other underground structures such as hydrocarbon pipelines and unstable ground feature (permafrost etc.). etc.
- Minimum cutting of trees and safety of people and property and favourable ground profile.
- Avoidance of reserved forest, archaeological and other sensitive areas, animal / bird sanctuaries
- Avoidance of rocky stretches and areas reserved for planned and future development, marshy low lying areas, river beds and earth slip zones.
- The blue print of design to ensure no shadow of the proposed new buildings should fall on to adjoining buildings in keeping with building bye-laws of the Mongolia.

288. Keeping above in mind, various expansion sub-projects proposed by MECSS officials for funding were taken up for initial assessment of environmental impacts. Similarly, MECSS has selected available government lands that are available in the area which are nearly barren with no or very little vegetation for schools/kindergarten at UB and other provinces**. Table 6.1** provides locational details about Schools/Kindergarten proposed in Ulaanbaatar and other provinces.

Table 6.1. Locations of proposed Schools/Kindergartens in Ulaanbaatar/other provinces and Land status

No	Sub-Projects	Location	Latitude	Longitude	Altitude (m)	Land Area Status
1	2	3	4	5	6	7
A	**Kindergartens**					
A 1	**Kindergartens under expansion**					
1	Kindergarten No.66	UB, Bayngol District, 2nd khoroo.	N47^{0}54’55.7	E106^{0}53’15.5	1291	1400m^2 is available
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	N47^{0}54’11.9	E106^{0}53’48.8	1287	2000m^2 is available
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	N47^{0}54’42.1	E106^{0}52’49.7	1288	480m^2 is available
4	Kindergarten No.88	UB, Bayngol District, 18th khoroo.	N47^{0}55’17.8	E106^{0}53’05.8	1320	2500m^2 is available
5	Kindergarten No.22	UB, Baynzurkh District, 1st khoroo.	N47^{0}55’34.6	E 106^{0}56’16.4	1327	1100m^2 is available
6	Kindergarten No.8	UB, Baynzurkh District, (16th khoroo.	N47^{0}55’14.7	E106^{0}58’29.5	1328	640m^2 is available
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	N47^{0}55’10.6	E106^{0}58’57.8	1324	1600m^2 is available
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	N47^{0}55’34.4	E106^{0}54’18.1	1306	1600m^2 is available
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	N47^{0}54’05.6	E106^{0}54’13.4	1291	1100m^2 is available
10	Kindergarten	UB, Khan-Uul	N47^{0}54’05.0	E106^{0}54’01.0	1290	900m^2 is

No	Sub-Projects	Location	Latitude	Longitude	Altitude (m)	Land Area Status
1	2	3	4	5	6	7
	No.72	District, 2nd khoroo.				available
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	N47^{0}52’23.7	E106^{0}49’59.3	1293	1200m^2 is available
12	Kindergarten No.84	UB, Songinokhair-khan, 6th khoroo.	N47^{0}56’00.0	E106^{0}49’21.1	1324	1000m^2 is available
13	Kindergarten No.104	UB, Songinokhair-khan, 12th khoroo.	N47^{0}54’57.7	E106^{0}51’09.1	1282	3000m^2 is available
14	Kindergarten No.107	UB,Songinokhair-khan, 14th khoroo.	N47^{0}54’52.6	E106^{0}50’35.7	1279	1400m^2 is available
15	Kindergarten No.110	UB,Songinokhair-khan, 15th khoroo.	N47^{0}54’55.5	E106^{0}50’20.3	1279	1400m^2 is available
16	Kindergarten No.158	UB,Songinokhair-khan, 24th khoroo.	N47^{0}57’36.1	E106^{0}48’32.1	1350	1200m^2 is available
17	Kindergarten No.176	UB, Songinokhair-khan, 31st khoroo.	N47^{0}56’01.4	E106^{0}51’09.2	1389	400m^2 is available
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	N47^{0}54’41.4	E106^{0}53’56.1	1291	760m^2 is available
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	N47^{0}54’35.1	E106^{0}43’25.1	1290	1100m^2 is available
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	N47^{0}55’50.8	E106^{0}55’20.9	1312	1800m^2 is available
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	N48^0 03’ 34.0	114^0 29’25.11	751	4500m^2 is available
A 2	**Kindergartens under new construction**					
1	New kindergarten (Deleted after Due diligence)	UB, Bayngol District, 17th khoroo.	N47^{0}55’13.5	E106^{0}53’15.8	1314	No land is available
2	New kindergarten (Deleted after Due diligence)	UB, Baynzurkh District, 17th khoroo	N47^{0}55’52.1	E107^{0}00’05.4	1362	2400m^2 is available
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	N47^{0}56’09.3	E106^{0}59’41.6	1393	600m^2 is available
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	N45^{0}54’42.8	E106^{0}56’18.6	1296	500m^2 is available
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	N47^{0}47’24.0	E106^{0}42’29.6	1344	2474m^2 is available
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	N47^{0}46’43.9	E107^{0}15’05.4	1480	3000m^2 is available
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	N47^{0}45’45.7	E107^{0}15’52.8	1488	1000m^2 is available
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	N47^{0}46’55.8	E107^{0}14’44.5	1460	6000m^2 is available
9	New kindergarten (Deleted after Due diligence)	UB, Songinokhair-khan, 5th khoroo.	N47^{0}55’59.0	E106^{0}49’04.4	1311	No land is available
10	New kindergarten	UB, Songinokhair-khan, 25th khoroo.	N47^{0}57’59.3	E106^{0}49’46.7	1390	300m^2 is available
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	N46^{0}21’15.89	E108^0 23’ 9.45	1327	4000m^2 is available
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	N44^{0}54’30.06	E 110^{0}08’ 6.12	1200	6000m^2 is available
13	New	Orkhon, Erdenet city	N 49^{0}00’ 56.1	E 104^0 01’ 7.8	1400	10000m^2 is

No	Sub-Projects	Location	Latitude	Longitude	Altitude (m)	Land Area Status
1	2	3	4	5	6	7
	kindergarten					available
14	New kindergarten	Bulgan, Teshig Soum,	N 49^0 56'46.2	E102^0 39' 33.7	1100	2100m^2 is available
15	New kindergarten	Baynkhongor,Baynkhongor Soum, 4th Bag.	N$46^0$12'19.49	E 100^0 43'56.6	2070	4900m^2 is available
B	**Schools:**					
B 1	**Schools under expansion:**					
1	School No.51	Bayngol District, UB	N$47^0$54'59.7	E$106^0$52'44.3	1297	600m^2 is available
2	School No.18	UB, Khan-Uul District	N$47^0$53'59.3	E$106^0$53'40.8	1291	200m^2 is available Use the top of school building
3	"Erdmiin Orgil" Complex	UB, Nalaikh District	N$47^0$46'06.7	E$107^0$14'50.5	1460	6000m^2 is available
4	"Ireedui" Primary School	UB, Songinokhairhan District.	N$47^0$54'53.9	E$106^0$50'01.3	1276	600m^2 is available Use the top of school building
5	"Ireedui" Secondary School	UB, Songinokhairhan District.	N$47^0$54'58.9	E$106^0$50'29.1	1278	600m^2 is available Use the top of school building
6	School No.122	UB, Songinokhairhan District, 22nd khoroo.	N$47^0$55'10.5	E$106^0$41'44.8	1300	6000m^2 is available
7	School No.6	UB, Sukhbaatar District	N$47^0$54'36.8	E$106^0$54'05.9	1290	Use the top of school building
8	Khantaishir	Govi-Altai, Altai town.	N $46^0$22' 4.09	E $114^0$15' 18.1	2204	800m^2 is available
9	Bogd Soum, Uvrukhangai	Uvrukhangai, Bogd Soum,	N$44^0$40'13.74	E102^0 10' 26.5	1324	1500m^2 is available
10	Baruunburen Soum, Selenge (Deleted after Due diligence)	Selenge, Baruunburen Soum.	N$49^0$10'17.23	E$104^0$49'37.55	1388	100m^2 is available
B 2	**School under new construction :**					
1	New school	UB, Baynzurkh District, 14th khoroo.	N$47^0$54'53.7	E$106^0$57'14.6	1360	6000m^2 is available
2	New school	Songinokhairhan District, 7th khoroo.	N$47^0$57'13.0	E$106^0$48'43.4	1329	10000m^2 is available
3	New school	Darkhan, Mangirt, 15th Bag.	N$49^0$28'08.0	E$105^0$58'34.9	980	15000m^2 is available

Plot Size on Land available (Column 7 above)

289. The blue prints (technical drawings) will be developed by the schools/kindergartens through accredited architects in Mongolia. The plot size for each school/kindergarten will vary depending upon the size, location, orientation of land, access road, and its suitability for expansion/new construction design. Normally, a school/kindergarten plot size would vary between 400-700 square meters (i.e. 20mx20m for kindergarten and 20mx35m for school).

6.3.2 Distance from Various Receptors

290. Distance from various receptors is give in **Table 6.2** below. These details were collected by the consultant team during the site visits, public consultations and recorded in **Annexure 1**. Summary details as listed in Annexure 1 are presented in summary form. Annexure 1 can be referred for more details on each topic.

Table 6.2: Approximate distance of subprojects from Receptors

Site number	Sub-Project Components	Average Distance of Schools/Kindergartens from District HQ (Km)	Minimum distance from apartments or any buildings of constructed area	Distance from other schools in the area (km)	Number of Trees Affected	Distance from water body (km)	Distance from Railway Line (km)	Distance from Two lane Roads (km)	Distance from Airport (km)	Distance f- waste water treatment facility (km)	Distance from Power Plant (km)	Distance from utilities – heating, water supply (km)	Distance from urban landfill site (km)	Distance from Fire station (km)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A1	**Kindergarten under expansion**													
1	Kindergarten No.66	2	40	0.3	2	5	1.9	0.5	20	10	6	1	22	5
2	Kindergarten No. 100	2	50	3	0	0.2	0.6	0.2	14	9	4	2	21	7
3	Kindergarten No.164	0.3	50	1	2	1.8	0.9	0.2	15	10	5	0.9	20	2
4	Kindergarten No.88	6	100	0.4	0	7	2.6	0.8	16	9	6	0.4	19	7
5	Kindergarten No.22	6	60	0.4	5	0.7	8	0.4	19	14	10	0.5	9	6
6	Kindergarten No.8	1.5	40	1	4	9	8	0.1	22	18	6	1	8	8
7	Kindergarten No.82	1.9	50	0.5	8	8	8	0.3	24	20	6	0.7	8	7
8	Kindergarten No.108	7	70	0.9	1	1.6	9	0.05	25	23	8	1	17	0.5
9	Kindergarten No.65	5	20	2	0	0.6	1.2	0.5	19	21	5	0.8	21	3
10	Kindergarten No.72	2	20	1	0	0.6	1.2	0.3	11	17	5	1	21	8
11	Kindergarten No.12	9	50	0.2	0	0.8	5	0.3	8	9	4	8	19	14
12	Kindergarten No.84	5	50	3	0	3	12	0.2	13	8	4	1	7	19
13	Kindergarten No.104	10	80	0.3	0	5	6	0.5	16	9	5	0.4	14	10
14	Kindergarten No.107	11	50	0.1	0	5	6	0.3	16	15	6	0.5	15	10
15	Kindergarten No.110	12	200	0.5	0	5-8	6	0.4	15.5	15	6	0.4	15	10
16	Kindergarten No.158	6	50	5	0	0.2	13	1	17	11	5	6	1	18
17	Kindergarten No.176	12	10	3	0	2	8	2	18	15	7	6	14	12
18	Kindergarten No.68	5	20	0.3	4	2.5	1	0.3	14	10	9	0.3	20	5
19	Kindergarten No.160	3	20	0.3	2	2.5	1	0.6	13	11	10	0.4	20	2
20	Kindergarten No.17	2.5	50	1	3	2	6	0.3	18	14	11	0.6	15	3
21	Kindergarten No.6	1	80	1	0	2	5	0.1	11	10	8	0.3	6	1
A2	**Kindergarten under new construction**													
1	UB, Bayngol District, 17th khoroo. (Deleted after Due diligence)	2	10	0.003	0	8	2.7	0.3	15	10	6.5	0.2	19	6

Site number	Sub-Project Components	Average Distance of Schools/Kindergartens from District HQ (Km)	Minimum distance from apartments or any buildings of constructed area	Distance from other schools in the area (km)	Number of Trees Affected	Distance from water body (km)	Distance from Railway Line (km)	Distance from Two lane Roads (km)	Distance from Airport (km)	Distance f- waste water treatment facility (km)	Distance from Power Plant (km)	Distance from utilities – heating, water supply (km)	Distance from urban landfill site (km)	Distance from Fire station (km)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	UB, Baynzurkh District, 17th khoroo (Deleted after Due diligence)	9	20	1	0	7	5	0.2	23	19	4	5	9	18
3	UB Baynzurkh District, 24th khoroo.	9	30	1	0	9	5	1	23	20	4	6	9	18
4	UB,Baynzurkh District, 25th khoroo	5	10	2	0	1	6	0.05	16	12	8	7	8	20
5	UB, Khan-Uul District, 14th khoroo.	23	100	0.1	0	2	19	0.5	10	16	12	16	5	28
6	UB, Nalaikh District, 1st khoroo.	2	140	1	0	6	0.8	0.7	59	6	2.8	1	6	2
7	UB, Nalaikh District, 3rd khoroo.	1	20	1	0	7	0.2	0.3	60	5	2.8	1	6	2
8	UB, Nalaikh District, 7th khoroo.	1	120	1	0	6	0.8	0.2	60	5	3	2	7	2
9	UB, Songinokhairkhan District, 5th khoroo. (Deleted after Due diligence)	5	20	0.8	0	1	4	0.4	13	13	8	1	9	19
10	UB, Songinokhairkhan District, 25th khoroo.	10	50	1	0	1	6	0.03	17	14	8	9	8	24
11	Gobisumber, Sumber Soum, 3rd Bag.	0.7	120	0.6	0	N/A	1	0.4	N/A	2	7	0.4	8	1
12	Dornogobi, Sainshand Soum, 7th Bag.	1	120	1	0	N/A	1	0.1	N/A	3	1	0.6	7	1
13	Orkhon, Erdenet city	1	250	1	0	N/A	7	0.15	N/A	4	2	0.7	10	1
14	Bulgan, Teshig Soum,	0.5	100	0.3	0	1	N/A	0.1	N/A	2	5	0.04	7	0.6
15	Baynkhongor, Bayan-khongor Soum, 4th Bag.	2	100	1	0	0.6	N/A	0.3	6	3	1	1	9	2

Site number	Sub-Project Components	Average Distance of Schools/Kindergartens from District HQ (Km)	Minimum distance from apartments or any buildings of constructed area	Distance from other schools in the area (km)	Number of Trees Affected	Distance from water body (km)	Distance from Railway Line (km)	Distance from Two lane Roads (km)	Distance from Airport (km)	Distance f- waste water treatment facility (km)	Distance from Power Plant (km)	Distance from utilities – heating, water supply (km)	Distance from urban landfill site (km)	Distance from Fire station (km)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B1	**Schools under expansion**													
1	School No.51	1	20	1	20	2	2	0.2	16	10	8	0.1	17	4
2	School No.18	0.6	30	0.7	0	0.4	1	0.2	10	8	4	0.1	17	8
3	“Erdmiin Orgil” Complex	0.5	120	0.2	0	7	0.7	0.2	N/A	2	1.8	0.1	7	1
4	“Ireedui” Secondary School	10	100	0.6	0	5	5.7	0.3	14	8	4.4	0.2	13	6
5	“Ireedui” Primary School	10	80	0.6	0	5	6	0.2	14	8	5	0.2	14	6
6	School No.122	8	120	5	0	0.3	2.5	0.2	15	9	7	5	5	17
7	School No.6	3	20	0.3	0	2.5	1	0.4	17	10	9	0.1	20	3
8	Khantaishir school	0.6	50	0.7	0	N/A	N/A	0.07	3	4	0.8	0.1	9	1
9	Bogd school	0.2	70	0.3	0	1	N/A	0.6	N/A	1	0.4	0.03	5	N/A
10	Baruunburen school (Deleted after Due diligence)	0.1	20	0.3	0	N/A	N/A	0.2	N/A	0.7	0.4	0.4	7	N/A
B2	**Schools under new construction**													
1	UB, Baynzurkh District, 14th khoroo	2	50	0.7	0	6	1.5	0.2	17	15	10	0.5	8	6
2	Songinokhairhan District, 7th khoroo	9	100	4	0	0.1	13	3	17	9	5	5	2	19
3	Darkhan, Mangirt, 15th Bag.	1	900	0.9	0	N/A	3	1	N/A	5	5	0.1	4	1

NAV: Not available as detailed survey not completed by MECSS

Trees Affected– Lopped or cut as detailed survey will be done by construction company

N/A – Not applicable

For some of the Schools/Kindergartens sub-projects, the blue print development is underway. The data regarding soil, topography, contour, land cutting and filling required, distance from water body and distance from major roads, details of forest/non-forest, fruit/non-fruit trees can be affected, land details will be collected by Construction Company. If sites are changed other than those indicated here, supplementary information will be supplied for each of these subprojects by MECSS to ADB for prior approval before contract award.

6.3.3 Distance from Reserve Forest/Protected Areas/National Park/Sanctuary

291. The distance from the Schools/Kindergarten to the national parks/protected areas/reserve forests are given in the **Table 6.3**.

Table 6.3: Distance from Protected Areas (National Parks, Sanctuaries and Forest reserves) for all subprojects

No	Sub-Projects	Location	Distance from Protected Areas (km)
1	2	3	4
A	Kindergartens		
A 1	Kindergartens under expansion		
1	Kindergarten No.66	UB, Bayngol District, 2nd khoroo.	Bogd Khan SPA is 10 km
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	Bogd Khan SPA is 9 km
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	Bogd Khan SPA is 10 km
4	Kindergarten No.88	UB, Bayngol District, 18th khoroo.	Bogd Khan SPA is 12 km
5	Kindergarten No.22	UB, Baynzurkh District, 1st khoroo.	Bogd Khan SPA is 18 km
6	Kindergarten No.8	UB, Baynzurkh District, (16th khoroo.	Bogd Khan SPA is 22 km
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	Bogd Khan SPA is 13 km
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	Bogd Khan SPA is 8 km
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	Bogd Khan SPA is 8 km
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	Bogd Khan SPA is 8 km
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	Bogd Khan SPA is 3 km
12	Kindergarten No.84	UB, Songinokhairkhan, 6th khoroo.	Bogd Khan SPA is 9 km
13	Kindergarten No.104	UB, Songinokhairkhan, 12th khoroo.	Bogd Khan SPA is 9 km
14	Kindergarten No.107	UB,Songinokhairkhan, 14th khoroo.	Bogd Khan SPA is 9 km
15	Kindergarten No.110	UB,Songinokhairkhan, 15th khoroo.	Bogd Khan SPA is 9 km
16	Kindergarten No.158	UB,Songinokhairkhan, 24th khoroo.	Bogd Khan SPA is 16.3 km
17	Kindergarten No.176	UB, Songinokhairkhan, 31st khoroo.	Bogd Khan SPA is 17 km
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	Bogd Khan SPA is 8 km
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	Bogd Khan SPA is 7 km
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	Bogd Khan SPA is 15 km
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	Dornod Mongol SPA is 180 km
A 2	Kindergartens under new construction		
1	New kindergarten Deleted after Due diligence)	UB, Bayngol District, 17th khoroo.	Bogd Khan SPA is 12 km
2	New kindergarten (Deleted after Due diligence)	UB, Baynzurkh District, 17th khoroo	Bogd Khan SPA is 20 km
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	Bogd Khan SPA is 20 km
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	Bogd Khan SPA is 9 km
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	Bogd Khan SPA is 1.5 km
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	Bogd Khan SPA is 14 km
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	Bogd Khan SPA is 15 km
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	Bogd Khan SPA is 16 km
9	New kindergarten (Deleted after Due diligence)	UB, Songinokhairkhan, 5th khoroo.	Bogd Khan SPA is 15 km
10	New kindergarten	UB, Songinokhairkhan, 25th khoroo.	Bogd Khan SPA is 19 km
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	Ikh Nart Nature Reserve is 65
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	Ikh Nart Nature Reserve 170 km
13	New kindergarten	Orkhon, Erdenet city	Zed Khantai SPA is 100 km
14	New kindergarten	Bulgan, Teshig Soum,	Zed Khantai SPA is 10 km
15	New kindergarten	Baynkhongor,Baynkhongor Soum, 4th Bag.	Khangai Nuruu Mountain NP is 40 km
B	Schools:		
B 1	Schools under expansion:		

No	Sub-Projects	Location	Distance from Protected Areas (km)
1	2	3	4
1	School No.51	Bayngol District, UB	Bogd Khan SPA is 10 km
2	School No.18	UB, Khan-Uul District	Bogd Khan SPA is 8 km
3	"Erdmiin Orgil" Complex	UB, Nalaikh District	Bogd Khan SPA is 17 km
4	"Ireedui" Primary School	UB, Songinokhairhan District.	Bogd Khan SPA is 10 km
5	"Ireedui" Secondary School	UB, Songinokhairhan District.	Bogd Khan SPA is 10 km
6	School No.122	UB, Songinokhairhan District, 22nd khoroo.	Bogd Khan SPA is 19 km
7	School No.6	UB, Sukhbaatar District	Bogd Khan SPA is 9 km
8	Khantaishir	Govi-Altai, Altai town.	Khasagt Khairkhan National Park is 50 km
9	Bogd Soum, Uvrukhangai	Uvrukhangai, Bogd Soum,	Ikh Bogd NP is 20 km
10	Baruunburen Soum, Selenge (Deleted after Due diligence)	Selenge, Baruunburen Soum.	None
B 2	School under new construction :		
1	New school	UB, Baynzurkh District, 14th khoroo.	Bogd Khan SPA is 11 km
2	New school	Songinokhairhan District, 7th khoroo.	Bogd Khan Mountain SPA is 20 km
3	New school	Darkhan, Mangirt, 15th Bag.	Tujiin Nars NP is 90 km

6.3.4 Current vs. Suggested solutions for infrastructure for sub-projects

292. Total of 49 sites including 13 schools and 36 kindergartens suggested to be supported by the project and 1 school and 3 kindergarten out of them are dropped out due to not satisfying environmental safety criteria. Currently, from rest 45 project sites, 16 sites require New Construction (NC), 25 sites to be built in Separate Buildings (SB), 5 sites require Additional Floor (AF) expansion. Out of them, 25 sites have connected to Central Heating (CH), 5 sites have individual Heat Only Boiler (HOB) and 1 site has Electric Heating (EH), 25 sites have connected to Central Water Supply System (CWSS), 3 sites have individual Deep Water Well (DWW) for water supply and 2 sites have connected to Ger Area Water Distribution System (GAWDS), and 1 site have transporting water from other area. In total 25 sites have connected to Central Sewage System (CSS), 5 sites have individual Holding Tank (HT), 1 site has no any sewage facility and uses a pit for grey water disposing.

293. Basing on current situation of infrastructure and possibilities to be connected service infrastructures of project sites, the project future solution would be suggested as in **Table 6.4** that 36 sites which have the possibilities have to be connected to Central Heating (CH), 9 sites will have individual Heat Only Boiler (HOB) or Electric Heating (EH), 35 sites will be connected to Central Water Supply System (CWSS), 8 sites must have Deep Water Wells (DWW) for water supply and 2 sites will have connection to Ger Area Water Distribution System (GAWDS), and 36 sites will be connected to Central Sewage System (CSS), 6 sites can have individual Septic Tank (ST) and 3 sites which have no enough space for installing ST can be have Holding Tank (HT) for disposing waste water.

294. **Table 6.4** lists all current vs suggested infrastructure solutions for each sub-project site.

Table 6.4: Existing and suggested infrastructures at each sub-project site

No	Sub-Project components	Location	Type of projected construction		Current/Future situation of infrastructure or Utilities					
			NC/SB/ AF	Capacity	Heating		Water Supply		Waste water	
					Current	Future	Current	Future	Current	Future
1	2	3	4	5	6	7	8	9	10	11
A	**Kindergartens**									
A 1	Kindergartens under expansion									
1	Kindergarten No.66	UB, Bayngol District, 2nd khoroo.	SB	200	CH	CH	CWS	CWS	CSS	CSS
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	SB	150	CH	CH	CWS	CWS	CSS	CSS
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	SB	150	CH	CH	CWS	CWS	CSS	CSS
4	Kindergarten No.88	UB, Bayngol District, 18th khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
5	Kindergarten No.22	UB, Baynzurkh District, 1st khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
6	Kindergarten No.8	UB, Baynzurkh District, (16th khoroo.	SB	240	CH	CH	CWS	CWS	CSS	CSS
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	SB	150	CH	CH	CWS	CWS	CSS	CSS
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	SB	240	CH	CH	CWS	CWS	CSS	CSS
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	SB	150	CH	CH	CWS	CWS	CSS	CSS
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	SB	120	HOB	HOB	GAWDS	GAWDS	HT	ST
12	Kindergarten No.84	UB, Songinokhairkhan District, 6th khoroo.	SB	200	CH	CH	CWS	CWS	CSS	CSS
13	Kindergarten No.104	UB, Songinokhairkhan District, 12th khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
14	Kindergarten No.107	UB, Songinokhairkhan District, 14th khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
15	Kindergarten No.110	UB, Songinokhairkhan District, 15th khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
16	Kindergarten No.158	UB, Songinokhairkhan District, 24th khoroo.	SB	240	HOB	HOB	DWW	DWW	HT	ST
17	Kindergarten No.176	UB, Songinokhairkhan District, 31st khoroo.	AF	100	HOB	HOB	DWW	DWW	HT	HT
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	SB	150	CH	CH	CWS	CWS	CSS	CSS
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	SB	140	CH	CH	CWS	CWS	CSS	CSS
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	SB	240	CH	CH	CWS	CWS	CSS	CSS
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	SB	240	HOB	CH	GAWDS	GAWDS	HT	CSS
A 2	**Kindergartens under new construction**									

No	Sub-Project components	Location	Type of projected construction		Current/Future situation of infrastructure or Utilities					
			NC/SB/ AF	Capacity	Heating		Water Supply		Waste water	
					Current	Future	Current	Future	Current	Future
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1	New kindergarten	UB, Bayngol District, 17th khoroo.	Dropped out due to the land allocated for this site locates in between 3 kindergartens (2 of them newly constructed) overlapping with their land and underground utility infrastructure.							
2	New kindergarten	UB, Baynzurkh District, 17th khoroo	Dropped out due to the resettlement issue.							
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	NC	240	EH	HOB or EH	Transporting	DWW	Gray water pit	HT
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	NC	240	None	CH	None	CWS	None	CSS
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	NC	240	None	HOB	None	DWW	None	ST
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	NC	240	None	CH	None	CWS	None	CSS
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	NC	150	None	CH	None	CWS	None	CSS
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	NC	240	None	CH	None	CWS	None	CSS
9	New kindergarten	UB, Songinokhairkhan District, 5th khoroo.	Dropped out due to not availability of free land							
10	New kindergarten	UB, Songinokhairkhan District, 25th khoroo.	NC	150	None	HOB	None	DWW	None	HT
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	NC	240	None	CH	None	CWS	None	CSS
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	NC	280	None	CH	None	CWS	None	CSS
13	New kindergarten	Orkhon, Erdenet city	NC	320	None	CH	None	CWS	None	CSS
14	New kindergarten	Bulgan, Teshig Soum,	NC	150	None	CH	None	CWS	None	CSS
15	New kindergarten	Baynkhongor, Bayan-khongor Soum, 4th Bag.	NC	200	None	HOB	None	DWW	None	ST
B	**Schools:**									
B 1	**Schools under expansion:**									
1	School No.51	Bayngol District, UB	SB	320	CH	CH	CWS	CWS	CSS	CSS
2	School No.18	UB, Khan-Uul District	AF	320	CH	CH	CWS	CWS	CSS	CSS
3	“Erdmiin Orgil” Complex	UB, Nalaikh District	SB	320	CH	CH	CWS	CWS	CSS	CSS
4	“Ireedui” Primary School	UB, Songinokhairhan District.	AF	320	CH	CH	CWS	CWS	CSS	CSS
5	“Ireedui” Secondary School	UB, Songinokhairhan District.	AF	320	CH	CH	CWS	CWS	CSS	CSS
6	School No.122 (Green school)	UB, Songinokhairhan District, 22nd khoroo.	SB	640	HOB	HOB	DWW	DWW	HT	ST
7	School No.6	UB, Sukhbaatar	AF	320	CH	CH	CWS	CWS	CSS	CSS

No	Sub-Project components	Location	Type of projected construction		Current/Future situation of infrastructure or Utilities					
			NC/SB/ AF	Capac ity	Heating		Water Supply		Waste water	
					Current	Future	Current	Future	Current	Future
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
		District								
8	Khantaishir	Govi-Altai, Altai Soum.	SB	320	CH	CH	CWS	CWS	CSS	CSS
9	Bogd Soum, Uvrukhangai	Uvrukhangai, Bogd Soum,	SB	320	CH	CH	CWS	CWS	CSS	CSS
10	Baruunburen Soum, Selenge	Selenge, Baruunburen Soum.	Dropped out due to lack of land space.							
B 2	**Schools under new construction :**									
1	New school	UB, Baynzurkh District, 14th khoroo.	NC	920	None	CH	None	CWS	None	CSS
2	New school	Songinokhairhan District, 7th khoroo.	NC	640	None	HOB	None	DWW	None	ST
3	New school	Darkhan, Mangirt, 15th Bag.	NC	920	None	CH	None	CWS	None	CSS

Remark: NC-New Construction, SB-Separate Building, AF-Additional Floor, CH-Central Heating, CWS-Central Water Supply, CSS-Central Sewage System, DWW-Deep Water Well, HOB-Heat Only Boiler, ET-Electric Heating, GAWDS- Ger Area Water Distribution System and HT-Holding Tank, ST-Septic Tank.

6.4 Cumulative Impact Analysis of subprojects

295. The potentially affected environment in the project area is defined principally in regard to two factors: (i) the nature and scale of the proposed action; and (ii) the sensitivity and circumstances of the environment in which the proposed action will occur or issues of special concern (such as induced and cumulative impacts, etc.). The project's area of influence regarding potential impacts associated with noise and traffic congestion during construction will extend to areas around the construction zones.

296. There are no physical-geological and hydro-dynamically difficult conditions that may adversely impact the construction, and there is a low earthquake potential. No environmentally sensitive areas were observed near the sites as all infrastructure improvements are located in Ulaanbaatar City and other *Aimags*/provinces. There are no cultural heritage sites in the project areas.

Densification of area

297. The schools/Kindergartens have sufficient vacant pieces of land required for expansion project in the current premises that was not used as a playground. Therefore, the issue of densification of construction in the area does not arise.

Influence zone of each School/kindergarten

298. In some areas, where the other schools are located in vicinity (about 100m distance), the expansion plan is located in the other direction so the distance does not decrease. Figures in **Annexure 1b** provide details about the affected area for each school/kindergarten. The effective area of influence taken for each school is a 100 m radius for all impacts – noise, dust, and traffic.

Noise

299. During construction phase, there is no concurrent construction in two adjoining schools so there will be no amplification of noise to the neighbourhood. The Construction

company will install noise barriers during construction if the residents complain of higher noise incidence from construction activities. However, during operations, the noise from the playgrounds may increase due to increased number of children, the residents during the consultations have assured that they would not be inconvenienced on that account.

Greenhouse Gas emissions

300. The project would install about 10 heat only boilers in locations where the district heating is not available (Ger areas). Given that the hours of operation would for 12 hours for 210 days (1 October to 1 May) at the emission rate of 2500g/s for 10 boilers would lead to 9 tonnes/annum (Calculated using data from **Table 14.2 in Annexure 4**). The EHS guideline which states that GHG emission limit for project should not exceed 25,000[28] tonnes/annum is well within limits. However, the discussion were held with MECSS to install electric floor heating and electric boiler for hot water in these schools to avoid handling of coal, ash and its related impacts of using Heat only Boiler.

Summary of Impacts

301. Potential environmental impacts (both positive and negative) associated with all project phases were identified in this section is illustrated by the following Table. Most of the minor, temporary adverse environmental impacts relate to the building construction process, and can be relatively easily mitigated with standard best practices that are increasingly being required of the construction industry. **Table 6.5** provides a summary analysis of positive and adverse impacts of the sub-projects.

Table 6.5: Summary Analysis of Positive and Adverse Impacts:

1	Project Activities	Positive Impacts (Type)
A	**Pre-Construction**	
i	Increasing local businesses	Local business will be enhanced due to the construction activities in the area. Local construction companies will be contracted. (Temporary)
B	**Construction**	
i	Employment	Employment opportunity to local population. (Temporary)
C	**Operation**	
i	Socio -economic impact	Development of education facilities will help nomadic population in the country to send their children for education and thereby may develop the society and neighbourhood. (Permanent)
ii	State of Art new facilities	Most schools building are between 30-40-year-old buildings having inefficient heating, electricity, rusted water and inadequate sanitation. (Permanent)
2	**Project Activities**	**Adverse Impacts (Type)**
A	**Pre-Construction**	
i	Site Access	Loss of access to the site for students play area. (Temporary)
ii	Site preparation, clearing and earthworks	Clearing of vegetation, trees; land development may create problems in local drainage pattern; emission of dust, Improper management of construction debris and solid waste may pose risk to the students and others; construction noise (Temporary). Reduction in visual aesthetics at site, access road, truck traffic, construction equipment and permanent building (Permanent).
B	**Construction**	
i	Influx of workers	Health & safety of workers at site may pose to risk; concentration of labor force creates un-hygienic condition and sanitation hazard

[28] EHS Guideline, Guidance Note 3 Resource Efficiency and Pollution Prevention, 2012

		(Temporary).
ii	Construction equipment / materials	Brick/stone crushing and equipment installations may create noise; carrying of construction materials may create traffic congestion; cutting/filling, stockpiling of construction material and traffic movement may create dust emission, improper management of construction debris and solid waste may pose risk to the workers, students and residents (Temporary).
iii	Vehicle and pedestrian traffic	More congestion near the main entrance to the; increased number of vehicles on local roads will result in increased wear and tear of local roads thus reducing lifespan of affected roads; pedestrians to exercise care with increase of vehicular traffic on the adjacent roads and increase of exhaust emission from vehicles (Temporary).
C	**Operation**	
i	Vehicle and pedestrian traffic adjacent to School building	Slightly more congestion near the main entrance to the School; Pedestrians to exercise more care with increase of vehicular traffic at school gates for drop-pickup of students; increase of exhaust emission from vehicles, which will pollute local atmospheric air (Temporary).
ii	Generation of consumables	Improper solid waste management, sanitation hazard. (Temporary)
iii	Increased demand on local services	Increased risk of water shortages and electricity load shedding. (Permanent)
iv	Extreme climate events, disasters and emergency	Mongolia is earthquake prone area. Fire hazard or any medical emergency may arise during operation of the school. (Permanent)

Impacts on key environmental parameters (Air, water, soil and Noise)

302. The **Table 6.6** below lists impacts on environment parameters of the sub-project areas where the project will be implemented.

Table 6.6: Impact of key environment parameters

#	Environmental Parameter	Type of Impact	Reason	Proposed Mitigation Measures
1	Air Quality	Low	Insignificant air emission from the construction activity except during stacking/storage of soil, construction material at site	Sprinkling of water, proper handling of excavated soil, construction material, banned substances/VOCs etc.
2	Water Quality	Low	The project will require small quantity of water for construction. No hazardous effluent is envisaged to be discharged during construction	The required water will be sourced from tankers by the construction company. Domestic effluent shall be discharged in holding tanks which will be cleaned regularly and waste thrown at urban body's solid waste management site.
3	Soil Quality	Low	Land is available-has open/vacant areas within the school premises for	Construction company to ensure proper housekeeping, sanitation and cleanliness at work site.

#	Environmental Parameter	Type of Impact	Reason	Proposed Mitigation Measures
			expansion projects and government land for new schools.	
4	Noise Quality	Low	The construction activity may lead to noise pollution during concreting –steel cutting, bending, casting using vibrators, operation of mechanised equipment and drills etc. that will affect the residents of the area. Small noise related installations within shell structure may continue beyond school holidays	The schools shall be closed for summer vacation during shell construction of the building to minimize disruption. Noise monitoring will be done at regular intervals. If any night construction activity that is noise intensive is undertaken, neighbourhood must be consulted to determine suitable timings.
5	Hazardous Substance – eg. Asbestos, VOCs	Minimal	The expansion sub-projects will not impact the main buildings of the schools	Sections of buildings, if they contain any hazardous material will not be selected for improvement actions.
6	Terrestrial Ecology	Low	No ecologically sensitive place (protected area/reserved forest/Important flora and fauna species) within 5 km radius from each sub-project site	Tree replantation/transplantation to be carried out inside school if any trees are cut by the construction company

7.0 ENVIRONMENTAL MANAGEMENT PLAN

7.1 Critical Environmental Review Criteria

(i) Loss of irreplaceable resources

303. The School/Kindergarten projects do not involve any large-scale excavation and land Thus, there will be no net "Biodiversity Loss" due to project implementation due to felling of trees.

(ii) Accelerated use of resources for short-term gains

304. The project will not use any natural resources occurring in the area during construction, operation and maintenance phases. The construction material such as steel, cement, etc. shall come from factories while the excavated soil shall be disposed in designated waste management sites designated by urban body. Thus, the project shall not cause any accelerated use of resources for short term gains.

(iii) Endangering of species

305. No endangered species of flora and fauna exist in the project area and there seems to be no possibility of endangering/causing extinction of any species.

(iv) Promoting undesirable rural-to urban migration

306. The project will not cause any submergence or loss of land holdings that normally trigger migration. It also does not involve acquisition of any private land holdings. Hence, there is no possibility of any migration.

(v) Increase in affluent/poor income gap

307. The project will increase availability of education facilities to the neighbourhood communities. Several vulnerable communities are also going to be benefitted due to these facilities. Thus, the project is expected to contribute in reduction of affluent/poor income gap by providing education opportunities for children of "herder" nomadic population thereby making them equal footing into mainstream of economic streams in future.

7.2 Disaster Management, Health and Safety, Training

Disaster Management

308. Though major earthquake in recent years, small to moderate earthquake have been felt in Mongolia. The flood risk in Ulan Bator, Dharkan and other Provinces is lower than that of the other parts of country. Aimag level Emergency Management Agency has been formed under the National Emergency Management Agency of Government has been designated to take care of disaster management issues. Disaster resilient features[29] will be built into new and expanded schools and kindergartens. The facilities will have sound seismic design to withstand earthquakes, winter snow storms, improved flood control and precipitation resistant features for all the proposed kindergartens/schools.

Health and Safety Issues Management

309. To avoid/ minimize inherent risks during construction, operation and maintenance, the construction company will follow national and international Environment, Health and Safety Procedure for construction and expansion of schools/kindergartens and the operations and maintenance (O&M) period. Some other implications and mitigations from safety point of view are listed in **Table 7.1** below:

[29] The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR Terminology on Disaster Risk Reduction. https://www.unisdr.org/we/inform/terminology) Source: Reducing Disaster Risk by Managing Urban Land Use, Guidance Notes for Planners, ADB, 2016

Table 7.1: Safety Implication and Mitigation

No	Implication	Mitigation
1	Falling object accidents	Proper signs to avoid areas where falling objects can hurt passer-bys, school children etc.
2	Open construction boundary	Construction company to install metal sheet barriers that are high enough to make a boundary so that children, residents cannot get unauthorized access into construction sites.
3	Electrical shock/fire due to any open wiring at construction site	Ensure all access points to the schools do not have any open electrical connections/wires lying in open
4	Accidents at school gates due to congestion caused during construction	Alighting area for children from cars, buses

Training Programs

310. The training program will be developed by PIU team comprising of Environment Specialist, M&E Specialist who will be contracted with PIU during project implementation. Each of training should last 1 day with specific program and should include interactive problem solving tasks.

311. Trainings on EMP preparation and implementation for construction companies, Emergency Response systems for all emergency situations, Occupational Health and Safety etc. are proposed to be held as per training program as shown below in **Table 7.2.** The costs for all the training programs are included in the ADB funding for the project.

Table 7.2: Training programme - summary of training needs

Training topic:	Summary of training purpose and content	Recipients/ Participants	Frequency or target date
Induction to EMP	Overview of EMP including site information, pollution risks and controls, and programmes. Preparation of site specific EMPs and training on implementation to staff of construction company (s)	All PIU engineers / contractors	At beginning of project
Review of EMP, Refresher training on EMP	Review of EMP including new changes and updates	All PIU Engineers / contractors	One year after project start, or more frequently if required
Training on specific pollution risks and controls			
Emergency case response planning	To identify on-site “potential accident scenario” and how to plan potential emergency response actions.	All PIU Engineers /contractors/Local residents	During the project implementation
Air Quality Monitoring	Ambient Air Quality, Volatile Organic Compounds (VOCs), Particulate Matter (PM), Ozone Depleting Substances (ODS), Greenhouse Gases (GHGs)	All PIU Engineers /contractors	During the project implementation
Water Conservation	Water Monitoring and Management, Process Water Reuse and Recycling, Heating Systems	All PIU Engineers /contractors	During the project implementation

Training topic:	Summary of training purpose and content	Recipients/ Participants	Frequency or target date
Waste water and Ambient Water Quality	Liquid Effluent Quality, Discharge to Surface Water, Discharge to Sanitary Sewer Systems, Land Application of Treated Effluent, Septic Systems, Wastewater Management	All PIU Engineers /contractors	During the project implementation
Hazardous Materials Management	General Hazardous Materials Management, Hazard Assessment, Management Actions	All PIU Engineers /contractors	During the project implementation
Fire safety	Fire, and Explosion Prevention, Control Measures,	All PIU Engineers /contractors	During the project implementation
Occupational Safety, Health and Safety	Occupational Health and Safety Emergency Preparedness and Response, Community Involvement and Awareness	All PIU Engineers /contractors	During the project implementation
Waste Management	General Waste Management, Waste Management Planning, Waste Recycling and Reuse, Treatment and Disposal, Waste Storage, Transportation, Treatment and Disposal, Commercial or Government Waste Contractors	All PIU Engineers /contractors	During the project implementation
Monitoring and evaluation			
Participatory M&E of impacts.	Simple methods for recognizing adverse impacts on environment Methodology of monitoring and evaluation on the water quality	Local residents, School managements/construction company	During the project implementation
Energy Efficiency and Green Buildings	Introduction to energy efficiency, heat loss, green school concept	Local residents, School managements	During the project implementation
Project management and implementation	M&E, Implementation assessment the program. Principle of donor organizations' support to local beneficiaries.	All PIU Engineers /contractors	At the beginning of the project

7.3 Environmental Impact Matrix

312. The environmental impacts management matrix has been prepared for the project that discusses the anticipated impacts, monitoring requirements, and development of mitigation measures with respect to the following stages: (i) pre-construction, (ii) construction, and (iii) operation and maintenance. Detailed, site-specific mitigation measures and monitoring plans were developed and will be implemented during the project implementation phase. A summary environmental impact matrix and the mitigation measures are mentioned in **Table 7.3**.

Table 7.3: Environmental Impact Matrix

Sl. Nº	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
A.	**Physical Resources**							
1.	Topography	Change in the surface features and present aesthetics due to the construction of the project.	Direct/Local/ irreversible		X		The surface soil will be restored to normal slope after erection. If there is any excess soil, it shall be disposed off at suitable location. Any loss of vegetation will be attended by MECSS as per existing Government of Mongolia norms and per EMP.	During construction activity.
2.	Climate	No impact on the climatic conditions	Direct/Local/ irreversible	X			No impact on the climatic conditions, hence no mitigation is required.	
B.	**Environmental Resources**							
1.	Air Quality	Project will have marginal impact on air quality during the construction period due to increase in the dust emission due to cutting/filling, stockpiling of construction material and traffic movement	Direct/Local/ reversible	X			Water sprinkling at construction site, limited bare soils, maintenance of vehicles.	During construction activity.
2.	Noise	Noise from piling, brick/stone crushing, concreting and equipment installation.	Direct/Local/ reversible	X			Restriction of noise generating activities at night and use of personal protective equipment like ear plugs, mufflers.	During construction activity.
3.	Surface and Ground Water quality	Runoff from the construction site.	Direct/Local/ reversible	X			Land development may create problems in local drainage pattern, minor impact. Careful siting of soil dump and construction material at site.	Before and during construction activity.
		Domestic wastewater from construction sites. Cutting/filling at construction site would	Direct/Local/ reversible	X			Domestic waste treatment by providing septic tank/soak pits at work site for workers at each location.	During construction and operation.

Sl. Nº	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
		create natural drainage blockade during rainy season.						
4.	Soils and Geology	Soil erosion due to clearing of topsoil at site.	Direct/Local/ reversible		X		Rehabilitation and stabilization of disturbed land at the Schools/Kindergartens.	During and after the construction activity.
		Damage due to seismic activity.	Direct/regional/ reversible	X			Site selection and proper foundation design considering the geological conditions and seismicity of the area.	Before the construction activity.
		Settling of foundations due to permafrost	Direct/regional/ reversible		X		Site selection and proper foundation design considering the geological conditions of the area.	Before the construction activity.
C.	**Ecological Resources**							
1.	Terrestrial Ecology	Loss of vegetation.	Direct/Local/ irreversible		X		The tree planting/transplantation for trees felled will be done by the Construction Company	Before the construction phase.
2.	Terrestrial Fauna	No significant impacts envisaged.	Direct/Local/ reversible	X			No direct impact	Before and during construction phase.
3.	Aquatic Ecology	No significant impacts envisaged.	Direct/Local/ reversible	X			Disposal of construction waste and other waste to avoid polluting any water body and streams.	Before and during construction phase
D.	**Human Environment**							
1	Health and Safety	Fires, explosion and other accidents, Health & safety of workers at site may pose to risk in some cases.	Direct/Local	X			Use of personal protective equipment during construction. Regular inspection of construction site for faults prone to accidents. Volatile organics to be handled	During construction and operation phase
		Banned Substances; Safe drinking water and Sanitation hazard	Direct/Local		X		Presence of Asbestos in old buildings, concentration of labor force creates un-hygienic condition; provide proper facilities	During construction phase
2.	Agriculture	No significant impacts envisaged.	Direct/Local/ reversible	X			No agriculture land used for new school/expansion.	Before and during construction phase.
4.	Socio-	Beneficial impacts job	Direct/regiona		X		Unskilled labor and indirect	During operational

Sl. Nº	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation and Monitoring
				Low	Medium	High		
	economics	opportunities during construction phase	l				benefits. Overall economic growth of the region.	phase
5.	Resettlement	No significant impacts envisaged.	Direct/Local/ reversible	X			No resettlement issue.	Before the construction phase.
6.	Archaeological /Cultural sites	No archaeological, historical or cultural important sites are affected by the construction.	Direct/Local/ reversible	X			No archaeological, historical or cultural important sites are affected.	--
7.	Traffic and Transportation	Traffic congestion due construction vehicles, ferry of construction and waste material.	Direct/Local/ reversible	X			Proper traffic signs at the construction site, ensuring availability and maintenance of proper access roads.	During construction phase
		Increase in temporary traffic at gates due to pickup of students					Ensuring more staggered timings for students.	During construction and operation phase
8.	Waste Generation	Probability of Surface and ground water pollution. Improper management of construction debris and solid waste may pose risk to the neighbours.	indirect/Local/ reversible	X			Minimization, reuse and recycle whenever possible. Final wastes to be collected and disposed off in compliance with applicable regulations and rules.	During operation phase
		Pollution from liquid discharge	indirect/Local/ reversible	X			No liquid discharge from the project, domestic sewage should be disposed through septic tank	During operation phase
9	Site Security	Improper site security may pose risk to the school children or community	Direct/Local/ reversible	X			Proper fencing and protection at the construction sites, and manned security a must at the school site.	During construction phase

7.4 Monitoring

313. In addition to the EMP, to ensure that project would not be generating a negative impact to the overall environment quality, an Environmental Monitoring Plan (EMoP) will be prepared. The monitoring activities of the project include site supervision, verification of permits, monitoring of water quality, soil, noise and air. Monitoring of the quality of water, soil, air and noise during the construction stage is a responsibility of civil works contractors. PIU engineers (who are contracted by PIU) will supervise civil works contractors. Monitoring of sanitary waste treatment should be done periodically to avoid water pollution. Other environmental good practices include noise abatement, maintaining hygienic conditions, maintenance of fire and safety equipment etc. Monitoring report should be prepared once in six months with the corrective action plan for the problem areas.

314. MECSS will be responsible for implementing internal monitoring systems for EMP implementation, and will forward semi-annual progress reports to the Government and ADB. The reports will cover EMP implementation with attention to compliance and any needed corrective actions. On-going consultation measures will be incorporated in the EMP.

315. The PIU will be responsible for internal monitoring of the EMP implementation, and will develop quarterly progress reports with details of activities and progress made during EMP implementation. The PIU will submit annual monitoring reports to ADB. If project activities are noticed to have significant adverse environmental impacts, ADB requires MECSS to retain qualified and experienced experts[30] or qualified Non-Government Organisation (NGO) or Community Based Organization (CBO) to verify the report. If required, these external experts/NGO or CBO will report on a semi-annual basis directly to ADB to verify if sound environmental management practices were followed during implementation. In case the implementation of EMP measures is not satisfactory, the external experts/NGO or CBO will recommend actions to enhance environmental compliance. A template of the Environment Monitoring Report is attached as **Annexure 5**, which will be required to submit bi-annually by MECSS to ADB.

7.5 Environmental Management Plan (EMP)

316. The Environmental Management Plan (EMP) for the project is attached as **Annexure 2**, which identifies feasible and cost - effective measures to be taken to reduce potential significant, adverse, impacts to acceptable levels. Here, proper mitigation measures are proposed for each potential impact, including details on responsible parties for implementation of mitigation measures and supervision.

7.6 Environmental Monitoring Plan (EMoP)

317. The mitigation measures suggested requires monitoring of environmental attributes both during construction and operational phase of the project by the MECSS. During the construction and operation phase of this project, the monitoring of the environmental aspects shall be done at the Schools/Kindergarten by the environment speciliast of the PIU.

Review process of site specific EMPs

318. **Annexure 3** provides the periodicity of the measurements of environmental parameters – air, noise, soil and water at the various schools/kindergartens to be implemented by the Construction Company during the construction phase. The Annexure also lays down the

[30] External expert who is not involved in day-to-day project implementation or supervision

following checklist/clauses for the Construction Company to adhere to.

- Environmental Site Inspection and Monitoring Checklist, and
- Environmental Safeguard Clauses for Civil Works Contracts.

319. The environmental monitoring plan is to be utilized for measuring the extent of compliance with the EMP during the project implementation. The main objective of environmental monitoring is:

- to evaluate the performance of construction company in mitigating negative impacts vs. the proposed measures in the EMP;
- to provide information on unanticipated adverse impacts or sudden change in impact; to determine if any impacts are irreversible in nature which required remedial measures and monitoring;
- to suggest improvement in environmental mitigation measures, if required;

320. During the construction phase, civil works contractors should ensure that activities like handling of earth works clearing work, access road construction, putting proper traffic signals is done properly to have minimum impact. This in turn should be monitored by the construction supervision specialists responsible for the school/kindergarten project.

321. Implementation of environmental mitigation measures will be ensured through both routine and periodic monitoring. **Table 7.4** lists environmental monitoring activities during construction phase:

Table 7.4: Construction Phase Monitoring

#	Indicators of Monitoring	Types of Monitoring/ Method of Monitoring	Monitoring Frequency	Responsibility
1	Safe transportation of construction material through neighbourhood and roads	Visual Inspection Continuous	Regular during construction	Civil works contractors
2	Stockpiling of excavated materials and appropriate disposal	Visual Inspection	Regular during construction	School/Civil works contractors
3	Occupational health and safety, use of safety gears by workers	Use of PPE Visual Inspection	Regular during construction	Civil works contractors
4	Safety to students, staff, apartment dwellers etc.	Record of injury or accidents	Regular during construction	School
5	Inconvenience to apartment dwellers, water logging etc.	Visual Inspection Continuous	Regular during construction	School/Civil works contractors
6	Solid waste segregation disposal	Visual Inspection	Regular during construction	Civil works contractors
7	Cutting/trimming of trees	Continuous	Regular during construction	School, Civil works contractors
8	Environmental Parameters Quality	Air, Water, Noise, soil sampling lab testing & comparison with Baseline of the area	Six Monthly	Civil works contractors

PPE: personal protective equipment

322. During the operation phase, the Schools/kindergartens through MECSS could continue to conduct monitoring as specified below in **Table 7.5**:

Table 7.5: Operations Phase Monitoring

#	Indicators of Monitoring	Types of Monitoring/ Method of Monitoring	Monitoring Frequency	Responsibility
1	Solid waste management system	Records of waste collected and managed	Bi-annual	School/ PIU
2	Number of orientation and trainings on safety, facility usage to students, staff	Number of orientation and trainings conducted	Regular	School/ PIU
3	Preparation of monitoring reports and Impact audits	Preparation of monitoring reports and Compliance with EMP	Bi-Annual	School/ PIU

EMP = environmental management plan, PIU = project implementation unit

Construction Contracts

323. The construction company will adhere and comply with all measures and procedures identified in the EMP. The EMP and EMoP which are endorsed by the EA and Government of Mongolia, will be monitored in accordance to ADB Safeguard Policy 2009 requirements. Mitigation measures related to construction as specified in the EMP will be incorporated into civil works contracts, and their implementation will be primarily the responsibility of civil works contractors. In addition, civil works contractors will be requested to submit monthly progress reports on the implementation of EMP measures to EA/PIU.

Reporting

324. The EA in turn will be expected to report to the ADB on progress achieved against the EMP activities and milestones on a quarterly basis. Progress reports will include a description of implementable activities and their status; identify the responsible party (ies) involved in their implementation; and provide project management schedules and timeframes for doing so, along with their associated costs.

7.7 Environmental Management Plan Budget Costs

325. The main benefits of the environmental mitigation plan are (i) ensuring that environmental standards are met during design, construction, and operation of the project; (ii) providing offsets to negate project impacts especially ecological impacts. Without such expenditures, the project might generate significant environmental impacts, causing the biophysical environment in the area to deteriorate and indirectly depressing the economies of local communities.

326. The compliance with the EMP has been prepared based upon optimum and reasonable costs that are derived upon minimization of mitigation measures on a “least-cost” basis. The estimated budget for implementing the EMP is USD$ 280,000 of the total project cost of USD 40 million as shown in **Table 7.6**.

Table 7.6. Estimated costs for implementing EMP

#	Type of expenses	Cost Estimates USD $
1	Promotion and advertisement of the EMP*	30,000
2	Support the implementation of mitigation activities**	100,000
3	Reviewing and revising of EMP***	30,000
4	Training and Consultancy ****	30,000
5	Budget for the Monitoring activities	50,000
6	Budget for public consultation and feedback	40,000
	TOTAL	**280,000**

* "Promotion and advertisement of the EMP" include activities to provide awareness on EMP to relevant stakeholders and public communities in surrounding areas of construction sites as well as informing them of the roles and responsibilities of various parties involved. Costs may include development of promotional materials, advertising etc.
** Approximately 0.25% of total project cost for individual package
*** Revision of IEE/EMP, if major scope of project activities change during implementation
**** Training costs for items as per Table 7.2 above

327. The cost components include items such cost towards promotion, advertisement and implementation of mitigation activities (Construction Company's civil works scope), review and revision of IEE/EMP is scope changes, Training and consultancy (identified in Table 7.2), monitoring of EMP and support implementation of mitigation activities etc. in entire location of Schools/Kindergarten and future public consultations required. These activities will be coordinated by the PIU Coordinator, Environment Specialist, M&E specialist, and the construction supervision specialists hired for project implementation and supervision of the construction company.

7.8 Institutional Arrangements

7.8.1 Project Implementation Organizations: Roles and Responsibilities

328. The Ministry of Education, Culture, Science, and Sports (MECSS) will be the executing agency of the project and will oversee overall project implementation and management activities to ensure smooth and timely implementation and completion of project activities. The MECSS and UMED (responsible for output 1 in Ulaanbaatar) will be the implementing agencies. The project will be implemented from September 2017 to June 2021.

329. The project steering committee will be established by MECSS and comprise MECSS directors, representatives of MOF, UMED, Engineering Supply Department of Ulaanbaatar Municipality, Education Evaluation Center, Institute for Teachers' Professional Development, and Institute of Education. The MECSS will constitute a Project Implementation Unit (PIU) for implementing the ADB loan which will be established by MECSS to manage day-to-day activities of the project. **Table 7.7** below depicts Management roles and responsibilities.

Table 7.7: Management Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Executing agency – Ministry of Education, Culture, Science, and Sports (MECSS)	(i) Establish project implementation unit. (ii) Establish project steering committee. (iii) Establish systems, procedures, and mechanisms to ensure effective and efficient project implementation. (iv) Oversee overall project implementation and management activities to ensure smooth and timely implementation and completion of project activities.
Project steering committee	(i) Approve annual budgets and plans for the project. (ii) Oversee progress in project implementation. (iii) Guide and support project implementation. (iv) Provide coordination between ministries and other stakeholders involved in project implementation.
Implementing Agencies – MECSS and UMED	(i) Provide strategic, policy, and coordination support for the implementation of outputs 1–5. (ii) Supervise all project activities under outputs 1–5.
Project implementation unit	(i) Perform day-to-day management of the project.

Project Implementation Organizations	Management Roles and Responsibilities
	(ii) Coordinate and implement project activities, including procurement, recruitment, disbursement, contract administration, monitoring, and reporting. (iii) Prepare, on behalf of the executing and implementing agencies, bidding documents, terms of reference, reports, and other supporting documents and submit them for review and approval. (iv) Maintain on behalf of the executing agency the imprest accounts; and prepare and submit withdrawal applications and supporting documents, quarterly and annual reports, annual audit reports and financial statements.
ADB	(i) Provide technical support for project implementation. (ii) Supervise and ensure compliance by the executing and implementing agencies with Asian Development Bank's policies and procedures in project implementation.

ADB = Asian Development Bank.

330. The project implementation unit will be staffed with experienced professionals (a project coordinator, a procurement specialist, a financial management specialist, monitoring and evaluation specialist (M&ES), civil engineer, cost estimator, environment specialist (ES), project assistant, driver) to handle day-to-day project management.

7.8.2 Project Organization Structure

331. The interactions between the project steering committee, MECSS, UMED and PIU at the project level are shown in **Figure 7.1**.

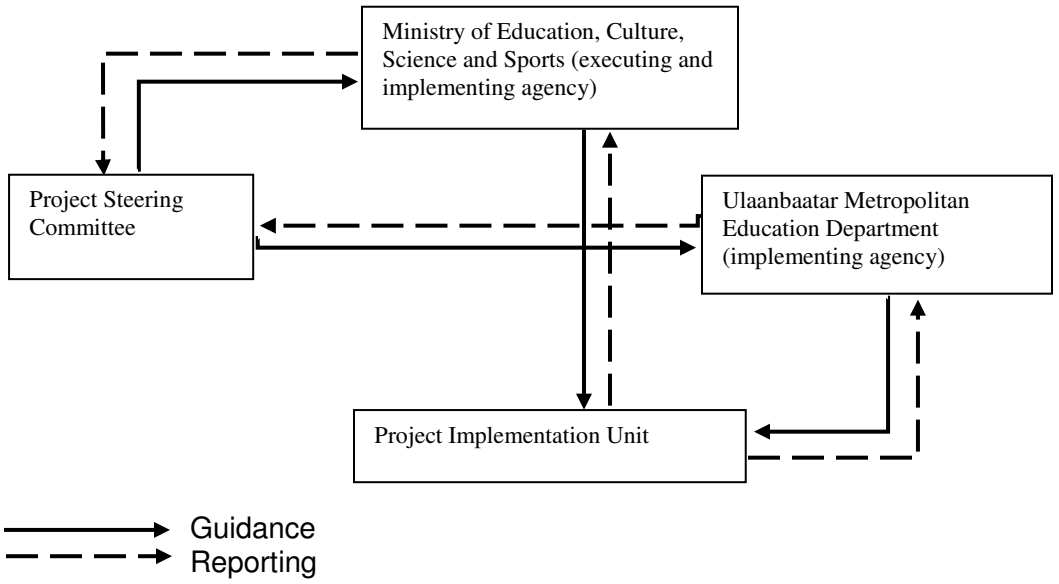


Figure 7.1: Project Organization Structure

7.8.3 EMP implementation arrangements.

332. The Project Implementation Units (PIU) which will assume primary responsibility for the environmental assessment as well as implementation of EMP through Construction Company (civil works contractors) or any third party consultants. The Project coordinator will be assisted

by the ES for environmental monitoring and EMP measures. Keeping in view the capacity of MECSS, it is proposed that ES and M&ES must coordinate with each Construction Company to address environmental mitigation issues[31].

333. The duties of the Environmental Specialist will include at a minimum: (i) oversight of Construction Company for monitoring and implementing mitigation measures; (ii) liaising with the school/kindergarten management and Construction Company (civil works contractors) and seeking their help to solve the environment-related issues of project implementation; and (iii) technical progress reporting as well as preparation of environmental management reports every 6 months (as required by ADB).

334. The ES will be assisted by the Monitoring and Evaluation specialist (M&ES) in monitoring of the contract requirements and any specialist functions by the construction supervision specialists (civil engineer and cost estimator) hired under the PIU. Additional third-party services may be employed by the MECSS as necessary. Further details on person/agencies responsible for EMP activities are in **Table 7.8**.

Table 7.8: Institutional Roles and Responsibilities for EMP Implementation Activities

Activity	Responsible Person/Agency
Sub-project Initiation Stage	
Establish PIU and award contracts	Project Coordinator, Procurement Specialist, PIU MECSS
Clearances/approvals from relevant Government of Mongolia agencies-urban, water, power etc.	PIU, MECSS
Disclosure of subproject EMP details on MECSS website	PIU, MECSS
Conducting discussions/meetings/workshops with APs and other stakeholders	ES and other Specialists at PIU
Updating of EMP mitigation measures based on discussions	ES, M&ES, PIU
EMP Implementation Stage	
Meetings at community/household level with APs	ES, Construction Company
Implementation of proposed EMP mitigation measures	ES, Construction Company
Consultations with APs during EMP mitigation measures implementation	ES, Construction Company
Grievances Redressal	PIU /District Administration
Internal monitoring	PIU/ MECSS
External monitoring*	External Experts

ADB-Asian Development Bank; AP-Affected Persons; EA-Executing Agency; EMP-Environmental Management Plan; PIU- Project Implementation Unit, ES – Environment Specialist

*Note –External monitoring only required when projects are noticed to have significant adverse environmental impacts. Normally not required for Environment Category B project.

7.9 Implementation Plan

335. The proposed project involves expansion of 8 Schools, 17 Kindergartens on their premises at and construction of 3 new Schools and 7 Kindergartens on government owned

[31] ADB advises that all EAs develop in-house capability for environmental, health, and safety (EHS) program consistent with international best practices. The EHS program should include accounting for environmental benefits resulting from investment projects within three months of loan approval. The monitoring agency shall report on semi-annual basis directly to ADB and determine whether sound environmental management practices have been achieved, and suggest suitable recommendations and remedial measures for midterm correction and improvement.

land. The project will involve the preparation of engineering designs, drawings, and specifications, procurement and installation of school and kindergarten equipment and furniture, construction supervision and completion inspections. The total cost of output 1 is estimated to be $39.53 million.

336. The overall draft project implementation schedule for Output 1 under the project is attached **as Table 7.9.**

Table 7.9: Overall Project Implementation Schedule (OUTPUT 1)

Activities	2017		2018				2019				2020/2021			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 1: Gap in enrolment capacity of schools and kindergartens narrowed														
1.1 Advertise and recruit 5 engineering firms packages														
1.2 Prepare drawings, specifications, and BOQ for schools														
1.3 Prepare drawings, specifications, and BOQ for kindergartens														
1.4 Recruit an international procurement specialist to prepare specifications for buildings, machinery, equipment, and furniture														
1.5 Prepare specifications for buildings, machinery, equipment, and furniture														
1.6 Prepare and advertise procurement packages of civil works for school construction and expansion (including equipment)														
1.7 Prepare and advertise procurement packages of civil works for 240 seat kindergartens (including equipment)														
1.8 Prepare and advertise procurement packages of civil works for other kindergartens (including equipment)														
1.9 Apply for building, land, and utility permits														
1.10 Recruit an international construction supervision training specialist														
1.11 Recruit 10 individual construction supervision specialists														
1.12 Train construction supervision specialists														
1.13 Supervise civil works on school and kindergarten sites														
1.14 Recruit an environment specialist														
1.15 Implement, monitor, and report on environment management plans														
1.16 Sign civil works (including equipment) contracts for school construction and expansion														
1.17 Start civil works for school construction and expansion														
1.18 Conduct civil works completion inspections for the constructed and expanded schools														
1.19 Sign civil works (including equipment) contracts for 240 seat kindergartens														
1.20 Start civil works for 240 seat kindergartens														
1.21 Conduct civil works completion inspections for the constructed and expanded 240 seat kindergartens														
1.22 Sign civil works (including equipment) contracts for other kindergartens														

Activities	2017		2018				2019				2020/2021			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.23 Start civil works for other kindergartens														
1.24 Conduct civil works completion inspections for the constructed or expanded other kindergartens														
1.25 Prepare and advertise procurement packages for school and kindergarten furniture for 2018														
1.26 Sign contract for school and kindergarten furniture for 2018														
1.27 Deliver furniture to schools and kindergartens for 2018														
1.28 Prepare and advertise procurement packages for school and kindergarten furniture for 2019														
1.29 Sign contract for school and kindergarten furniture for 2019														
1.30 Deliver furniture to schools and kindergartens in 2019														

NOTE - This schedule is tentative and will be finalised based on each site as well as estimated schedule indicated by bidders for each contract.

8.0 INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

8.1 Consultation Process

337. During the project formulation stage, MECSS has conducted a project scoping exercise and reconnaissance survey of the existing system. Accordingly, during public consultation sessions, considerable dialogue had been held between MECSS representatives, individuals, and groups from the community to make them aware of the proposed project.

338. The project-affected community residing beside the proposed Schools/Kindergartens has already gained a reasonable knowledge about the potential grievances, which may arise in the future. The community were also informed about the Grievance Redressal Mechanism (GRM), which will be followed by MECSS as per ADB SPS 2009 guidelines.

8.2 Consultation Details

339. During the site visits, the officials and consultants made numerous observations and held discussions with school managements concerned which would be helpful for project design: (i) location of proper access roads, laydown area for materials to be used by the construction companies to use without disturbing the school working and minimizing utilization of playground areas, (ii) avoidance of underground existing pipes for water, heating, sewage etc. at these proposed work sites, (iii) right of way for construction vehicles and provide traffic safety during construction to local residents living adjoining these schools, (iv) traffic caused by construction of new buildings/expansion projects by use of concrete, dump trucks etc. transporting materials inside school premises; traffic safety for children and their parents during operations of school in normal work hours (September 2017 onwards), (vi) lack of safety equipment such as smoke alarms in most old buildings and the need for adequate firefighting extinguishers and imparting evacuation drills and emergency response procedures training, (vii) distances of these schools from non-sensitive biodiversity areas and cultural heritage sites to ensure no impact, (viii) dust and noise emissions from the construction subprojects and their impacts on school children and apartment dwellers adjoining the school area, (ix) noises from any surroundings areas during construction and operations, (x) avoid any shadow projection onto adjoining buildings due to new structures to be constructed as part of this project, (xi) any banned substances generated as part of any expansion project such as asbestos etc., (xii) emissions from coal based heating and water boilers (some cases), (xiii) if insulation works are required in schools to ensure energy efficiency, i.e. Loss of heat due to old walls (xiv) if any associated facilities are present, and (xv) check climate change vulnerability of the location.

340. The team along with district officials and schools shall also conduct group discussions with the public residing in these subproject areas to sensitize them about project activities, their impacts and get their suggestions between January 26 to March 18, 2016. **Annexure 6** indicates a summary of public consultations conducted during the field survey along with socio economic profile in the project affected area.

341. Consultations were carried out with various stakeholders such as MECSS officials, Government of Mongolia officials, relevant land departments and the sub divisional magistrate of the project area. As part of the assessment, approximately 3150 representatives from surrounding households, entities, apartments/buildings have been surveyed/interviewed to collect the data during the months of January/March 2017. These discussions were carried out at almost at nearby apartments/buildings that were situated in the vicinity of schools.

342. The resident community consulted was requested to air their opinions freely, on the project, its impact, and suggestions for mitigating adverse impacts. People participated in voluntary public consultation sessions to express their view about the proposed project. No major environmental issues were raised during the consultation process.

343. **Table 8.1** provides summary of public consultations. **Table 8.2** summarizes some follow-up actions recommended by the consultees.

Table 8.1 Summary Findings of Public Consultations

#	Issues Discussed	Summary Responses and Suggestions from the Participants
1	Do you support for the construction at school.	Almost 100% of participants would support the new construction and expansion of schools/kindergartens. They expressed that accessibility to kindergartens/schools in vicinity of their homes is an important necessity. All schools and kindergartens have exceeded the number of students per their design capacity. The residents of these areas wished to have more increased access/admissions to school/kindergarten in their area.
2	What is educational status of your community?	Mostly people who reside in these areas have lower-than-average income or minimum income; completed secondary education and or even some are illiterate according to local social surveys conducted by social coordinator of the schools/kindergartens.
3	Will this construction at School/ Kindergartens give any negative impact to your apartment complex?	Majority or more than 905 of participants were explaining that there won't be any negative impacts on them regarding the noise and dust caused by the construction works since our residential area is located nearly 70-200 meters away from the school grounds. Since the playground outside kindergarten is large and spacious, no negative impact would be exerted when constructing a building. Teachers and the other employees see no negative effects. Some participant expressed that though no negative effects are expected, but safety norms and standards should be followed. At one meeting, 77% answered “no impacts” to children due to construction at the kindergarten; 2% answered there would not be significant negative effects. 10% answered there would be some negative effects and about 11% did not answer.
4	What benefits do you perceive from this construction?	Pre-school age children at home will be provided with an opportunity to study at kindergarten due to increased capacity. Many parents wanted to send their children to kindergartens, to be provided with opportunity to start children’s education and correct upbringing, and also take up a job for a better life if the new kindergartens are constructed.
5	Would you be have any problem with school if construction	Participants see the construction as a temporary difficulty and are willing to cope with any problem

#	Issues Discussed	Summary Responses and Suggestions from the Participants
	company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	for development of school/kindergarten in the future. They felt that the construction company should be accountable for the works and the environment should be rehabilitated after the installation of utilities facilities/pipes etc. is completed. After the construction, road must be maintained due to damages occurred by trucks and other machinery. Possible difficulties such as power shortage and closing of roads can take place when installing utilities facilities must be attended immediately by construction company. At one meeting 67% of the participants answered "it can be managed temporarily", "it is ok during summer time" and a "big issue is being solved" expressing that there would not be any conflicts. 7% answered there would be issues. Remaining 26% did not answer the question.
6	Would you be having any construction causes some dust during digging and storing in the school premises?	Dust and noise will not be cause issues for children and kindergarten teachers, because they will be on holiday during construction period. Apartments are located about 120-250m distance from construction site. It would be better if construction work is conducted after children and elder people are off to their summer houses. Other than this, there will not be a problem. Infants might have difficulties to sleep due to loud noise as well as dust from construction site. So, construction work must be finished at scheduled hours.
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	Most of participants expressed that since it's a development work and there should be no problems. Offices and service establishments around the areas work during the day time, so they won't be having any difficulties. Transportation of building materials won't inconvenience the residents as even now many construction activities are ongoing without taking care residents' comfort. The construction will offer no hindrance since the main way to kindergarten and special fencing are available. They expressed that the construction work must be completed within the time specified.
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	No hindrance since the building of kindergarten is short and construction area is large. Also, most households go to their summer house or travel around countryside which results in less number of residents during summertime thus we consider the problems relating to construction work will be minimal. Working hours need to finish before the night. The majority of the residents reside at their summer camp house during that time, so there should be no problem there. At a meeting, some participants said that there will be no problems,

#	Issues Discussed	Summary Responses and Suggestions from the Participants
		majority of the residents will be out of the city at their summer camp houses, and kindergarten for our children is a vital need for their community. They expressed willingness to work in harmony with construction company if it works with proper procedures.
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	Most residents are desperate for having a kindergarten for years, they don't like to complain about it. Heavy and large vehicle could cause some traffic issues, proper transportation vehicles needs to be used by the construction company. Disposal and the removal process of all the wastes should be carried out daily. Every damage on nature caused by the construction work should be restored afterwards. Open loading wastes and failing to follow the waste removal procedures can cause some negative impacts. If all the waste removal procedures carried out properly, there is no problem. All the accidents while transporting materials such as things falling off or dragged through the road must be avoided. If the construction company performs well and responsibly, they don't have any negative comment or impression.
10	Are you concerned about Health & Safety of residents and children during the construction?	There are no concerns because there is plenty of space where kindergarten building will be constructed and it has safe distance from their residences. However, there might be some cases where livestock or animals might fall into the excavated holes which would require proper fencing for preventing such incidents. For children, the construction company must set up safety zone parameter, put warning signs. Since the main construction work will be carried out during the summer break (June to September), they feel that there may not be any problems during this time. However, during other months, the children will be going to their schools, so they are worried. They recommended that proposals from parents in tandem with residents and governors must be taken up by the construction company regarding warnings, safety precautions to ensure safety and health of children.
11	Would you like to participate in safety monitoring and controlling activities?	Most of participants want to be involved if they are free during that time. Service establishment employees expressed that they won't be involved on this matter. Governor's office expressed their readiness to provide professional support such as giving guidelines and evaluation through their civil servants during the construction work.
12	Would you be willing to form a Committee to help to school	If deemed necessary it can be either voluntarily or in accordance with the appropriate procedures.

#	Issues Discussed	Summary Responses and Suggestions from the Participants
	during the construction period?	Private sector organizations were not willing to be involved in a committee or a council activities. Citizens felt that it would be better if that type of committee or council is formed for active involvement. At a meeting, 84% of the participants answered “inspection committee should be established” and “will take part in it if possible”. 7% answered “inspection committee is not wanted”. 9% did not answer.
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	Main concern was that the environment in the area should be rehabilitated after construction. The area should be sprinkled with water to prevent from causing allergies to the people during the construction. Green area should be established. In one meeting 68% of the participants answered “trees should not be cut”, “not concerned because it is conducted during children’s holiday” and “construction work should be conducted by taking the area where children will play into account”. 11% answered “nothing to be considered”. Outside of the kindergarten should be maintained. Vegetation and establishment of green area must be carried out satisfactorily and felt that it should be carried out by professional people, not a construction company. Construction wastes should be removed in a timely manner. Signs with pictures that can be understood by children should be placed around construction waste area. Soum Government Administration expressed interest in cooperating with the construction company regarding provision of construction materials such as sand, cement and water. Soum have number of natural attractions and receives many tourists. For this reason, there should be a dedicated road for transportation of construction materials. Heavy equipment might damage the surface of the soil. They do not have a paved road except for the main road.
14	If you have any problem caused by this school/kindergarten construction, whom would you like to contact? (Construction company, school, urban department etc.)	70% of the participants answered “construction company”. 4% answered “administration of the district”. 21% answered “administration of the kindergarten”. They felt that clear information should be given on the issue by the Construction company and local administration organizations, district administration, educational department and other applicable organizations such as Environment Inspector or Educational Department of Ulaanbaatar. It should be informed to the administration of the province, governor of the bag and/or the construction company.
15	What would you expect to improve at current school building (such as	At most of consultations, participants said that hot water pipelines must be renewed and reinstalled,

#	Issues Discussed	Summary Responses and Suggestions from the Participants
	changing coal heating to electric heating etc.)	and sewage pipelines must be replaced, outside facade of the current building need to be renovated, improvement of the surrounding areas, adding more playground for children. Some of the participants suggested for "restructuring classrooms, maintenance for ceiling, walls, other parts, playground, physical training hall, plumbing maintenance, heat loss, roof, kitchen, auditorium, extension of the building and rooms and ventilation system".
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	Main comment was that construction work such as blocking the road by heavy vehicles, digging and excavating holes and trenches should not affect the business of the area. A problem will not be caused to the shops, business and service centers that are located around kindergarten building. At some locations, there will be no problem, because there are no shops, business, industrial or service centers in/near the school area. They felt that the area was a cultural place of the province, thus construction works should be managed when the cultural place is operating.
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	There are no so many NGOs and civil society organizations. However, at a meeting held at Ulaanbaatar, participants mentioned several NGOs but had not knowledge fi any one NGO works in this area. At consultations held in *Soums* and *Aimags*, participants expressed that environmental protection works are actively conducted in these areas. They have public servants, state inspector in charge of environmental matters of *Soums* and inspector in charge of environmental matters of professional inspection agency.

Table 8.2: Summary of Recommendations by the Consultees

#	Issue	Responsible Party
1	Introducing of EMP back to communities surrounding the sites for improving their knowledge about their responsibilities and participation in monitoring is important	Civil works contractors and School using Advertising budget of EMP
2	Traffic Management • The Construction company to ensure proper road safety for resident's children during construction. • To conduct transportation using a dedicated road in order to ensure safety of the citizens; • To park the vehicles in the dedicated parking space • If Ger area street road must be used for transportation, the least populated street shall be used	Civil works contractors adhere to EMP

3	Noise Not to conduct works that emit loud noise during night time	Civil works contractors to adhere to EMP and also to citizen council requirements
4	A Committee of citizens, schools and MECSS for inspecting the quality of the construction and process of following safety procedures during construction.	MECSS and School Management to form citizen council
5	• New building of the kindergarten must meet the standards and use quality construction materials. • Ventilation, heating and plumbing system should be taken into serious consideration. • Complete external landscaping and maintenance must be done e.g. fence, road, street lighting and play ground and equipment	Architect, MECSS and Civil works contractors

Locations and participants

344. Consultation meetings were held at 33 sites in total out of them 4 sites will be under new construction where the administrations, directors of the existing school / kindergartens assisted the team. However, for 16 new construction kindergarten/school locations, consultations could not be done as there was no social or technical person has been appointed as well as lack of time availability and lack of organizers at these new locations.

345. **Annexure 6** gives the names of all participants of the public consultation conducted by the team. Consultation details for the 33 sites is also attached (Some documents are being translated). **Table 8.3** provides a summary of location and number of participants for the consultations.

Table 8.3 Location and Number of Participants of Consultations

No	Sub-Project components	Location	Number of Participants of Consultations		
			Total	Male	Female
1	2	3	4	5	6
A	Kindergartens				
A 1	Kindergartens under expansion				
1	Kindergarten No. 66	UB, Bayngol, 2nd khoroo.	50	21	29
2	Kindergarten No. 100	UB, Bayngol District, 3rd khoroo.	57	37	20
3	Kindergarten No.164	UB, Bayngol District, 4th khoroo.	51	21	30
4	Kindergarten No.88	UB, Bayngol, 18th khoroo.	414	193	221
5	Kindergarten No.22	UB, Baynzurkh, 1st khoroo.	58	29	29
6	Kindergarten No.8	UB, Baynzurkh District, (16th khoroo.	125	31	94
7	Kindergarten No.82	UB, Baynzurkh District, 16th khoroo.	74	28	46
8	Kindergarten No.108	UB, Chingeltei District, 6th khoroo.	-	-	-
9	Kindergarten No.65	UB, Khan-Uul District, 2nd khoroo.	468	191	277
10	Kindergarten No.72	UB, Khan-Uul District, 2nd khoroo.	33	6	27
11	Kindergarten No.12	UB, Khan-Uul District, 4th khoroo.	-	-	-
12	Kindergarten No.84	UB, Songinokhairkhan District, 6th khoroo.	57	35	22
13	Kindergarten No.104	UB, Songinokhairkhan District, 12th khoroo.	314	139	175
14	Kindergarten No.107	UB, Songinokhairkhan District, 14th khoroo.	111	26	85
15	Kindergarten No.110	UB, Songinokhairkhan District, 15th khoroo.	453	182	271
16	Kindergarten No.158	UB, Songinokhairkhan District, 24th khoroo.	23	5	18
17	Kindergarten No.176	UB, Songinokhairkhan District, 31st khoroo.	24	7	17
18	Kindergarten No.68	UB, Sukhbaatar District, 3rd khoroo.	45	14	31
19	Kindergarten No.160	UB, Sukhbaatar District, 3rd khoroo.	18	8	10
20	Kindergarten No.17	UB, Sukhbaatar District, 10th khoroo.	45	13	32

No	Sub-Project components	Location	Number of Participants of Consultations		
			Total	Male	Female
1	2	3	4	5	6
21	Kindergarten No.6	Dornod, Kherlen Soum, 3rd Bag	57	26	31
A 2	**Kindergartens under new construction**				
1	New kindergarten (deleted after due diligence)	UB, Bayngol District, 17th khoroo.	-	-	-
2	New kindergarten (deleted after due diligence)	UB, Baynzurkh District, 17th khoroo	-	-	-
3	New kindergarten	UB Baynzurkh District, 24th khoroo.	57	26	31
4	New kindergarten	UB,Baynzurkh District, 25th khoroo	-	-	-
5	New kindergarten	UB, Khan-Uul District, 14th khoroo.	-	-	-
6	New kindergarten	UB, Nalaikh District, 1st khoroo.	-	-	-
7	New kindergarten	UB, Nalaikh District, 3rd khoroo.	-	-	-
8	New kindergarten	UB, Nalaikh District, 7th khoroo.	-	-	-
9	New kindergarten (deleted after due diligence)	UB, Songinokhairkhan District, 5th khoroo.	-	-	-
10	New kindergarten	UB, Songinokhair-khan District, 25th khoroo.	-	-	-
11	New kindergarten	Gobisumber, Sumber Soum, 3rd Bag.	234	65	169
12	New kindergarten	Dornogobi, Sainshand Soum, 7th Bag.	4	1	3
13	New kindergarten	Orkhon, Erdenet city	49	18	31
14	New kindergarten	Bulgan, Teshig Soum,	105	20	85
15	New kindergarten	Baynkhongor, Bayan-khongor Soum, 4th Bag.	68	43	25
B	**Schools:**				
B 1	**Schools under expansion:**				
1	School No.51	Bayngol District, UB	48	16	32
2	School No.18	UB, Khan-Uul District	-	-	-
3	“Erdmiin Orgil” Complex	UB, Nalaikh District	-	-	-
4	“Ireedui” Primary School	UB, Songinokhairhan District.	-	-	-
5	“Ireedui” Secondary School	UB, Songinokhairhan District.	120	38	82
6	School No.122 (green school)	UB, Songinokhairhan District, 22nd khoroo.	-	-	-
7	School No.6	UB, Sukhbaatar District	-	-	-
8	Khantaishir	Govi-Altai, Altai town.	113	39	74
9	Bogd Soum,	Uvrukhangai, Bogd Soum,	58	19	39
10	Baruunburen (deleted after due diligence)	Selenge, Baruunburen Soum.	27	13	14
B 2	Schools under new construction :				
1	New school	UB, Baynzurkh, 14th khoroo.	-	-	-
2	New school	Songinokhairhan, 7th khoroo.	-	-	-
3	New school	Darkhan, Mangirt, 15th Bag.	20	4	16
		GRAND TOTAL	**3380**	**1314**	**2066**

8.3 Information Disclosure

346. In line with ADB’s Public Communications Policy, MECSS is required to ensure that relevant project information about environment safeguard issues is made available during the initial stages to affected people and other stakeholders, including the general public at *Aimag*/district headquarters where it is publicly accessible in Mongolian language and any other vernacular local language. ADB and MECSS will also upload and display the IEE

documents for their respective websites.

347. Incorporation of the environmental concerns of affected persons (APs) through the public consultation in the decision-making process will avoid or minimize conflict situations during the implementation process as well as enable them to provide meaningful inputs into the project design and its implementation. During implementation period, MECSS through the schools/construction company can conduct public consultation and information disclosure through public meetings and notice.

9.0 GRIEVANCE REDRESS MECHANISM

9.1 Grievance Channels (Framework)

348. During public consultation sessions of the IEE study, the discussions with apartment dweller groups and individuals were conducted to make them aware of the proposed project. Thus, the project-affected community residing beside the proposed Schools/Kindergartens has already gained a reasonable knowledge about the potential grievances, which may arise in future.

349. The public was informed that there will be no involuntary acquisition of land, or involuntary restrictions on land use which result in physical displacement and economic displacement. After construction of School/kindergarten, the land used will be restored back to its original use.

9.2 Time Frame

350. A community awareness programme must be conducted one month prior to construction by the Project Implementation Unit (PIU) of MECSS regarding the scope of the project, procedure of construction activities, utility of resources, identified impacts and mitigation measures. These awareness programmes will help the community to resolve problems, clarify their distrusts related to the proposed project at initial stage. The Community should be informed about the Grievance Redress Mechanism (GRM), which is already established as per MECSS and Government of Mongolia procedure for making complaints, including the place and the responsible person to contact in practical way in this regard. Almost all the stakeholders related to the GRM will also be aware of the established grievance process, the requirement of grievance mechanism, goals, benefits, relevant laws regulations etc.

9.3 The Grievance Redress Mechanism

351. MECSS does not have any specific Environment or Social Safeguards Policy currently. ADB procedures require MECSS to establish a Grievance Redressal Mechanism (GRM) for Environment having suitable grievance redress procedure for the project affected persons. The GRM would address affected persons' concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to the affected persons at no cost. This GRM consists of a Grievance Redress Committee (GRC) for Environment headed by the project director of MECSS who is a permanent official of the EA and supported by Ulaanbaatar/Aimag education officer, and PIU environment specialist. The committee consists of the following constitution as listed in **Table 9.1:**

Table 9.1: Constitution of Grievance Redress Committee

1	Project Director	Chairman
2	Ulaanbaatar/Aimag Education officer/School Management	
3	PIU Environment Specialist	
4	Citizens' Council representative and one women representative	
5	Representative of Construction Company	
6	Affected Person	

352. This Grievance Redress Mechanism (GRM) would provide an effective approach for resolution of complaints and issues of the affected person/community. Project Implementation Unit (PIU) shall formulate procedures for implementing the GRM and PIU's engineering staff shall undertake GRM's initiatives that include procedures of

taking/recording complaints, handling of on-the-spot resolution of minor problems, taking care of complainants and provisions of responses to distressed stakeholders etc. paying particular attention to the impacts on vulnerable groups.

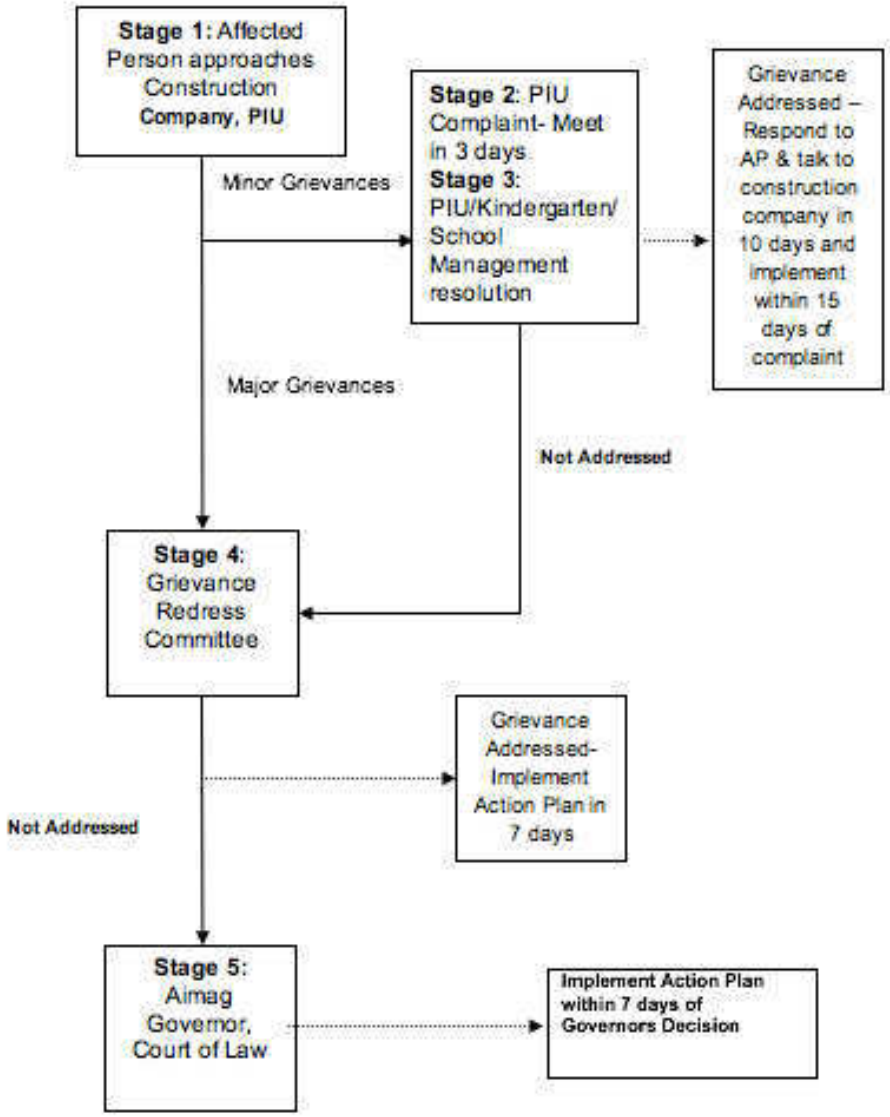
353. During Construction period, the GRM can have multiple tiers for grievance redress i.e. at Construction Company level, the district school/kindergarten administrations levels; and/or the PIU level, or by courts.

- Stage 1: **Access to GRM**. If a concern arises, the affected person (AP) [residents, government official, worker of contractor, etc.] may resolve the issue of concern directly with the contractor, or make his/her complaint known to either the PIU directly, or through the bagh or soum, whichever level of authority he/she is most comfortable with;
- Stage 2: **Official Complaint to PIU**. If a complaint is filed at bagh/soum level, the bagh/soum representative will submit complaint to the PIU. For each complaint, the PIU must assess its eligibility. If the complaint is not eligible, e.g. related to an issue outside the scope of the project, PIU will provide a clear reply within five working days to the AP;
- Stage 3: **PIU Complaint Resolution**. The PCU will register the eligible complaint informing the respective aimag, contractors, the PMU and ADB. The PIU, with support of the loan implementation consultant will take steps to investigate and resolve the issue. This may involve instructing the construction company to take corrective actions. Within seven days of the redress solution being agreed upon, the contractor should implement the redress solution and convey the outcome to the PIU and notify ADB;
- Stage 4: **GRC Meeting**. If no solution can be identified by the PIU or if the AP is not satisfied with the suggested solution under Stage 3, within two weeks of the end of Stage 3, the PIU will organize a GRC meeting under the auspices of the head of PIU Coordinator, local aimag/district officials, citizen's council, women representative, contruction company representative as well as the environment specialist of PIU is present. The meeting should result in a solution acceptable to all, and identify responsibilities and an action plan. The contractor should implement the agreed redress solution and convey the outcome to the GRC within seven working days;
- Stage 5: **Aimag Governor Resolution/Court of Law**. If the GRC meeting cannot resolve the problem, and the AP is unsatisfied, the PIU will set up a meeting with the aimag Governor to identify a solution. The GRM will not impede an AP's desire to access judicial remedies.

354. The PIU will keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome. . The PIU will issue public notices to inform the public within the project area of the GRM. The PIU's phone number, fax, address, email address will be disseminated to the people at the bagh and soum levels. The PIU will have facilities to maintain a complaints database and communicate with construction company, construction supervision engineers, the environmental inspectors of the local offices of GASI, local aimag environmental authorities and representatives of affected soums and baghs. Procedures and timeframes for the grievance redress process are as follows and shown in **Figure 9.1.**

355. During operations, if any issues are not addressed in the GRM, the grievance can be resolved by referring to ADB's loan covenants.

Figure: 9.1 - Flow chart showing Grievance Redress Mechanism for Environment



* (Affected person can take the matters to Court of Law at any point of GRM)
PIU-Project Implementation Unit

10.0 CONCLUSION AND RECOMMENDATION

356. This report assessed various existing environmental parameters in and around the sub-project and the actions planned to minimize any significant negative impact. As part of Output 1, the project will support physical construction, expansion, and rehabilitation of education facilities. It was found that the existing designs used for the construction and expansion of kindergartens and schools in Mongolia are reasonably sound.

357. The sub-project sites are not located near any sensitive areas as well no significant historical and cultural areas. The project will not cause any significant adverse environmental impacts during construction and expansion of school/kindergarten buildings. Rather, the project activity will have a positive impact as indicated earlier.

358. Impacts are manageable and can be managed cost effectively - Environmental impacts are likely to result from the proposed construction of school buildings. Careful mitigation and monitoring, specific selection criteria and review/assessment procedures for subprojects have been specified to ensure that minimal impacts take place. The detailed design would ensure inclusion of any such environmental impacts that could not be specified or identified at this stage are taken into account and mitigated where necessary. Those impacts can be reduced through the use of mitigation measures such as correction in work practices at the construction sites, or through the careful selection of sites and access locations.

359. The limited project impacts are associated with drainage congestion/water logging, dust and noise pollution, occupational health hazards, risk from poor sanitation system, improper lighting and ventilation system in school, and management of labor at the site. Moreover, most of the associated impacts are expected to be limited to the construction phase, and will therefore be temporary in nature. Regular monitoring of the recommended mitigation measures shall also be carried out during the implementation phase of the project.

360. The selected lands for all new schools are located within the government land. Thus, acquisition of land will not be required from the surrounding communities. Since proposed for are barren, no need for removal of trees for the construction of new schools/kindergartens. No endangered or protected species of flora or fauna are reported at any of the subproject sites.

361. The proposed project will have number of positive impacts and negative impacts to the existing environment as follows:

- Construction of state of the art new building for schools in Mongolia is the main positive impact.
- Environment pollution due to cut and fill operations, transportation of construction materials, disposal of debris, disturbance to the school activities, nuisance from dust, noise, vehicle fumes, black smoke, vibration etc. due to construction activities are the short term negative impacts due to proposed project.
- Although there is negligible removal of waste, noise, health and safety, trees for the Schools/Kindergartens, which is the main negative impact to the proposed project area.

362. It is required to establish baseline parameters in the beginning to monitor changes of the quality of water, air, soil and noise during the construction and operation periods.

363. Proper GRM will have to be implemented by MECSS to overcome public inconvenience during the proposed project activities.

364. EMP and Environment Monitoring Plan has been prepared and attached as **Annexures 2 and 3** respectively. One round of public consultations was conducted. The results indicate broad support for the project based on perceived economic and social benefits. Most impacts are expected to occur during the construction phase and are considered to be of a temporary nature. The school construction sites were carefully selected after undergoing an options assessment. This enabled the architects of blue prints for each building to bypass important underground utilities water supplies and resources nearby any sensitive ecological areas.

365. Environment impact analysis have been done with various criteria like demographic factors, climate and natural habitat, community and employee health and safety etc. based on the impact analysis. It was found that there is no adverse impact on any natural existing land resources nor will affect the regular life of people resident in the subproject area. The environment impact associated with Schools/Kindergartens project is limited to the extent of construction phase and can be mitigated through a set of recommended measures and adequate provision for environment and social impact which cover monitoring, measuring and mitigation. The main project impacts are associated with clearing of digging, waste management and excavation and movement of soils.

366. The IEE performed is adequate for purposes of project implementation. Based on the environmental assessment and surveys conducted for the project, the potential adverse environmental impacts can be mitigated to an acceptable level by adequate implementation of the mitigation measures identified in the EMP. Adequate provisions are being made in the project to cover the environmental mitigation and monitoring requirements, and their associated costs.

367. The potential cumulative and residual impacts of the sub-components as a whole indicate the project classifies as a Category “B”, in accordance with ADB’s Safeguards Policy Statement 2009 and MET Guidelines of Mongolia. Thus, IEE report has been prepared for the project. Thus, a full Environmental Impact Assessments (EIA) for the project is not required. The project is not considered highly sensitive or complex.

ANNEXURES

Annexure – 1: Inventorization of Schools/Kindergarten

LIST OF SCHOOL AND KINDERGARTEN EXPANSION AND CONSTRUCTION SITES

Table A1.1 Schools

No.	Location	Expansion/New Construction	School No.
1	Bayngol District, UB	Expansion	School No.51
2	Baynzurkh District, UB (14-r khoroo)	New Construction	
3	Khan-Uul District, UB	Expansion	School No.18
4	Nalaikh District, UB	Expansion	"Erdmiin Orgil" Complex
5	Songinokhairhan District, UB (7-r khoroo)	New Construction	
6	Songinokhairhan District, UB	Expansion	"Ireedui" Primary School
7	Songinokhairhan District, UB	Expansion (additional floor)	"Ireedui" Secondary School
8	Songinokhairhan District, UB (22-r khoroo)	Expansion	School No.122 (green school)
9	Sukhbaatar District, UB	Expansion	School No.6
10	Darkhan Soum, Darkhan (Mangirt, 15-r bag)	New Construction	
11	Altai Soum, Govi-Altai (Khantaishir)	Expansion	
12	Bogd Soum, Uvrukhangai	Expansion	
13	Baruunburen Soum, Selenge	Expansion	Dropped out due to lack of land space.

Table A1.2 Kindergartens

No.	Location	Expansion/New Construction	Kindergarten No.
1	Bayngol District, UB (2-r khoroo)	Expansion	Kindergarten No.66
2	Bayngol District, UB (3-r khoroo)	Expansion	Kindergarten No. 100
3	Bayngol District, UB (4-r khoroo)	Expansion	Kindergarten No.164
4	Bayngol District, UB (17-r khoroo)	New Construction	Dropped out due to the land allocated for this site locates in between 3 kindergartens (2 of them newly constructed) overlapping with their land and underground utility infrastructure.
5	Bayngol District, UB (18-r khoroo)	Expansion	Kindergarten No.88

No.	Location	Expansion/New Construction	Kindergarten No.
6	Baynzurkh District, UB (1-r khoroo)	Expansion	Kindergarten No.22
7	Baynzurkh District, UB (16-r khoroo)	Expansion	Kindergarten No.8
8	Baynzurkh District, UB (16-r khoroo)	Expansion	Kindergarten No.82
9	Baynzurkh District, UB (17-r khoroo)	New Construction	Dropped out due to the resettlement issue.
10	Baynzurkh District, UB (24-r khoroo)	New Construction	
11	Baynzurkh District, UB (25-r khoroo)	New Construction	
12	Chingeltei District, UB (6-r khoroo)	Expansion	Kindergarten No.108
13	Khan-Uul District, UB (2-r khoroo)	Expansion	Kindergarten No.65
14	Khan-Uul District, UB (2-r khoroo)	Expansion	Kindergarten No.72
15	Khan-Uul District, UB (4-r khoroo)	Expansion	Kindergarten No.12
16	Khan-Uul District, UB (14-r khoroo)	New Construction	
17	Nalaikh District, UB (1-r khoroo)	New Construction	
18	Nalaikh District, UB (3-r khoroo)	New Construction	
19	Nalaikh District, UB (7-r khoroo)	New Construction	
20	Songinokhairkhan District, UB (5-r khoroo)	New Construction	Dropped out due to not availability of free land
21	Songinokhairkhan District, UB (6-r khoroo)	Expansion	Kindergarten No.84
22	Songinokhairkhan District, UB (12-r khoroo)	Expansion	Kindergarten No.104
23	Songinokhairkhan District, UB (14-r khoroo)	Expansion	Kindergarten No.107
24	Songinokhairkhan District, UB (15-r khoroo)	Expansion	Kindergarten No.110
25	Songinokhairkhan District, UB (24-r khoroo)	Expansion	Kindergarten No.158
26	Songinokhairkhan District, UB (25-r khoroo)	New Construction	
27	Songinokhairkhan District, UB (31-r khoroo)	Expansion	Kindergarten No.176
28	Sukhbaatar District, UB (3-r khoroo)	Expansion	Kindergarten No.68
29	Sukhbaatar District, UB (3-r khoroo)	Expansion	Kindergarten No.160
30	Sukhbaatar District, UB (10-r khoroo)	Expansion	Kindergarten No.17
31	Sumber Soum, Gobisumber	New Construction	
32	Sainshand Soum, Dornogobi (7-r bag)	New Construction	
33	Orkhon	New Construction	
34	Teshig Soum, Bulgan	New Construction	

No.	Location	Expansion/New Construction	Kindergarten No.
35	Baynkhongor Soum, Baynkhongor	New Construction	
36	Dornod (Kherlen, 3-r bag)	Expansion	Kindergarten No.6

Table A1.3 School Physical Features

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A1. Kindergarten under expansion															
1	KG # 66	BGD, 2nd Khoroo,	N47^{0}54'55.7 E106^{0}53'15.5	Expansion by 2 floor new building connecting to old one. 1400m^2 land is available.	Current building is 3 floor, but the 3rd floor belongs to "Ikh Zasag" college.	FFH, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
2	Kindergarten #100	Bayngol,	N47^{0}54'11.9 E106^{0}53'48.8	Expansion by 2 floor new building. Has a blue print, but the design of connection between new/old buildings must change.	One floor building constructed by brick in 1985. 2000m^2 land is available.	None	Yes	-	-	Yes	-	-	Yes	-	-
3	KG # 164	BGD, 4th Khoroo,	N47^{0}54'42.1 E106^{0}52'49.7	Expansion by 2 floor new building with 7 classroom 180 children and needs 480 m^2. Has no blue print.	Current building is 2 floor building constructed in 1973. Kindergarten has 9213 m^2 area land.	Fire-fighting hydrant (FFH). Has no alarm	Yes	-	-	Yes	-	-	Yes	-	-
4	KG # 88	BGD, 18th Khoroo,	N47^{0}55'17.8 E106^{0}53'05.8	Expansion by 2 floor building. Has no blue print. More than 2500	Current building is 1 and 2 floor, brick. Constructed in	Fire-fighting hydrant (FFH)	Yes	-	-	Yes	-	-	Yes	-	-

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				m^2 is available for expansion.	1982. KG has 10118 m^2 area.	Has no alarm									
5	KG #22	BZD, 1st Khoroo	N47^{0}55’34.6 E 106^{0}56’16.4	Expansion by new 2 floor building.	Two floor, constructed in 1970. Has 3400m^2 land.	Fire-fighting hydrant	Yes	-	-	Yes	-	-	Yes	-	-
6	KG # 8	BZD, 16th Khoroo	N47^{0}55’14.7 E106^{0}58’29.5	Expansion by new building	Exsisting 2 floor building established in 1957.	-	Yes	-	-	Yes	-	-	Yes	-	-
7	KG #82	BZD,16th khoroo.	N47^{0}55’10.6 E106^{0}58’57.8	Expansion will be a separate two floor new building	Has 2 floor building, established in 1980, KG has 7420 m^2 land	Fire-fighting hydrant	Yes	-	-	Yes	-	-	Yes	-	-
8	KG #108	CHD,6th khoroo.	N47^{0}55’34.4 E106^{0}54’18.1	The expansion will be separate 2 floor building with capacity of 150 children.	Has 2 floor building, established in 1978, in the	Fire-fighting hydrant	Yes	-	-	Yes	-	-	Yes	-	-
9	KG # 65	KUD, 2nd Khoroo	N47^{0}54’05.6 E106^{0}54’13.4	Expansion by 2 floor new building. Blue print is ready.	Two floor, brick. Constructed in 1972.	None	Yes	-	-	Yes	-	-	Yes	-	-
10	KG # 72	KUD, 2nd Khoroo	N47^{0}54’05.0 E106^{0}54’01.0	Expansion by 2 floor new building. 900m^2 land is available.	Two floor building constructed by brick in 1976.	None	Yes	-	-	Yes	-	-	Yes	-	-
11	KG # 12	Khan Uul,	N47^{0}52’23.7 E106^{0}49’59.3	Expansion by new building. 1200m^2 land is available.	1 Floor, brick and 3 Gers used as classroom	None			Yes		Yes	Electric heating in Gers.	-	-	Yes

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12	KG # 84	SKD, 6th Khoroo	N47^{0}56'00.0 E106^{0}49'21.1	Expansion by 2 floor new building with 12 classes for 280 children. Has no blue print.1000 m^2 land is available.	KG constructed in 1948. The building is not purposed for kindergarten. KG has 3422 m^2 area. KG is taking care 240 children in 7 classes, but 2 of them are in Ger.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
13	KG # 104	SKD, 12th Khoroo	N47^{0}54'57.7 E106^{0}51'09.1	Expansion by 2 floor new building connecting to old one. 3000 m^2 land is available.	Kindergarten's building constructed in 1986 by brick. KG has 10172 m^2 area.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
14	KG # 107	SKD, 14th Khoroo	N47^{0}54'52.6 E106^{0}50'35.7	Expansion by 2 floor new building. 1400 m^2 land is available.	KG constructed in 1986. KG has 8659.6 m^2 land.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
15	KG # 110	SKD, 15th Khoroo	N47^{0}54'55.5 E106^{0}50'20.3	Expansion by 2 floor new building with 12 classes for 280 children. Has no blue print.1400 m^2 land is available.	KG constructed in 1987 by brick. KG has 10026 m^2 area.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
16	KG # 158	SKD,24th	N47^{0}57'36.1	Expansion by 2	Established in	None	-	Has a	-	-	-	Has a	-	needs	-

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Khoroo	E106^{0}48’32.1	floor new building with 8 classroom for 280 children, replacing current 4 Ger classrooms. Has no blue print.1100 m^2 area land is available for expansion.	2011. Has 2600 m^2 area. Taking care 314 children, out of them 114 children are in 4 Ger classes.							possibility to install electric heating			
17	KG # 176	SKD,31st Khoroo	N47^{0}56’01.4 E106^{0}51’09.2	Expansion by additional floor on the top of the building with capacity of 2 classrooms and 50 children.	The KG is constructed in 2011. Capacity is 2 classrooms, 50 children. The KG has 125 children.	None	-	-	Yes	-	Yes	-	-	Yes	-
18	KG # 68	SBD, 3rd Khoroo	N47^{0}54’41.4 E106^{0}53’56.1	Expansion by 2 floor new building. 760m^2 land is available.	Two floor, brick. Constructed in 1973.	None	Yes	-	-	Yes	-	-	Yes	-	-
19	KG # 160	SBD, 3rd Khoroo	N47^{0}54’35.1 E106^{0}43’25.1	Expansion by 2 floor new building.	2 floor building, constructed in 1980.	None	Yes	-	-	Yes	-	-	Yes	-	-
20	KG # 17	SBD, 10th khoroo.		The expansion will be a two floor separate building. 1800m^2 land is available.	Has 2 floor building, constructed in 1963. KG has 3950m^2 land, 810m^2 area is under the	FFH	Yes	-	-	Yes	-	-	Yes	-	-

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					building.										
21	KG # 6	Dornod, Kherlen Soum, 3rd Bag		The expansion will be a two floor separate new building on the new owned land which is very close to main pipelines of CH, CSS and CWSl can be connected to.	Has 2 floor building, established in 1962. Has 2400 m^2 land. KG has 4500 m^2 land in other area which is 500 m from existing one.	None	-	-	HT	-	HOB	-	Yes	-	-
A2 Kindergarten Under New Construction															
1	New KG	Bayngol, 17th Khoroo,	N47^{0}55’13.5 E106^{0}53’15.8	Proposed to build new two-floor building. Has no blue print. No land is available.	The proposed land is in between KG# 162 and presently built 2 new KG (#241, #11)	-	Dropped out due to the land allocated for this site locates in between 3 kindergartens (2 of them newly constructed) overlapping with their land and underground utility infrastructure.								
2	New KG	BZD,17th Khoroo	N47^{0}55’52.1 E107^{0}00’05.4	New building	No building, empty field	-	Dropped out due to the resettlement issue.								
3	Branch of KG # 168	BZD,24th Khoroo	N47^{0}56’09.3 E106^{0}59’41.6	New building	Gers used as class room	-	-	-	-	-	-	-	-	-	-
4	New KG	BZD. 25th Khoroo	N47^{0}57’59.3 E106^{0}49’46.7	New building. 500m^2 land is available. Has a blue print.	None	-	-	-	-	-	-	-	-	-	-
5	New KG	KUD,14th Khoroo	N47^{0}47’24.0 E106^{0}42’29.6	A 2 floor new building will be built in the	The existing KG has 2 floor, established in	None	No	-	HT	No	HOB	In 2011, KG installed	No	DW	-

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				premise of existing KG 165 with 2474m^2 area of land.	2008,							electric heath			
6	New KG	Nalaikh district, 1st Khoroo	N47^{0}46’43.9 E107^{0}15’05.4	New building with 8 classrooms for 240 children. 3000 m^2 area is available.	Will build new building	-	-	-	-	-	-	-	-	-	-
7	New KG	Nalaikh district, 3rd Khoroo	N47^{0}45’45.7 E107^{0}15’52.8	New building with 8 classrooms for 240 children. 1000 m^2 area is available.	Will build new building	-	-	-	-	-	-	-	-	-	-
8	New KG	Nalaikh district, 7th Khoroo	N47^{0}46’55.8 E107^{0}14’44.5	New building with 8 classrooms for 240 children. 6000 m^2 area is available.	Will build new building	-	-	-	-	-	-	-	-	-	-
9	New KG (Deleted)	SKD, 5th Khoroo	N47^{0}55’59.0 E106^{0}49’04.4	The kindergarten will be built on the remaining old building of Khoroo government demolishing it	The area for new kindergarten is nearby new building of 25th Khoroo Government office.		Dropped out due to not availability of free land								
10	New KG	SKD. 25th Khoroo	N47^{0}57’59.3 E106^{0}49’46.7	New building. 300m^2 land area is available. Has blue print.	None	-	-	-	-	-	-	-	-	-	-

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
11	New KG	Sumber, 3rd bag, Gobisumber aimg	N46^{0}21’15.89 E108^0 23’ 9.45	The area is located nearby main road and surrounded by Ger khashaa plots and small services.	Government owned 300m^2 land is available. Has blue print. Access road is available	-	-	-	-	-	-	-	-	-	-
12	New KG	Sain-shand, 7th bag, Dorno-gobi	N44^{0}54’30.06 E 110^{0}08’ 6.12	The area is located nearby main road and surrounded by Ger khashaa plots and small services.	Government owned 300m^2 land is available. Has blue print. Access road is available.	-	-	-	-	-	-	-	-	-	-
13	New KG	Erdenet, Orkhon	N 49^{0}00’ 56.1 E 104^0 01’ 7.8	The surrounding area is included in city develop-ment plan and close to central heating, water supply and sewage system.	The new construction site is situated in Tsagaan Chuluut bag, has 10000 m^2 land, owned by Government .	-	-	-	-	-	-	-	-	-	-
14	New KG	Teshig, Bulgan	N 49^0 56’46.2 E102^0 39’ 33.7	New KG will have 2floors with capacity of 150 children. 2100m^2 land is available.	The site is planned inside existing KGs premises. The KG has 11060 m^2 land.		There new building can connect to central heating, water supply and sewage system.								
15	New KG	Bayn-khongor	N46^{0}12’19.49 E 100^0 43’56.6	The area included in town infrastructure	The site is in the edge of Ger Khashaa area.		The area has no central heating, water supply and sewage system.								

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				development plan.	Total of 4900 m^2 land owned by Government.										
B1 Schools Under Expansion															
1	SCH # 51	BGD	N47^{0}54’59.7 E106^{0}52’44.3	Expansion by new building. Has blue print.	3 floor, brick /1974	None	Yes	-	-	Yes, but not sufficient	-	-	Yes	-	-
2	SCH # 18	Khan uul,	N47^{0}53’59.3 E106^{0}53’40.8	Expansion by adding new floor on top.	3 Floor, brick /1979	None	Yes	-	-	Yes	-	-	Yes	-	-
3	Primary school “Erdmiin Orgil”	Nalaikh district, 2nd Khoroo	N47^{0}46’06.7 E107^{0}14’50.5	Expansion by new building with 14 classrooms for 640 students.	The primary school has a 1 floor building constructed in 1970.	None	Yes	-	-	Yes	-	-	Yes	-	-
4	High SCH # 1 of “Ireedui”	SKD, 15th Khoroo	N47^{0}54’58.9 E106^{0}50’29.1	Expansion by adding one more floor on top. Has a model blue print.	Building is 2 floor, constructed in 1983. School has 14602.2 m^2 land.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
5	Primary school # 3 of “Ireedui”	SKD, 17th Khoroo	N47^{0}54’53.9 E106^{0}50’01.3	Expansion by additional floor. Has a blue print.	Building is 2 floor, constructed in 1983. School has 14281.7 m^2 land.	Fire-fighting hydrant, Has no smoke alarm.	Yes	-	-	Yes	-	-	Yes	-	-
6	SCH #122	SKD, 22nd khoroo.	N47^{0}55’10.5 E106^{0}41’44.8	The expansion will be 3 floor building with capacity of 640	Has 18,000 m^2 land, 4 floor building, with capacity of 640		-	-	HT	-	HOB	-	-	-	Yes

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				students and has a blue print for building.	students, constructed in 2013. currently 1500 students.										
7	SCH #6	SBD, 3rd Khoroo	N47^{0}54’36.8 E106^{0}54’05.9	Expansion by adding one more floor on top.	Two floor, brick. Constructed in 1973.	None	Yes	-	-	Yes	-	-	Yes	-	-
8	SCH Khantishir	GA, Altai town,	N 46^{0}22’ 4.09 E 114^{0}15’ 18.1	School has 3567 m^2 land. The expansion will be a new 3 floor, with capacity of 320 students.	The school has one floor building constructed in 1961, used as office for construction company.	None	Yes	-	-	Yes	-	-	Yes	-	-
9	SCH Bogd	Bogd, Uvur-khangai	N44^{0}40’13.74 E102^0 10’ 26.5	The expansion will be 2 floor new building with capacity of 320 students..	SCH building is 2 floor, established in 1978. Has 5669 m^2 land.	None	Yes	-	-	Yes	-	-	Yes	-	-
10	SCH Baruun buren (Deleted)	Baruun Buren, Selenge	N49^{0}10’17.23 E104^{0}49’37.55	The expansion will be 2 floor separate building with capacity of 320 students. Lack of free-land	SCH building is 2 floor, established in 1981. Has 1563 m^2 land.	None	Dropped out due to lack of land space.								
B2 Schools Under New Construction															

No	# of Schools and Kindergartens	District	Location GPS	Type of proposed construction	Type of existing building /year constructed	Fire-fighting facilities etc.	Sewage water management facility			Heating supply			Water supply		
							Connected to central Sewage system	Septic tank	Holding tank	Connected to central heating system	Heating from an own HOB	Electric heating	From central water supply system	From own water well	From transported water reserved in own water reservoir.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	New SCH	BZD, 14th Khoroo	N47^{0}54’53.7 E106^{0}57’14.6	New building	Land is in the construction area.	-	-	-	-	-	-	-	-	-	-
2	New SCH	SKD, 7th Khoroo	N47^{0}57’13.0 E106^{0}48’43.4	New school building with 24 classrooms for 960 students. Has blue print. 1.0 ha land is available.	No building.		Far from CSS			Has no possibility to connect CHS			Has no possibility to connect to CWS		
3	New SCH	Darkhan-Uul province, Darkhan city	N49^{0}28’08.0 E105^{0}58’34.9	Construct new school building with capacity of 960 students.	1.5 ha area is available		Possible to connect to CSS			Has a possibility to connect to CHS			Possible to connect to CWS		

Abbreviations:
FFH-Fire Fighting Hydrant, HOB-Heat Only Boiler, HT-Holding Tank, CSS-Central Sewage System, CHS-Central Heating System, CWS-Central Water Supply, KG-Kindergarten, SCH-School, BZD-Baynzurkh district, BGD-Bayngol district, SBD-Sukhbaatar district, SKD-SonginoKhairkhan district, KUD-Khan Uul district, SUD-Sukhbaatar district, GA-Gobi-Altai.

Table A1.4 Other Physical Distances

No	School Name	District	Aerial Distance from National Parks	Aerial Distance from Industrial Zones	Aerial Distance from Gas station	Aerial Distance from Solid waste site	Aerial Distance from Railway/ Major Road	Aerial distance from Power station, power line, substation	Aerial Distance from any river/water body
1	2	3	4	5	6	7	8	9	10
A1. Kindergarten under expansion									
1	KG # 66	BGD, 2nd Khoroo,	14 km to Bogd Khan SPA	6 km	1.3 km	22 km	1.9 km	6.0 km to Thermal Power Plant # 3	5 km to Tuul river and 1 km to Dundgol river
2	Kindergarten #100	Bayngol,	9 km to Bogd Khan SPA	0.5 km to Iron factories	3 km	21 km	0.6 km	4 km to Thermal Power Plant # 3	3 km to Tuul river, 0.2 km to Dund gol river

No	School Name	District	Aerial Distance from National Parks	Aerial Distance from Industrial Zones	Aerial Distance from Gas station	Aerial Distance from Solid waste site	Aerial Distance from Railway/ Major Road	Aerial distance from Power station, power line, substation	Aerial Distance from any river/water body
1	2	3	4	5	6	7	8	9	10
3	KG # 164	BGD, 4th Khoroo,	10 km to Bogd Khan SPA	1 km to Train repair center	2 km	20 km	0.9 km	5 km to Thermal Power Plant # 3	5 km to Tuul river, 1.8 km to Dund gol river
4	KG # 88	BGD, 18th Khoroo,	12 km to Bogd Khan SPA	5 km	4 km	19 km	2.6 km	6 km to Thermal Power Plant # 3	7 km to Tuul river
5	KG #22	BZD, 1st Khoroo	Bogd Khan SPA is 18 km away from site	3km to car repair	0.5 km	9km	0.7km highway 8km railway	10 km to Thermal Power Plant # 3	Selbe river is 0.7 km, Tuul river is 12 km
6	KG # 8	BZD, 16th Khoroo	10 km to Bogd Khan SPA	500 m to Tsaiz market	800 m	8 km	8 km	6 km to Amgalan Thermal Plant	9 km to Tuul river
7	KG #82	BZD,16th khoroo.	Bogd Khan SPA is 13 km	1km to Tsaiz market	900m	8 km	8km	6 km to Amgalan Thermal Plant	Uliastai river is 8 km, Tuul river is 10 km
8	KG #108	CHD,6th khoroo.	Bogd Khan SPA is 8 km	1km to Dulguun nuur market	1.5km	17km	9km	7 km to Thermal Power Plant # 3	Selbe river is 1.6 km
9	KG # 65	KUD, 2nd Khoroo	8 km to Bogd Khan SPA	3 km to Tin-ning factories	2 km	21 km	1.2 km	5 km to Thermal Power Plant # 3	3 km to Tuul river, 0.6 km to Dund gol river
10	KG # 72	KUD, 2nd Khoroo	8 km to Bogd Khan SPA	3 km to Tin-ning factories	2 km	21 km	1.2 km	5 km to Thermal Power Plant # 3	3 km to Tuul river, 0.6 km to Dund gol river
11	KG # 12	Khan Uul,	6 km to Bogd Khan SPA	9 km to Tin-ning factories	0.2 km	19 km	5 km	4 km to Thermal Power Plant # 3 and 4 km to Thermal Power Plant # 4	0.8 km to Tuul river
12	KG # 84	SKD, 6th Khoroo	15 km to Bogd Khan SPA.	14 km to main industrial area and 0.5 km to building material factory.	1.5 km	7 km "Ulaan chuluut" waste dumping.	12 km	4 km to Thermal Power Plant #2	15 km to Tuul river and 3 km to Baruun Salaa river
13	KG # 104	SKD, 12th Khoroo	9 km to Bogd Khan SPA.	7 km	1.9 km	14 km	6.0 km	5 km to Thermal Power Plant #3	8 km to Tuul river and 5 km to Dundgol river
14	KG # 107	SKD, 14th Khoroo	9 km to Bogd Khan SPA.	7 km	2.0 km	15 km	6.0 km	6 km to Thermal Power Plant #3	8 km to Tuul river and 5 km to Dundgol river
15	KG # 110	SKD, 15th Khoroo	9 km to Bogd Khan SPA.	7 km	2.0 km	15 km	6.0 km	6 km to Thermal Power Plant #3	8 km to Tuul river and 5 km to Dundgol river
16	KG # 158	SKD,24th Khoroo	16.3 km to Bogd Khan SPA.	17.4 km to main industrial area and 4 km to building material factory.	2.0 km	1 km to "Ulaan chuluut" waste dumping.	13 km to main railway and 1 km to sub-railway	5 km to Thermal Power Plant #2	13 km to Tuul river and 0.2 km to Baruun salaa river.
17	KG # 176	SKD,31st Khoroo	12 km to Bogd Khan SPA.	10 km from main industrial	1.0 km	14 km to "Ulaan chuluut" waste	8 km from main railway	7 km to Thermal Power Plant #3	13 km from Tuul river and 2 km from Dund

No	School Name	District	Aerial Distance from National Parks	Aerial Distance from Industrial Zones	Aerial Distance from Gas station	Aerial Distance from Solid waste site	Aerial Distance from Railway/ Major Road	Aerial distance from Power station, power line, substation	Aerial Distance from any river/water body
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
				area .		dumping.			gol river.
18	KG # 68	SBD, 3rd Khoroo	10 km to Bogd Khan SPA	3 km to Train repair centre.	0.8 km	20 km	1 km	9 km to Thermal Power Plant # 3	7 km to Tuul river, 2.5 km to Dund gol river
19	KG # 160	SBD, 3rd Khoroo	10 km to Bogd Khan SPA	2 km to Train repair centre.	0.7 km	20 km	1 km	9 km to Thermal Power Plant # 3	7 km to Tuul river, 2.5 km to Dund gol river
20	KG # 17	SBD,10th khoroo.	Bogd Khan SPA is 15 km	1 km to construction market	900m	15km	6km	11 km to Thermal Power Plant # 3	Selbe river is 2 km
21	KG # 6	Dornod, Kherlen Soum, 3rd Bag	Dornod Mongol SPA is 180 km	3km to market	1km	6km	5km	8 km to Thermal Power Plant	Kherlen river is 2 km
A2 Kindergarten Under New Construction									
1	New KG (Deleted)	BGD,17th Khoroo,	12 km to Bogd Khan SPA	5 km	3 km	19 km	2.7 km	6.5 km to Thermal Power Plant # 3	8 km to Tuul river
2	New KG (Deleted)	BZD,17th Khoroo	11 km to Bogd Khan SPA	100 m to Auto market and Car repair shops	2 km	9 km	5 km	4 km to Amgalan Thermal Plant	7 km to Tuul river
3	Branch of KG # 168	BZD,24th Khoroo	11 km to Bogd Khan SPA	600m to Auto market, Car repair shops	1 km	9 km	5 km	4 km to Amgalan Thermal Plant and 0.3 km to Power Station	9 km to Tuul river
4	New KG	SKD,25th Khoroo	18 km to Bogd Khan SPA	2 km to market places	1 km	8 km	6 km	8 km to Thermal Power Plant # 2	2 km to Baruun Salaa river and 1 km to Zuun Salaa river
5	New KG	KUD,14th Khoroo	Bogd Khan SPA is 1.5 km	20km to market	2km	5km	19km	12 km to Thermal Power Plant # 2	Turgen river is 2 km
6	New KG	Nalaikh district, 1st Khoroo	16 km to Bogd Khan SPA and 9 km to Gorkhi-Terelj NP.	1.3 km to Coal Mining	0.7 km	6 km	0.8 km	2.8 km to Thermal Heating Plant of Nalaikh	6 km to Tuul river
7	New KG	Nalaikh district, 3rd Khoroo	16 km to Bogd Khan SPA and 9 km to Gorkhi-Terelj NP.	1 km to Coal Mining	2 km	5 km	0.2 km	2.8 km to Thermal Heating Plant of Nalaikh	7 km to Tuul river
8	New KG	Nalaikh district, 7th Khoroo	16 km to Bogd Khan SPA and 9 km to Gorkhi-Terelj NP.	1.4 km to Coal Mining	0.6 km	6 km	0.8 km	2.8 km to Thermal Heating Plant of Nalaikh	6 km to Tuul river
9	New KG (Deleted)	SKD, 5th Khoroo	15 km away from Bogd Khan SPA	0.6km to construction	1km	9km	4km	8 km to Thermal Power Plant # 2	1km to Baruun salaa river

No	School Name	District	Aerial Distance from National Parks	Aerial Distance from Industrial Zones	Aerial Distance from Gas station	Aerial Distance from Solid waste site	Aerial Distance from Railway/ Major Road	Aerial distance from Power station, power line, substation	Aerial Distance from any river/water body
1	2	3	4	5	6	7	8	9	10
				factory					
10	New KG	SKD.25th Khoroo	18 km to Bogd Khan SPA	2 km to market places	1 km	8 km	6 km	8 km to Thermal Power Plant # 2	2 km to Baruun Salaa river and 1 km to Zuun Salaa river
11	New KG	Sumber, 3rd bag, Gobisumber aimg	65 km away from Ikh Nart Nature Reserve	2km to market	0.5km	8km	1km	0.7km to Heating Center	No river
12	New KG	Sain-shand, 7th bag, Dorno-gobi	170 km away from Ikh Nart Nature Reserve.	0.8km to auto repair	0.4km	7km	1km	1km to Heating power plant	No river
13	New KG	Erdenet, Orkhon	100 km away from Zed Khantai SPA	0.4km to timber market	0.3km	10km	7km	2km to Heating power plant	No river
14	New KG	Teshig, Bulgan	10 km far from Zed Khantai SPA	N/A	0.7km	7km	N/A	0.5km to Heating power plant	1 km far from Eg river
15	New KG	Bayn-khongor	Khangai Nuruu Mountain NP is 40 km	2km to market	1km	9km	N/A	1km to HOB	Tuin Gol river is 0.6 km
B1 Schools Under Expansion									
1	SCH # 51	BGD	8 km to Bogd Khan SPA	3 km	2km	17 km	2 km	8 km to Thermal Power Plant # 3	7 km to Tuul river, 2 km to Dund gol river
2	SCH # 18	Khan uul,	5 km to Bogd Khan SPA	1 km to Tinning factories	1 km	17 km	1 km	4 km to Thermal Power Plant # 3	2 km to Tuul river and 400 m to Dund Gol river
3	Primary school "Erdmiin Orgil"	Nalaikh district, 2nd Khoroo	15 km to Bogd Khan SPA and 10 km to Gorkhi-Terelj NP.	2 km to Coal Mining	1 km	7 km	0.7 km	1.8 km to Thermal Heating Plant of Nalaikh	7 km to Tuul river
4	High SCH #1 of Ireedui	SKD, 15th Khoroo	10 km to Bogd Khan SPA.	8 km	1.5 km	14 km	5.7 km	4.4 km to Thermal Power Plant #3	8 km to Tuul river and 5 km to Dundgol river
5	Primary school #3 of Ireedui	SKD, 17th Khoroo	10 km to Bogd Khan SPA.	7.5 km	1.0 km	13 km	6.0 km	5 km to Thermal Power Plant #3	8 km to Tuul river and 5 km to Dundgol river
6	SCH #122	SKD, 22nd khoroo.	Bogd Khan SPA is 19 km	8km to oil/petrolium storage	4km	5km	2.5km	7 km to Thermal Power Plant #2	Takhilt (small seasonal creek) river is 0.3 km
7	SCH #6	SBD, 3rd	10 km to Bogd Khan	3 km to Train	0.8 km	20 km	1 km	9 km to Thermal Power	7 km to Tuul river, 2.5

No	School Name	District	Aerial Distance from National Parks	Aerial Distance from Industrial Zones	Aerial Distance from Gas station	Aerial Distance from Solid waste site	Aerial Distance from Railway/ Major Road	Aerial distance from Power station, power line, substation	Aerial Distance from any river/water body
1	2	3	4	5	6	7	8	9	10
		Khoroo	SPA	repair centre.				Plant # 3	km to Dund gol river
8	SCH Khantishir	GA, Altai town,	50 km far from Khasagt Khairkhan National Park.	0.7km to market	0.3km	9km	N/A	0.8km to HOB	No river
9	SCH Bogd	Bogd, Uvur-khangai	Ikh Bogd NP is 20 km	-	1km	5km	N/A	0.4km to HOB	Khovd river is 1 km
10	SCH Baruun buren (Deleted)	Baruun Buren, Selenge	N/A	-	0.5km	7km	N/A	0.4km to HOB	Orkhon river is 7 km
B2 Schools Under New Construction									
1	New SCH	BZD, 14th Khoroo	7 km to Bogd Khan SPA	1 km to Naran Tuul market	1 km	8 km	1.5 km	10 km to Amgalan Thermal Plant	6 km to Tuul river
2	New SCH	SKD, 7th Khoroo	16 km to Bogd Khan SPA.	17 km to main industrial area and 3 km to building material factory.	2.0 km	2 km "Ulaan chuluut" waste dumping.	13 km to main railway and 1 km to sub-railway	5 km to Thermal Power Plant #2	13 km to Tuul river and 0.02 km to Baruun salaa river.
3	New School	Darkhan-Uul province, Darkhan city	None.	2 km from industrial area	1 km	4 km from Darkhan waste point	3 km	5 km to Thermal Heating Plant of Darkhan	5 km to Kharaa river

Abbreviations:
KG-Kindergarten, SCH-School, BZD-Baynzurkh district, BGD-Bayngol district, SBD-Sukhbaatar district, SKD-SonginoKhairkhan district, KUD-Khan Uul district, SUD-Sukhbaatar district, GA-Gobi-Altai, NP-National Park, SPA-Strictly Protected Area.

Table A1.5 School Receptors

No	School Name	District	Distance from Road (all sides)	Setback and type of buildings/distance in meters				Adverse impact if any	Trees to be cut/ transferred	Debris/Soil disposal reqd. outside premises
				Front	Back	Left side	Right side			
1	2	3	4	5	6	7	8	9	10	
A1. Kindergarten under expansion										
1	KG # 66	BGD, 2nd Khoroo,	Front 100 m	30 m to Group of garage	25 m to "Ikh Zasag" college building	60 m to apartment	20-40 m to apartments	None	4 trees will be transferred	Yes
2	Kindergarten #100	Bayngol,	Front 60 m road	80 m to new apartment	200 m to iron factory	30 m Hotel and "Uran	30 m to new apartment	None	No	yes

						gan" LLC				
3	KG # 164	BGD, 4th Khoroo,	Left 80 m	50 m to apartment	70 m to apartment	70 m apartmnt	30 m to new apartment	None	No	yes
4	KG # 88	BGD, 18th Khoroo,	Back 110 m, front 26 m.	school #96. 30 m	10 m garages	30 m garages	15 m garages and 50 m to Apartment	None	No	Yes
5	KG #22	BZD, 1st Khoroo	Right 200m, left 40m	Apartment 100m	Apartment 80m	Apartment 60m	Apartment 55m School 45m	None	No	Yes
6	KG # 8	BZD, 16th Khoroo	20 m to Dandar Baatar street road	Small road 30 m	Housing 30 m	Housing 20 m	Housing 20 m	none	No	Yes
7	KG #82	BZD,16th khoroo.	Front 200m, left 50m	Apartment 100m	Apartment and garage 70m	Apartmnt 60m	Apartment 30m	None	8 trees will be transferred	Yes
8	KG #108	CHD,6th khoroo.	Front 30m, left 50m, right 50m	Apartment 100m	Parking 70m, garden 70m	School 100m	Apartment 150m	None	1 tree will be cut	Yes
9	KG # 65	KUD, 2nd Khoroo	Back 15 m small road	20 m Apartment	20 m to Apartment	School # 52 50 m	40 m Apartment	None	No	yes
10	KG # 72	KUD, 2nd Khoroo	Left side 40 m small street	20 m to old apartment	30 m to apartment	Apartment 20 m	Private house 20 m	None	2 trees	yes
11	KG # 12	Khan Uul,	Front 150 m to main road to airport. Left 30 m to small road	Gas station 100 m	Households with Ger 50 m	Toyota service 200 m	School 70 m	None	No	Yes
12	KG # 84	SKD, 6th Khoroo	Back 80m, left 60m	Apartment 100m	Ger housing 150m	Apartmnt 80m	Office and Apartment 50m	None	None	Yes
13	KG # 104	SKD, 12th Khoroo	Left 300m	Kindergarten 120m	Apartment 100m	Garage 80m	Apartment 80m	None	None	Yes
14	KG # 107	SKD, 14th Khoroo	Left 80m, right 50m	Kindergarten 50m	Open field	Apartment 200m	School 100m	None	None	Yes
15	KG # 110	SKD, 15th Khoroo	Right 60m	KG 150m	Apartment 200m	Apartmnt 200m	Garage 50m	None	None	Yes
16	KG # 158	SKD,24th Khoroo	Front 60m, left 50m	Ger area 100m	Ger area 50m	Ger area 100m	Ger area 50m	None	None	Yes
17	KG # 176	SKD,31st Khoroo	Left 50m	Ger area 10m	Ger area 100m	Ger area 40m	Ger area 50m	None	None	Yes
18	KG # 68	SBD, 3rd Khoroo	Back 10 m small road	40 m to School #6	20 m to Apartment	Apartment 20 m	20 m to Apartment	None	4 trees	yes
19	KG # 160	SBD, 3rd Khoroo	Front 20 m small road	Housing 30 m	Apartment 20 m	Apartment 20 m	Apartment 20 m	None	2 trees	yes
20	KG # 17	SBD,10th khoroo.	Left 60m	Apartment 80m	Garage 60m	Apartment 50m	Apartment 50m	None	3 trees	Yes
21	KG # 6	Dornod, Kherlen Soum, 3rd Bag	Front 50m	Ger area 200m	Two Ger household	Ger area 250m	Museum 200m	None	None	Yes

A2 Kindergarten Under New Construction										
1	New KG (Deleted)	BGD,17th Khoroo,	Left 80 m,	10 m to kindergarten # 162.	10 m to kindergarten #11	80 m to kindergarten #241	15 m construction site	Overlap with the land of kindergarten # 162 and 11.	No	Yes
2	New KG (Deleted)	BZD,17th Khoroo	Front 100m to Shar Khad road	Group housing 40 m	Taxi company 30 m	Households 20 m	Auto market 50 m	None, but may be resettle or move some part of fences of a household for making access road.	No	No
3	Branch of KG # 168	BZD,24th Khoroo	1.2 km to Shar Khad road	Open area 80 km	Households with Ger 20 m	Households with Ger 10 m	Shop 20 m	If remove the existing Ger classrooms during the construction, the operation of kindergarten will stop.	No	Yes
4	New KG	SKD, 25th Khoroo	Front 10 m road	Road 10 m	Shop 10 m	Shop 30 m	Restaurant 10 m	None	No	yes
5	New KG	KUD,14th Khoroo	Left 200m, front 80m, back200m	Ger area 100m, Khoroo office150m	Ger area 250m	nothing	Kindergarten #165 50m	None	none	Yes
6	New KG	Nalaikh district, 1st Khoroo	Left 130m, right 250m	Ger area 200m	Ger area 150m	Ger area 140m	Nothing	None	None	Yes
7	New KG	Nalaikh district, 3rd Khoroo	Right 30m, Left 30m, front 50m	Ger area 60m	shop 30m	Ger area 50m	Ger area 50m	None	None	Yes
8	New KG	Nalaikh district, 7th Khoroo	Back 80m,	Nothing	Ger area 120m	Nothing	Nothing	None	None	Yes
9	New KG (Deleted)	SKD, 5th Khoroo	Back 20m	Ger 30m	Gers 30m	Ger 25m	Ger 20m	Overlap with old Khoroo government office	None	Yes
10	New KG	SKD.25th Khoroo	Front 40m	Ger area 50m	Ger area 50m	Building 50m	Shop 45m	None	None	Yes
11	New KG	Sumber, 3rd bag, Gobisumber Aimag	Front 110m, right 200m	Apartment 120m	Nothing	School 250m	Nothing	None	None	Yes
12	New KG	Sain-shand, 7th bag,	Front 180m	Noting	Garage 120m,	Ger 170m	Gas station	None	None	Yes

		Dorno-gobi			Gers 120m		280m			
13	New KG	Erdenet, Orkhon	Right 150m	Nothing	Ger area 250m	Wood market 250m	Ger area 280m	None	None	Yes
14	New KG	Teshig, Bulgan	Back 80m, left 80m	School 160m	House 160m	House 100m	House 100m	None	None	Yes
15	New KG	Bayn-khongor	Left 100m, right 300m	Nothing	Nothing	Nothing	Ger area 100m	None	None	Yes
B1 Schools Under Expansion										
1	SCH # 51	BGD	Back 20 m Front 150 m to Peace Avenue	Group Housing 50 m	University, Group Housing 20 m	Group Housing 20 m	Group Housing 20 m	Shadow to residents in back	20 – Bitola, Birch trees	Yes
2	SCH # 18	Khan uul,	Front 150 m to Chinggis Khan Avenue	Apartment building 40 m	Mechanical Engineering School 60 m	Apartment building 30 m	Dormitory of Mechanical Engineering School 30 m	None	No	Yes
3	Primary school "Erdmiin Orgil"	Nalaikh district, 2nd Khoroo	Front 100m	Garage 120m	Gear area 280m	School 150m	Current school building 50m	None	None	Yes
4	High SCH #1 of Ireedui	SKD, 15th Khoroo	Left 100m	School 100m	Apartment 130m	Apartmnt 100m	Apartment 120m	None	None	Yes
5	Primary school #3 of Ireedui	SKD, 17th Khoroo	Bach 150m	School 150m	Apartment 180m	Apartmnt 140m	Apartment 80m	None	None	Yes
6	SCH #122	SKD, 22nd khoroo.	Front 200m, right 190m	Ger area 250m	Vegetable planting 120m	Nothing	Ger area 400m	None	None	Yes
7	SCH #6	SBD, 3rd Khoroo	Front "Narnii zam" road100 m	Housing 30 m	Kindergarten # 68 40 m	Apartment 30 m	Apartment 20 m	None	No	yes
8	SCH Khantishr	GA, Altai town,	Front 90m, Right 130m	Gas station 200m	Group housing 50m	Housing 70m	Ger area 400m	None	None	Yes
9	SCH Bogd	Bogd, Uvur-khangai	Back 200m,	Primary school 50, housing 250m	Ger area 300m	Cultural center 70m	Ger area 300m	None	None	Yes
10	SCH Baruun buren (Deleted)	Baruun Buren, Selenge	Right 200m	Dry creek 20m	Dry creek 30m	Ger area 300 m	Khan bank 20m	Lack of land for expansion	None	Yes
B2 Schools Under New Construction										
1	New SCH	BZD, 14th Khoroo	Front 80 m,	Apartment	Open field	Housing	Apartment	None	No	Yes

			Right 800 m	50 m		50 m	building 50 m			
2	New SCH	SKD, 7th Khoroo	Right 290m, Left 180m	Nothing	Nothing	Ger area 200m	Ger area 100m, Baruun salaa river 20m	In the medow of river, may be flood prone, risckable area	None	Yes
3	New School	Darkhan-Uul province, Darkhan city	Front 180m, Left 180m	Nothing	Nothing	Kindergarten 900m	Ger area 1000m,	None	None	Yes

Abbreviations:
KG-Kindergarten, SCH-School, BZD-Baynzurkh district, BGD-Bayngol district, SBD-Sukhbaatar district, SKD-SonginoKhairkhan district, KUD-Khan Uul district, SUD-Sukhbaatar district, GA-Gobi-Altai,

Table A1.6 School Follow-up Actions

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
A1. Kindergarten under expansion								
1	KG # 66	BGD, 2nd Khoroo,	Consultation held in 22 Feb 2017 with residents of front and right sides	Must to students and teachers by Construction Company	An entrance must opened ineast side for construction and a new entrance must established in right and left side for children.	During Break – June-August	Fencing should be built inside the premises bloking the Ikh Zasag college and kindergarten during the construction	This kindergarten located at first and second floor of building and a dormitory of "Ikh Zasag" college is in the 3rd floor. The students in the dormitory uses back door
2	Kindergarten #100	Bayngol,	Consultation held in 30 Jan 2017 with residents of front and right sides	Must to students and teachers by Construction Company	Separate entrance must opened in south-east side for construction.	During Break – June-August	This kindergarten take cares children within 24 hours from Monday to Friday and its two classes serve to disabled children.	Kindergarten has improved its wall insulation and it could be an experience for other kindergartens.
3	KG # 164	BGD, 4th Khoroo,	Consultation held in 16 Feb 2017 with residents of front, left and right sides	Must to students and teachers by Construction Company	Separate entrance must opened in south side for construction.	During Break – June-August	The wall of existing building of KG needs improvement of insulation.	A small storage built by kindergarten management should be under attention during the transporting construction material.
4	KG # 88	BGD, 18th Khoroo,	Consultation held in 30 Jan 2017 with residents of right sides and school	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the western side of the kindergarten premises.	Transportation of construction material should be scheduled clearly and informed to nearest

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
			management					residents and signed.
5	KG #22	BZD, 1st Khoroo	Consultation held in 19 Feb 2017 with residents of right, front, back and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the northern side of the kindergarten premises.	Transportation of construction material should be schedulled clearly and informed to closest residents and signed.
6	KG # 8	BZD, 16th Khoroo	Consultation held in 9 Feb 2017 with residents of back and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Support improving the insulation and plumbing system.	The current building does not meet the requirements of the EHS guideline of WB because of the washrooms have poor sanitation condition, walls and ceiling of classrooms are broking down, and water and wastewater plumbing systems have deteriorated.
7	KG #82	BZD,16th khoroo.	Consultation held in 20 Jan 2017 with residents of front and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Support improving the insulation of existing building.	The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat.
8	KG #108	CHD,6th khoroo.	Required with residents of right, and front sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the easthern side of the kindergarten premises.	Transportation of construction material should be schedulled clearly and informed to closest residents and signed.
9	KG # 65	KUD, 2nd Khoroo	Consultation held in 30 Jan 2017 with residents of back side	Must to students and teachers by Construction Company	Separate entrance must opened in north-east side for construction	During Break – June-August	Access road should be established in the southern side of the kindergarten premises.	Transportation of construction material should be schedulled clearly and informed to closest school, residents and signed.
10	KG # 72	KUD, 2nd Khoroo	Consultation held in 29 Jan 2017 with residents of front, right and back sides.	Must to students and teachers by Construction Company	Separate entrance must opened in front side for construction.	During Break – June-August	Support improving the insulation of existing building.	The wall of existing building is constructed by limestone bricks so has many cracks and loses much heat.
11	KG # 12	Khan Uul,	None	Must to students and teachers by	Separate entrance must	During Break – June-August	Suggest to change the holding tank to septic tank	The wall of existing building is constructed by

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
				Construction Company	be used for construction		because of the Kindergarten has enough land space for installing the septic tank for sewage water. And improve insulation.	limestone bricks so has many cracks and loses much heat.
12	KG # 84	SKD, 6th Khoroo	Consultation held in 23 Jan 2017 with residents of back, front and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the southern side of the kindergarten premises.	The plumbing systems of current building is too old.
13	KG # 104	SKD, 12th Khoroo	Consultation held in 13 Jan 2017 with residents of back and right sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the north-eastern side of the kindergarten premises.	Transportation should be schedulled clearly and informed to closest school, residents and signed.
14	KG # 107	SKD, 14th Khoroo	Consultation held in 23 Jan 2017 with residents of left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the western side of the kindergarten premises.	Transportation should be schedulled clearly and informed to closest school, residents and signed.
15	KG # 110	SKD, 15th Khoroo	Consultation held in 1 Feb 2017 with residents of back and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Access road should be established in the western side of the kindergarten premises.	Transportation should be schedulled clearly and informed to closest school, residents and signed.
16	KG # 158	SKD,24th Khoroo	Consultation held in 15 Feb 2017 with residents of four sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Suggest to install septic tank because of the area far away from service infrastucture.	This area has no any heating, water supply and sewage infrastructure.
17	KG # 176	SKD,31st Khoroo	Consultation held in 1 Feb 2017 with residents of four sides	Must to students and teachers by Construction Company	Back side entrance must be used for construction	During Break – May-August	Improve water and coal storage in the kindergarten's building.	The north entrance of the fencing can be used as access road.
18	KG # 68	SBD, 3rd Khoroo	Consultation held in 16 Feb 2017 with residents of left and back sides	Must to students and teachers by Construction Company	Separate entrance must opened in north-east side for construction	During Break – June-August	Access road should be established in the north-eastern side of the kindergarten premises.	Transportation should be schedulled clearly and informed to closest school, residents and signed.
19	KG # 160	SBD, 3rd Khoroo	Consultation held in 22 Feb 2017 with residents of left side	Must to students and teachers by Construction Company	Separate entrance must opened in south-east side for	During Break – June-August	None	None

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
					construction			
20	KG # 17	SBD,10th khoroo.	Consultation held in 9 Feb 2017 with residents of back, right and left sides	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	Support improving the insulation and plumbing system of existing building.	None
21	KG # 6	Dornod, Kherlen Soum, 3rd Bag	Required with residents of back side and two households	Must to students and teachers by Construction Company	Entrance must be defined by construction company	Any time of the year	Expansion should be constructed on new land owned by kindergarten.	The new land area is close to newly established service infrastuctures.
A2 Kindergarten Under New Construction								
1	New KG (Deleted)	BGD,17th Khoroo,	Required with two kindergartens' management	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – May-August	The land is blocked and impossible to construct new building, (overlaped) Drop out	Drop out
2	New KG (Deleted)	BZD,17th Khoroo	Required with Households of left side	Not necessary	An entrance must be opened negotiating with left side household.	Any time of the year	Resettlement specialist consulted with households and the land owner was inclear. Drop out	Drop out
3	Branch of KG # 168	BZD,24th Khoroo	Consultation held in 24 Feb 2017 with residents of left and back side	Not necessary	Road safety marks have to be installed	During Break – May-August	Suggest to install holding tank and drilled water well for drinking water and sewage water.	Has individual electric heating, no any holding tank for waste water and uses simple pit, transporting drinking water.
4	New KG	SKD,25th Khoroo	Required with residents of front and left sides	Must to students and teachers by Construction Company	The entrance must be defined by constructor,	Whenever possible any time of the year	New area. No recommendation	None
5	New KG	KUD,14th Khoroo	Required with kindergarten #165	Must to students and teachers by Construction Company	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
6	New KG	Nalaikh district, 1st Khoroo	Required with residents of front, back and left sides	Must to students and teachers by Construction Company	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
7	New KG	Nalaikh district, 3rd Khoroo	Required with residents of left sides	Must to students and teachers by	The entrance must be defined	Any time of the year	New area. No recommendation	None

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
				Construction Company	by constructor,			
8	New KG	Nalaikh district, 7th Khoroo	Required with residents of back side	Must to students and teachers by Construction Company	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
9	New KG (Deleted)	SKD, 5th Khoroo	Required with residents of front, back and left sides	Not necessary	The entrance must be defined by constructor,	Any time of the year	Land is overlaped with old building. Drop out	Drop out
10	New KG	SKD.25th Khoroo	Required with owners of shops and restaurant.	Not necessary	According to construction operational plan	Any time of the year	Recommend to install holding tank because of has not enough land for septic tank	None
11	New KG	Sumber, 3rd bag, Gobisumber aimg	Consultation held in 18 Feb 2017 with residents of front, side apartment	Must to residents by Construction Company	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
12	New KG	Sain-shand, 7th bag, Dorno-gobi	Consultation held in 17 Feb 2017 with residents of back side	Must to residents by Construction Company	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
13	New KG	Erdenet, Orkhon	Consultation held in 10 Feb 2017 with residents of left side Ger area	Not necessary	The entrance must be defined by constructor,	Any time of the year	New area. No recommendation	None
14	New KG	Teshig, Bulgan	Consultation held in 8 Feb 2017 with residents of front, left and right sides	Must to teachers and children by Construction Company	The entrance must be in south-east,	Any time of the year	New area. No recommendation	None
15	New KG	Bayn-khongor	Consultation held in 8 Feb 2017 with residents of ger area	Must to residents by Construction Company	Free, new area	Any time of the year	New area. No recommendation	None
B1 Schools Under Expansion								
1	SCH # 51	BGD	Consultation held in 24 Feb 2017 with residents of back side	Must to students and teachers by Construction Company	Separate entrance must be used for construction	During Break – June-August	Fire fighting in old building required.	- Construction company to ensure proper safety - Add one more floor on top.
2	SCH # 18	Khan uul,	Consultation held in 9 Jan 2017 with	Must to students and teachers by	Separate entrance must	During Break – June-August	None	None

No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
			residents of front side	Construction Company	be opened in the right side for construction			
3	Primary school "Erdmiin Orgil"	Nalaikh district, 2nd Khoroo	Consultation held in 23 Feb 2017 with residents of front, side apartment	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	Construction site have to have sheet barrier	Current premise is big enough
4	High SCH #1 of Ireedui	SKD, 15th Khoroo	Required with residents of backt, left and right sides apartment	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	None	None
5	Primary school #3 of Ireedui	SKD, 17th Khoroo	Consultation held in 16 Feb 2017 with residents of backt, left and right sides apartment	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	None	None
6	SCH #122	SKD, 22nd khoroo.	Not required	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	Green school blue print can be introduced in this site	Ministry of Environment and Tourism is supporting to develop green school concept here.
7	SCH #6	SBD, 3rd Khoroo	Required with residents of right side	Must to students and teachers by Construction Company	Separate entrance must opened in south side for construction.	During Break – June-August	None	None
8	SCH Khantishr	GA, Altai town,	Consultation held in 7 Feb 2017 with residents of front, and right sides apartment	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	The blue print of the expansion should be focus how to connect new and existing buildings.	Existing building of the school is not proposed for school but for office of construction company.
9	SCH Bogd	Bogd, Uvur-khangai	Consultation held in 8 Feb 2017 with residents of right, side	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	None	None
10	SCH Baruun buren (Deleted)	Baruun Buren, Selenge	Consultation held in 9 Feb 2017 with residents of right side and bank	Must to students and teachers by Construction Company	Separate entrance must be opened in the back side	During Break – June-August	Lack of land space for the expansion. Drop out	Drop out
B2 Schools Under New Construction								

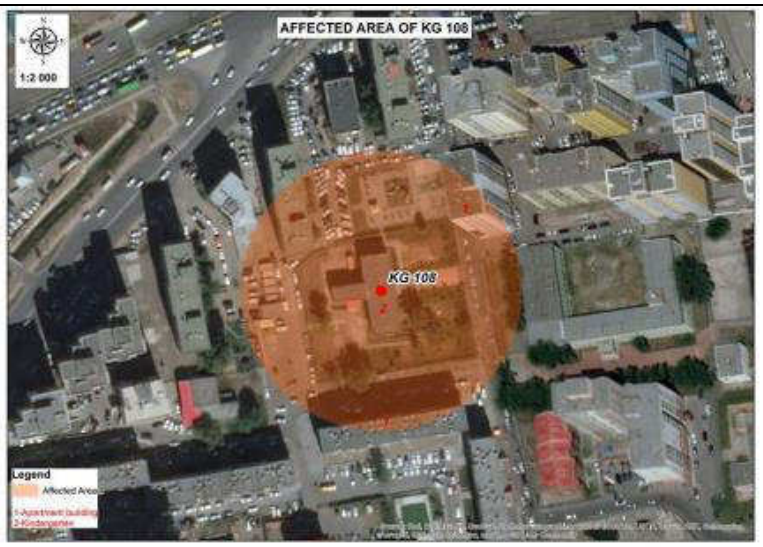
No	School Name	District	Consultations	Construction safety training	Access for construction period	Preferred start of construction	Additional recommen-dation	Remarks
1	2	3	4	5	6	7	8	9
1	New SCH	BZD, 14th Khoroo	None	Not necessary	Separate entrance other than MONNIS company's entrance must be used for construction	Any time of the year	New area. No recommendation	None
2	New SCH	SKD, 7th Khoroo	Required with residents of Ger areas	Not necessary	Separate entrance must be opened in the back side	Any time of the year	Suggest to install septic tank and drilled water well.	The area is far away from infrastucture.
3	New School	DarkhanUul province, Darkhan city	Consultation held in 6 Feb 2017 with residents of east side ger area	Not necessary	Separate entrance must be opened in the back side	Any time of the year	New area. No recommendation	None

Abbreviations:KG-Kindergarten, SCH-School, BZD-Baynzurkh district, BGD-Bayngol district, SBD-Sukhbaatar district, SKD-SonginoKhairkhan district, KUD-Khan Uul district, SUD-Sukhbaatar district, GA-Gobi-Altai,

Annexure 1b: Google Earth Images of Schools Identified

A1	Kindergartens under expansion		
1	KG # 66	BGD, 2nd Khoroo,	
2	KG#100	Bayngol,	
3	KG # 164	BGD, 4th Khoroo,	

4	KG # 88	BGD, 18th Khoroo,	
5	KG #22	BZD, 1st Khoroo	
6	KG # 8	BZD, 16th Khoroo	

7	KG #82	BZD,16th khoroo.	
8	KG #108	CHD,6th khoroo.	
9	KG # 65	KUD, 2nd Khoroo	

10	KG # 72	KUD, 2nd Khoroo	
11	KG # 12	Khan Uul,	
12	KG # 84	SKD, 6th Khoroo	

13	KG # 104	SKD, 12th Khoroo	
14	KG # 107	SKD, 14th Khoroo	
15	KG # 110	SKD, 15th Khoroo	

16	KG # 158	SKD,24th Khoroo	
17	KG # 176	SKD,31st Khoroo	
18	KG # 68	SBD, 3rd Khoroo	

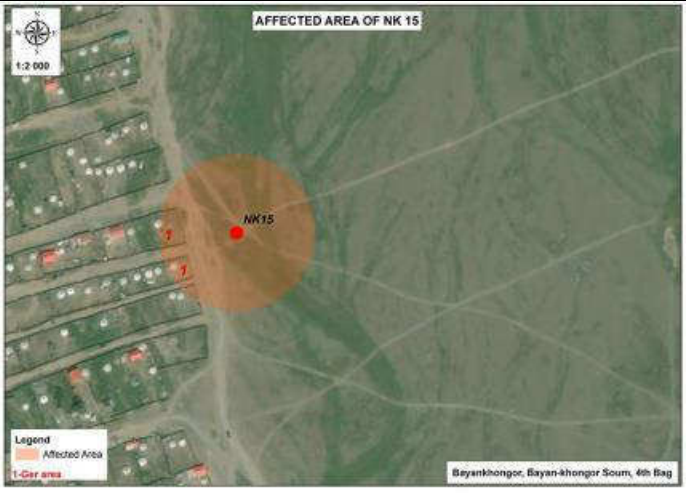
19	KG # 160	SBD, 3rd Khoroo	
20	KG # 17	SBD,10th khoroo.	
21	KG # 6	Dornod, Kherlen soum, 3rd Bag	
A2	Kindergartens under new construction		

1	New KG (Deleted)	BGD,17th Khoroo,	
2	New KG (Deleted)	BZD,17th Khoroo	
3	Branch of KG # 168	BZD,24th Khoroo	

4	New KG	SKD,25th Khoroo	
5	New KG	KUD,14th Khoroo	
6	New KG	Nalaikh district, 1st Khoroo	

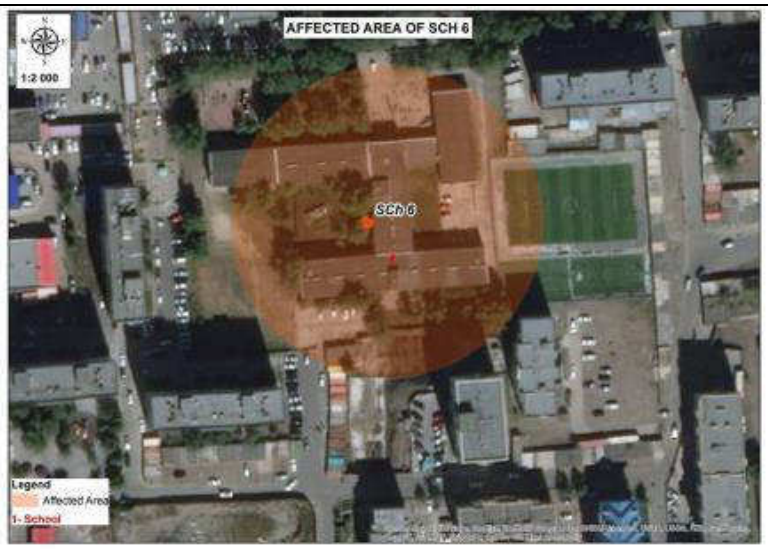
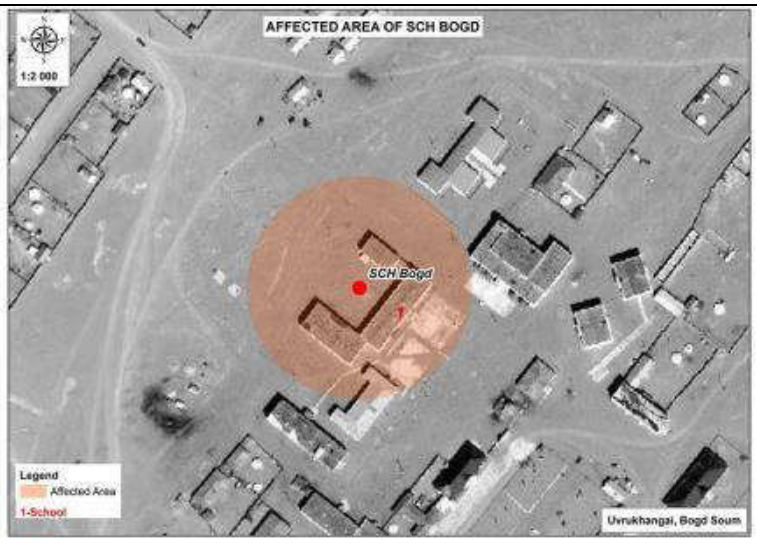
7	New KG	Nalaikh district, 3rd Khoroo	
8	New KG	Nalaikh district, 7th Khoroo	
9	New KG (Deleted)	SKD, 5th Khoroo	

10	New KG	SKD.25th Khoroo	
11	New KG	Sumber, 3rd bag, Gobisumber aimg	
12	New KG	Sain-shand, 7th bag, Dorno-gobi	

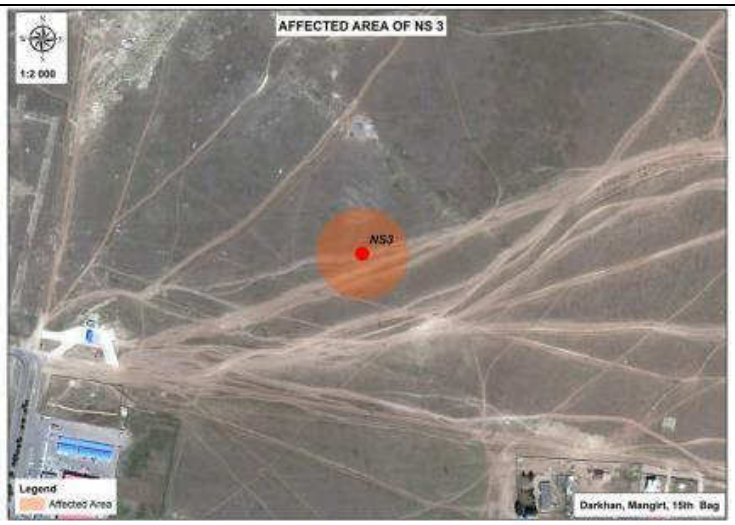
13	New KG	Erdenet, Orkhon	
14	New KG	Teshig, Bulgan	
15	New KG	Bayn-khongor	
B1	Schools under expansion		

1	SCH # 51	BGD	
2	SCH # 18	Khan uul,	
3	Primary school “Erdmiin Orgil”	Nalaikh district, 2nd Khoroo	

4	High SCH #1 of Ireedui	SKD, 15th Khoroo	
5	Primary school #3 of Ireedui	SKD, 17th Khoroo	
6	SCH #122	SKD, 22nd khoroo.	

7	SCH #6	SBD, 3rd Khoroo	
8	SCH Khantishr	GA, Altai town,	
9	SCH Bogd	Bogd, Uvur-khangai	

10	SCH Baruun buren (Deleted)	Baruun Buren, Selenge	
B2	Schools under new construction		
1	New SCH	BZD, 14th Khoroo	
2	New SCH	SKD, 7th Khoroo	

3	New School	DarkhanUul province, Darkhan city	

Annexure – 2: Environment Management Plan (EMP)

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
Pre-construction and Design						
1. Physical Resources						
Building specifications and design parameters.	Release of effluents in receptors (air, water, land).	Avoid all underground utilities during design	Blue prints	Inspection Agency - Once.	MECCS	Detailed design.
	Structural Safety for construction of extra floor.	Schools to get Specialized Inspection Agency approval for structural integrity	Seismic design in Blue Prints	Inspection Agency - Once.	MECCS	Detailed design.
Rehabilitation of old infrastructure in school/ kindergarten	Decayed infrastructure will damage new installations. Loss of heating and seepage etc. in building	Install modern fire control systems/firewalls, building insulation, plumbing and heating system upgrades	Structural safety of the old buildings and connected utilities to the building	Inspection Agency - Once.	MECCS	Detailed design.
2. Environment Resources (Receptors)						
Location of land for Schools/ Kindergarten	Impact to the existing surface water environment.	Construction facilities should be placed at suitable distance from water bodies, natural flow paths, important ecological habitats and residential areas. Careful site selection to avoid existing settlements	Water and Air Quality. Site location (distance to dwelling, and/or utilities).	Consultation with local authorities and land owners. Air quality Standards and Water Quality standards – Once.	MECCS	Detailed design/Planning Stage.
Schools/Kindergartens location and design for Noise.	Noise generation Exposure to noise, Nuisance to neighbouring properties.	Schools/Kindergartens location/designed to ensure noise will not be a nuisance to neighbouring properties.	Expected noise emissions based on Schools/Kindergartens design, noise levels.	Noise control regulations Noise levels to be specified in tender documents	MECCS	Detailed design/Planning Stage
Interference with drainage	Temporary flooding hazards.	Appropriate siting.	Site selection.	Consultation with local authorities	MECCS	Detailed location

[32] World Bank EHS guidelines will be used as a standard if any local Mongolian Standards are less stringent as per ADB SPS 2009

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
patterns				and design engineers.		survey and design.
Dismantling of portions of buildings for connectivity of expansion section	Asbestos present as insulation in some section of the building	Asbestos shall be handled carefully during dismantling, storage and disposal	Air quality	Air quality standards – once	MECCS	Part of detailed project siting and survey and design.
3. Ecological Resources						
Encroachment into precious ecological areas.	Loss of precious ecological values/ damage to precious species.	Avoid encroachment by careful site and location selection and reconnaissance before final siting of activities.	Floral and faunal habitats loss.	Enumeration of flora and fauna at site.	ESO of MECCS.	Detailed design/Planning Stage.
4. Human Environment						
Involuntary resettlement or land acquisition.	Loss of lands and structures.	Compensation paid for temporary/ permanent loss of residential land.	Public complaints	Rates paid as per the Resettlement plan/Frame work for the project.	ESO of MECCS	Prior to construction phase/Land Acquisition.
Removal of Trees	Loss of trees.	Avoid siting of structures to avoid any permanent loss of trees wherever possible. Implement tree replantation or transplantation as the case may be	Statutory approvals for tree trimming /removal from competent authority.	Consultation with local authorities and design engineers in consonance with MECCS.	MECCS	Part of detailed location survey and design.
Location and design of Schools/Kindergartens.	Disturbance to adjacent lands and the people due to digging and construction operations.	Maintain adequate clearance, construction of retaining structures, minimize digging close to the dwellings.	Building specifications and compliance with setback distances (“as-built” diagrams).	Technical specification- Once Measure setback distances to nearest house structures – Once.	MECCS	Detailed design/Planning Stage.
Location of Schools/Kindergartens	Exposure to safety related risks.	Setback of dwellings to designed in accordance with permitted safety distances	location selection with respect to nearest dwellings.	Setback distances to nearest houses –	MECCS	Part of siting survey and detailed

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
location and design.				Once.		location survey and design.
Explosions/Fire	Hazards to life	Design of Schools/Kindergarten to include modern fire control systems/firewalls. Provision of firefighting equipment to be located close to electrical/heating installations.	Schools/Kindergartens design compliance with fire prevention and control codes.	Tender document to mention detailed specifications – Once.	MECCS	Part of detailed Schools/Kindergartens layout and design /drawings
Construction Phase						
A. Physical Resources						
Construction site clearance	Removal of topsoil and loose soil storage at site may lead to dust emission	Sprinkle water at site and cover soil dump against air pollution	Air and water pollution	Visual inspection (Dust)	Contractor through contract provisions under supervision of MECCS	Construction period
Removal or disturbance to other public utilities	Public inconvenience	Advance notice to the public about the time and the duration of the utility disruption Use of well trained and experienced machinery operators to reduce accidental damage to the public utilities Restore the utilities immediately to overcome public inconvenience	Disruption to other commercial and public activities / Public complaints	Technical specification	MECCS and Contractor through contract provisions	Throughout construction period
Electrical/fire safety Equipment layout and installation	Sparks and fire hazard during construction	Record of all Schools/Kindergartens electric fittings and fire safety devices located within secure casings	Electrical casings at Schools/ Kindergartens	As per International standards Once in year	MECCS Contractor through contract provisions	Throughout construction/ erection period
Asbestos is	Lead to inhalation and	Record of all Schools/Kindergartens	Roofing and walls at	Mongolian	Contractor	Construction

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
found during construction	long term health impact on workers and occupants		school/kindergartens	national standards (MNS) 3838: 2008 and Construction standard package # 91.040.– once a year	through contract provisions under supervision of MECCS	period
Use of Volatile organic compounds	Toxicity and air contamination inside building	Use of low or no volatile organic compounds – water based nontoxic etc.	Air quality – measure volatility as per Mongolian standards – four times a year	Mongolian national standards (MNS) 3838: 2008 and Construction standard package # 91.040. – four times a year	Contractor through contract provisions under supervision of MECCS	Construction period
Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Storage of excess soil near drainage and settlement areas stored in restricted area and construction work should be carefully designed to minimize obstruction or destruction to natural drainage. Excess soil from foundation excavation to be reused on site or disposed of in accordance to construction site management plan by contractor.	Location and amount (m^3) of fill disposal Soil disposal locations and volume (m^3)	Visual inspection (Turbidity and sedimentation) Appropriate fill disposal and dispersal locations quarterly	Contractor through contract provisions under supervision of MECCS	Construction period
B. Environment Resources						
Equipment layout and installation	Noise and vibrations	Selection of construction techniques and machinery to minimize ground disturbance.	Construction techniques and machinery	Minimal ground disturbance Monthly	Contractor through contract provisions, MECCS	Construction period
Provision of facilities for construction workers at	Contamination of receptors (land, water, air).	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities at work site.	Amenities for Workforce facilities.	Presence of proper sanitation, water supply and waste disposal	Contractor through contract provisions	Construction period

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
work site				facilities - Once.	under supervision of MECCS	
Mechanized construction	Noise, vibration equipment wear and tear and operator safety, efficient operation.	Construction equipment to be well maintained. Construction techniques and Machinery selection to minimize ground disturbance. Proper maintenance and turning off plant not in use. Noise barriers will be installed to reduce incidence of noise to local residents.	Construction techniques and equipment - estimated noise emissions and operating schedules.	Technical specifications, safety regulations, Noise control regulations- Quarterly.	Contractor through contract provisions under supervision of MECCS.	Construction period
Construction of access road for ingress into premises	Increased land requirement for temporary accessibility.	Existing separate gates used for construction and maintenance access to the site wherever possible.	Access gates, road, locations (length and width of access roads).	Blue print design for access restricted to from normal school entrances not used by students.	Contractor through contract provisions under supervision of MECCS.	Construction period
C. Ecological Resources						
Site clearance.	Vegetation.	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance. Construction Company will replant or transplant trees to be cut within the school/kindergarten premises.	Vegetation marking and clearance control (area in m^2).	Clearance strictly limited to target vegetation – Once.	Contractor through contract provisions under supervision of MECCS.	Construction period
Trimming/cutting of trees within school boundary.	Loss of vegetation and deforestation.	Trees that can survive pruning to comply should be pruned instead of cleared. Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies. Construction Company will replant or transplant trees to be cut within the school/kindergarten premises.	Species-specific tree retention as approved by statutory authorities (average and maximum tree height at maturity, in meters).	Presence of target species	MECCS, Contractor through contract provisions under supervision of department	Construction period
D. Human Environment						

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
Construction schedules for Schools/Kindergartens.	Noise nuisance to neighbouring properties.	Minimize construction activities undertaken during the night and local communities informed of the construction schedule. Noise barriers will be installed to reduce incidence of noise to local residents.	Timing of construction (noise emissions in decibels (dBA).	Construction as per Scheduled timings only.	MECCS, Contractor through contract provisions.	Construction period.
Temporary use of land.	Losses to neighbouring land uses/ values.	Contract clauses specifying careful construction practices. School Land will be reinstated following completion of construction.	Contract clauses Design basis and layout. Reinstatement of land status (area affected, m2).	Incorporating good construction management, design engineering practices. C	Contractor through contract provisions under supervision of MECCS	Construction period.
Transportation and storage of materials.	Nuisance to the general public.	Transport loading and unloading of construction materials should not cause nuisance to the people by way of noise, vibration and dust. Avoid storage of construction materials beside the road, around water bodies, residential or public sensitive locations. Construction materials should be stored in covered areas to ensure protection from dust, emissions and such materials should be bundled in environment friendly and nuisance free manner.	Water, Air Quality and Noise in decibels (dBA).	xx Emission standards and Water Quality standards - Quarterly.	Contractor through contract provisions under supervision of MECCS.	Construction period.
Temporary outage of the electricity	Loss of power supply to the local community when distribution lines crossing the new Schools/Kindergartens are switched off.	Advance notice to the public about the time and the duration of the utility disruption. Restore the utilities immediately to overcome public inconvenience.	Power disruption to houses and commercial premises.	Regular monitoring during the period of strengthening the conductors	Contractor through contract provisions under supervision of MECCS	Throughout the construction period.

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
Health and safety	Injury and sickness of workers and members of the public.	Contract provisions specifying minimum requirements for construction camps. Contractor to prepare and implement a health and safety plan and provide workers with required PPE. Contractor to arrange for health and safety awareness programmes including on AIDS and sexually transmitted diseases (STD).	Contract clauses (number of incidents and total lost-work days caused by injuries and sickness).	MECCS and ADB Health and safety standards - Monthly.	Contractor through contract provisions under supervision of MECCS.	Construction period.
Community Health and Safety	Injury and accidents caused to residents in the area	Installation of proper warning signage, installation of sheet barriers to avoid people, children, animals falling into trenches, or projectile material hitting the residents walking by or damaging property	Contract clauses (number of incidents caused by injuries and accidents in neighbourhood).	EHS guidelines, MN Health and safety standards - Monthly.	Contractor through contract provisions under supervision of MECCS.	Construction period.
Capacity Building	Improve standards of implementation and monitoring.	Training of MECCS.	Training schedules.	Number of training program - Yearly.	MECCS.	Construction period.
Operation and Maintenance Phase						
A. Physical Resources						
Operation of Electrical safety systems, fire safety systems.	Electric sparks, fire and explosion	Record of all Schools/Kindergartens electrical switchbox located within secure casings.	Schools/Kindergartens electricity distribution boards – Monthly.	MNS: 0640 (1989) Fire safety standard - Monthly	MECCS.	Throughout the operation.
B. Environmental Resources						
Oil spillage.	Contamination of land/nearby water bodies.	Record of all oil spillage at schools/kindergartens	Schools/Kindergartens bounding (“as-built” diagrams)- Monthly.	Guideline on Transportation, storage, use and disposal of toxic	MECCS.	Throughout the operation

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
				and hazardous chemicals (2009) - Yearly		
C. Ecological Recourses						
None						
D. Human Environment						
Effluent Management from School	Chemicals from Chemistry laboratory, sewage flowing into city drains	Schools to ensure that chemistry class effluent is collected and disposed off to the District Branch of Emergency Management Agency Maintenance and regular upkeep of septic tanks and holding tanks by school to avoid surface discharge.	Water discharge parameters as specified in EMoP	Waste water standards – quarterly	School	Throughout operations
Training on Health and safety and emergency response	Lack of awareness for health and safety procedure.	Training of School personnel and children on safety and emergency response in compliance with District's Emergency Management Agency requirements	Training schedules.	Number of training program- Yearly.	MECCS	Operation
Segregation of Solid waste	Nuisance to local community	Training of School personnel and children in proper segregation and storage and waste at school	Training by PIU	Number of training program- Yearly.	Schools and kindergartens	Operation
Management of emissions from HOB	Low ambient air quality inside premises	Monitoring of HOBs operations to ensure the air emissions, ash handling etc. are within permissible limits	Air quality and contamination of soil	Air quality and soil contamination standards – every six months	Schools and kindergartens	Operation
O&M of building equipment- heating, building insulation and generators etc.	Loss of heating, high operational costs	Insulation to ensure efficient operations	Energy efficiency parameters	Energy conservation norms of buildings – Once/year	Schools and kindergartens	Operation
Electric shock	Death or injury to the	Security warnings around fittings.	Proper maintenance	Periodic	Schools and	Throughout

Project Activity	Potential Environmental Impact	Mitigation Action	Parameters to be Monitored	Standards[32]/ Measurement/ Frequency	Institutional Responsibility	Implementation Schedule
or accidents	staff and public.	Careful design using appropriate technologies to minimize hazards.	of distribution boxes and sign boards. Usage of appropriate technologies (lost work days due to injuries).	maintenance. Number of programmes and percent of staff/ workers covered.	kindergartens	the operation

Annexure – 3: Environment Monitoring Plan (Environmental Parameters)

Environmental component	Project stage	Parameters to be monitored	Sampling Location	Monitoring Frequency	Regulatory Standards for parameter	Agency responsible for implementation
1.Air Quality	A. Pre-construction and Design stage (Baseline development)	PM_{10}, $PM_{2.5}$, SO_2, NOx, SPM, CO (Visible dust)	Boundary of Schools/Kindergartens	One time	National Air quality standards of MNS 4585- 2007 "Air quality. General technical requirements" (Maximum acceptable level of toxic elements in outdoor air)	MECSS
	B. Construction Stage	PM_{10}, $PM_{2.5}$, SO_2, NOx, SPM, CO (Visible dust)	Boundary of Schools/Kindergartens	Every one month of construction period	National Air quality standards of MNS 4585- 2007 "Air quality. General technical requirements" (Maximum acceptable level of toxic elements in outdoor air)	Construction Company
	C. Operation Stage	PM_{10}, $PM_{2.5}$, SO_2, NOx, SPM, CO (Visible dust)	Boundary of Schools/Kindergartens	One time during commissioning	National Air quality standards of MNS 4585- 2007 "Air quality. General technical requirements" (Maximum acceptable level of toxic elements in outdoor air)	MECSS
2.Water Quality	A. Pre-construction and Design stage (Baseline development)	EC, TSS, DO, BOD, P^H Oil and grease, Pb,	Nearest well near Schools/Kindergarten	One time	National water quality standards of MNS 4586:1998	MECSS
	B. Construction Stage	EC, TSS, DO, BOD, P^H Oil and grease, Pb,	Nearest well near Schools/Kindergarten	One time	National water quality standards of MNS 4586:1998	Construction Company
	C. Operation Stage	EC, TSS, DO, BOD, P^H Oil and grease, Pb,	Nearest well near Schools/Kindergarten	One time during commissioning	National water quality standards of MNS 4586:1998	MECSS
3.Noise/ Vibration	A. Pre-construction and Design stage (Baseline development)	Noise level [dB(A)]	Boundary of Schools/Kindergartens	One time	National standards for Noise MNS 4585:2007	MECSS
	B. Construction Stage	Noise level [dB(A)]	Boundary of Schools/Kindergartens	Every one month of construction period	National standards for Noise MNS 4585:2007	Construction Company
	C. Operation Stage	Noise level [dB(A)]	Boundary of Schools/Kindergartens	One time during commissioning	National standards for Noise MNS 4585:2007	MECSS
4. Soil	A. Pre-construction and Design stage (Baseline development)	Visible spills and/or soil staining, Oil &	1 location inside Schools/Kindergartens	One time	Guideline on Transportation, storage, use and disposal of toxic and hazardous chemicals (2009)	MECSS

Environmental component	Project stage	Parameters to be monitored	Sampling Location	Monitoring Frequency	Regulatory Standards for parameter	Agency responsible for implementation
		grease				
	B. Construction Stage	Visible spills and/or soil staining, Oil & grease	1 location inside Schools/Kindergartens	One time	Guideline on Transportation, storage, use and disposal of toxic and hazardous chemicals (2009)	Construction Company
	C. Operation Stage	Visible spills and/or soil staining, Oil & grease	1 location inside Schools/Kindergartens	One time during commissioning	Guideline on Transportation, storage, use and disposal of toxic and hazardous chemicals (2009)	MECSS

Abbreviations:

SO_{2-} -Sulphur Dioxide; NO_{2-} - Nitrogen Dioxide; CO- Carbon Monoxide; Pb – Lead; $PM_{2.5}$ - Particulate Matter <2.5; PM_{10} - Particulate Matter <10;
EC – Electric Conductivity;TSPM- Total Suspended Particulate Matter; DO - Dissolved Oxygen; TSS - Total Suspended Solids;
BOD - Biological Oxygen Demand; ORP – Oxidation Reduction Potential
NAAQS - National Ambient Air Quality Standards specified by MET

Environmental Safeguard Clauses for Civil Works Contracts

The general environment, health and safety obligations of the Contractor within this Contract, without prejudice to other official provisions in force, include the following:

- The Contractor shall ensure that the construction and decommissioning of project facilities comply with (a) all applicable laws and regulations of Mongolia relating to environment, health and safety; (b) the Environmental Safeguards stipulated in ADB's Safeguards Policy Statement (2009); and (c) all measures and requirements set forth in the Generic environmental management plan (EMP).
- The Contractor shall establish a telephone hotline to received community complaints, staffed at all times during working hours. Contact details shall be prominently displayed at the sites. The Contractor shall disseminate in a timely manner information on the construction progress, including anticipated activities that might cause safety risk.
- The Contractor shall secure all necessary permits and licenses before undertaking the works.
- The Contractor shall assign sufficient qualified staff to manage site-EMP implementation, and ensure adequate financial resources are available to implement the site-EMP throughout the construction period.
- The Contractor shall provide equal pay for equal work, regardless of gender or ethnicity; provide those they employ with a written contract; provide the timely payment of wages; use local unskilled labor, as applicable, comply with core labor standards and the applicable labor laws and regulations, including stipulations related to employment, e.g. health, safety, welfare and the workers' rights, and anti-trafficking laws; and not employ child labor. The Contractor shall maintain records of labor employment, including the name, ethnicity, age, gender, domicile, working time, and the payment of wages.
- All buildings shall be designed in compliance with relevant the Government of Mongolia's design standards and codes for energy-efficient, safe buildings, including but not limited to: Mongolian national standards (MNS) 3838: 2008 and Construction standard package # 91.040. Only low or no volatile organic compound (VOC)-emitting materials shall be used (including paints, coatings, adhesives, carpet and furniture's) to ensure high indoor air quality. Water-based nontoxic, no allergenic paint for drywall or plaster surfaces shall be preferred to latex or oil-based paints. All facilities shall be properly sited to minimize the risk of scouring that may result from increase intensity of precipitation as a result of climate change.
- The Contractor shall take necessary precautions to avoid interruptions to water supply, wastewater collection, heating and other utility services during the civil works.
- The Contractor shall prepare a construction site-EMP based on the Generic construction EMP.
- The Contractor shall take appropriate sanctions against personnel violating the applicable specifications and provisions on environment, health and safety.
- The Contractor shall document, and systematically report to the school management and the project implementation unit (PIU), of each incident or accident, damage or degradation caused to the environment, workers or residents or their assets, in the course of the works.
- The Contractor shall provide all relevant information about the Generic EMP and the Site-EMP to subcontractor/s and be responsible for their actions.
- The Contractor shall provide the school administration and the PIU with a written notice of any unanticipated environmental, health and safety risks or impacts that arise during implementation of the contract that were not considered in the Generic EMP.

Environmental Site Inspection and Monitoring Checklist

Note: This form is designed for use by the project implementation unit (PIU) project coordinator during site inspections and monitoring and may not be exhaustive. Modifications and additions may be necessary to suit individual sub-projects and to address specific environmental issues and mitigation measures.

Name of school: _____
Location: _____
Inspection Date: _____
Inspection Time: _____
Inspector(s): _____

Inspection Item	Yes	No	N.A.	Remarks (i.e. problem observed, possible cause of nonconformity and/or proposed corrective/ preventative actions)
1. Has contractor appointed a construction supervisor and is the supervisor on-site?				
2. Is information pertaining to construction disclosed at construction site (including construction period, contractor information, grievance hotline, etc)?				
3. Are chemicals/hazardous products and waste stored on impermeable surfaces in secure, covered areas?				
4. Is there evidence of oil spillage?				
5. Are chemicals stored and labeled properly?				
6. Is construction equipment well maintained (any black smoke observed)?				
7. Is there evidence of excessive dust generation?				
8. Are there enclosures around the main dust-generating activities?				
9. Does contractor regularly consult with school management as well as nearby residents to identify concerns?				
10. Is there evidence of excessive noise?				
11. Any noise mitigation measures adopted (e.g. use noise barrier / enclosure)?				
12. Is construction wastewater and domestic wastewater discharged to sewer systems (if possible), or are on-site treatment facilities (septic tank) provided?				
13. Is there any wastewater discharged to soil or surface water?				
14. Is the site kept clean and tidy (e.g. litter free, good housekeeping)?				
15. Are separated labeled containers/areas provided for facilitating recycling and waste segregation?				
16. Are construction wastes/recyclable wastes and general refuse removed off site regularly?				
17. Is safe supply of clean water and an adequate number of toilets provided for workers?				
18. Is personal protection equipment provided for workers?				
19. Are clear information and warning signs placed at construction sites in view of the students and staff as well as the public?				
20. Are all construction sites made secure, discouraging access through appropriate				

Inspection Item	Yes	No	N.A.	Remarks (i.e. problem observed, possible cause of nonconformity and/or proposed corrective/ preventative actions)
fencing?				
21. Are disturbed areas properly re-vegetate after completion of works?				
22. Were any complaints filed with the contractor, and have staff and nearby residents raised any concerns related to the performance of contractor?				
23. Any other problems identified or observations made?				

_____

Date, Name and Signature of PIU staff/ consultant

Annexure – 4: Standards for Environment Monitoring for Air, Water, Noise and Soil Sampling

MNS 4585- 2007 "Air quality. General technical requirements"

Table 1. Maximum acceptable level of toxic elements in outdoor air

Toxic elements	Average duration of measurement	Measuring unit	Maximum acceptable content
Chemical influence			
(SO_2)*	Average for 10 minute Average for 20 minute Average for 24 hours Average for 1 year	mkg/ m^3	500 450 20 10
(CO)*	Average for 30 minute Average for 1 hour Average for 8 hours	mkg/ m^3	60000 30000 10000
(NO_2)*	Average for 20 minute Average for 24 hours Average for 1 year	mkg/ m^3	85 40 30
(O_3)*	Average for 8 hours	mkg/ m^3	100
Dust (Total particular matter)*	Average for 30 minute Average for 24 hours Average for 1 year	mkg/ m^3	500 150 100
Particular matter bigger size (PM 10)*	Average for 24 hours Average for 1 year	mkg/ m^3	100 50
particular matter small size (PM 2.5)*	Average for 24 hours Average for 1 year	mkg/ m^3	50 25
(Pb)*	Average for 24 hours Average for 1 year	mkg/ m^3	1 0,5
($C_{20}H_{12}$)*	Average for 24 hours	mkg/ m^3	0,001
Physical influence			
Noise* - day time (07-23) - night time (23-07)	 Average of 16 hours Average of 8 hours	dB	60 45
Note: * Can be used for indoor air quality			

Table 2. Maximum acceptable level of toxic elements in indoor air

	Average duration of measurement	Measuring unit	Maximum acceptable content
Chemical influence			
(CO_2)	Average for 24 hours	mkg/ m^3	1800
(Rn)	Average for 24 hours	Mk3v/ m^3	0,005
(CH_2O)	Average for 24 hours	mkg/ m^3	0,3
Air oxidizing	Average for 24 hours	mkg/ m^3	4000-6000

Table 3. Maximum acceptable level physical features of outdoor air

	Assessment condition	Measuring Unit	Acceptable level
Temperature*	In average	^0C	18-22
Velocity of air movement		m/c	0.2-0.4
Relative humidity		%	30-60
Luminescence - People stay permanently - People do not stay permanently		Lux	 150-300 50-150

Table 4. Ambient Air Quality Standards in Respect of Noise: MNS 4585-2007

Area Code	Category of Area/Zone	Limits in dB(A) Leq *	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note;

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 metres around hospitals, educational institutions and courts. The silence zones are zones which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

*dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level, over a specified period.

Source: Ministry of Environment and Tourism

Table 5. World Bank Environmental Air Quality Guideline (IFC 2007)

Parameter	Average duration of measurement	Measuring unit	Maximum acceptable content
Particular matter bigger size (PM 10)	Average for 1 year	mkg/m³	20
	Average per 24 hour	mkg/m³	50
particular matter small size (PM 2.5)	Average for 1 year	mkg/m³	10
	Average per 24 hour	mkg/m³	25
(SO_2)	Average per 24 hour	mkg/m³	20
	10 minutes	mkg/m³	500
(NO_2)	Average for 1 year	mkg/m³	40
	Average per hour	mkg/m³	200
Ozon (O_3)	Average per 8 hour	mkg/m³	100

Table 6. Soil microbiological pollution standard MNS 3297:91

Soil Sanitation Condition	E.Coli, titer	CL, perfringens, titer
No pollution	1.0<	0.1<
Low pollution	0.1-0.01	0.1-0.01
Medium pollution	0.01-0.001	0.01-0.001
High pollution	0.001>	0.0001>

Table 7. Quality parameters of water sphere MNS4586:1998

Parameters	Quality parameters of water sphere MNS4586:1998
HCO3-	N/A
CO32-	N/A
Cl	300/150
SO42-	100/100
NO3	9/3-N
Na+	N/A
K+	N/A
Ca2+	none<45
Mg2+	none<30
Mineralization	none<300
Hardness	none<3.55
ПИЧ	none<5.0
pH	6.5-8.8

Table 8: Mongolian and WHO Standards for drinking water quality (permissible limit of chemical composition)

Parameters		WHO 2011 4th edition	MNS 900 : 2010	MNS 6148: 2010	MNS 4943 : 2011	MNS 4586: 1998
Aluminum	Al	(0.9)([1])(*ha*)([2])	0.5(***)([3])	0.5	0.5	
Ammonium	NH_4^+	*n.g.* ([4]) (1.5)	1.5(**)	3.0	6.0 (as N)	0.5 (as N)
Antimony	Sb	0.020	0.020(***)	0.006		
Arsenic	As	0.010	0.01	0.01	0.01	0.01

Barium	Ba	0.7	0.7	2	1.5	
Beryllium	Be	*n.g.* (0.012)(*ha)*	0.0002(*)	0.001	0.001	
Bor	B	2.4	0.5	1.0	0.3	
Bromide	Br	*n.g.*		0.01 *bromate*?		
Cadmium	Cd	0.003	0.003(*)	0.003	0.03	0.005
Calcium	Ca	*n.g.*(300)	100			
Cloride	Cl	*n.g.*(250)	350	350		300
Chromium	Cr	0.050	0.050	0.070	0.300	0.050
Chromium 6^+	Cr^{6+}	*n.g.*		0.005	??	0.010
Cobalt	Co	*n.g.*			0.020	0.010
Copper	Cu	2.0	1.0	1.0	0.3	0.010
Cyanide	CN^-	*n.g.* (0.070)	0.010(*)	0.1/0.005([7])	0.05/0.005([7])	
Fluoride	F	1.5	0.7-1.5	1.5		1.5
Hydrosulfuric acid	H_2S	*n.g* (0.1)	0.1	0.002	0.5	
Iodine	I	*n.g.*	1.0(***)			
Iron	Fe	*n.g.* (0.3)	0.3(***)	0.3	1.0	
Lead	Pb	0.010	0.010(***)	0.050	0.100	0.010
Magnesium	Mg	*see Hardness*	30			
Manganate	Mn	0.4(ha)/(0.1)	0.1	0.1	0.5	0.1
Mercury	Hg	0.006 ([5])	0.0005(*)	0.002	0.001	0.0001
Molybdenium	Mo	*n.g.* (0.070)	0.070	0.040	0.500	0.250
Nicle	Ni	0.070	0.020(***)	0.1	0.2	0.010
Nitrate	NO_3^-	50	50(**)	50	15 (as tot N)	9.0 (as N)
Nitrite	NO_2^-	3.0	1.0(**)	1.0		0.02 (as N)
Phosphate	PO_4^{3-}	*n.g.*	3.5	3.5	1.5 (as tot P)	0.1 (as P)
Selenium	Se	0.040	0.010	0.040	0.020	
Argentium	Ag	*n.g.*(0.1)(*ha*)	0.1	0.1		
Sodium	Na	*n.g.* (200)	200			
Strontium	Sr	*n.g.*	2		2.0	
Sulphate	SO_4^{--}	*n.g.* (250)	500	500		100
Thallium	Tl	*n.g.*		0.0005		
Vanadium	V	*n.g.*		0.06 V_2O_5	0.1	
Copper	Zn	*n.g.* (4.0)	5.0(***)	5.0	1.0	0.01
Temprature	*T*°C	*n.g.*			20°C	
pH	*pH*	*n.g.* (6.5-8.5)	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5
Total dissolvable solids	*TDS*	*n.g.* (1000)	1000(1500)		1000 ([8])	
Hardness	*H* meq/L	(15 meq/L)	7.0 meq/L			??
Uranium	U	0.03/10 Bq/L	0.015	0.020	0.050	
Radium	^{226}Ra	1 Bq/L				
Total alpha	α tot	0.5 Bq/L ([6])	0.1 Bq/L			
Total beta	β tot	1 Bq/L ([6])	1 Bq/L			

Remark:

1. ([1]):(xx) Sub-normative for drinking water; ([2]) : (*ha*) Health monitoring (aging); ([3]) : (**) industrial or Agricultural pollution, (***) eliminate pollution; ([4]) : *n.g.* or clarified : ther is no interpretation, value; ([5]) non organic mercury; ([6]) screening level to be studied further; ([7]) total/free; ([8]) value that more than max or natural contents by 20%; put the values to be checked in cells highlighted or shaded by color. The measuring unit would be mg/l when the values are not indicated.
2. MNS 900: 2010 – Drinking water. Hygienic requirement and quality monitoring
   WHO ISBN 978 92 4 154815 1 – Drinking water quality general guideline, 4th edition, 2011.
   MNS 6148: 2010 – Water quality. Maximium limit for polluters in underground water
   MNS 4943: 2011 – Neutralised waste water effluent to the environment
   MNS 4586: 1998 – Water quality, general requirement (To evaluate surface water quality)

Table 9. Drinking Water Standards

Parameter	Standard Drinking water Specification as	
	Desirable Limit	Permissible Limit in absence of alternate source
Essential Characteristics-Physical Parameter		
Color, Hazen Units	5	25
Odour	Unobjectionable	-
Taste	Agreeable	-
Turbidity, NTU	5	10
pH	6.5 – 8.5	-
Essential Characteristics-Chemical Parameters		
Total Hardness as $CaCO_3$	300 Mg / L	600 Mg / L
Iron as Fe	0.3 Mg / L	1.0 Mg / L
Chloride as Cl	250 Mg / L	1000 Mg / L
Residual Free Chlorine	0.2 Mg / L	-
Desirable Characteristics-Chemical Parameters		
Dissolved Solids	500 Mg / L	2000 Mg / L
Calcium as Ca	75 Mg / L	200 Mg / L
Magnesium as Mg	30 Mg / L	100 Mg / L
Copper as Cu	0.05 Mg / L	1.5 Mg / L
Manganese as Mn	0.1 Mg / L	0.3 Mg / L
Sulphate as SO_4	200 Mg / L	400 Mg / L
Nitrate as NO_3	45 Mg / L	No relaxation
Fluoride as F	1.0 Mg / L	1.5 Mg / L
Phenolic Compounds as C_6H_5OH	0.001 Mg / L	0.002 Mg / L
Mercury as Hg	0.001 Mg / L	No relaxation
Cadmium as Cd	0.01 Mg / L	No relaxation
Selenium as Se	0.01 Mg / L	No relaxation
Arsenic as As	0.05 Mg / L	No relaxation
Cyanide as CN	0.05 Mg / L	No relaxation
Lead as Pb	0.05 Mg / L	No relaxation
Zinc as Zn	5 Mg / L	15 Mg / L
Anionic Detergents as MBAS	0.2 Mg / L	1.0 Mg / L
Chromium as Cr^{+6}	0.05 Mg / L	No relaxation
Mineral Oil	0.01 Mg / L	0.03 Mg / L
Alkalinity	200 Mg / L	600 Mg / L
Aluminum as Al	0.03 Mg / L	0.2 Mg / L
Boron as B	1 Mg / L	5 Mg / L
Bacteriological Characteristics		
Coliform Organisms	10 CFU	10 CFU
E. Coli	Absent	Absent

Remark: CFU-Colony Forming Unit

Table 10. Water analysis parameters

Parameter	Desirable Limit	Permissible Limit in absence of alternate source
Color, Hazen Units	5	25
Turbidity, NTU	5	10
Residual Free Chlorine	0.2 Mg / L	-
Copper as Cu	0.05 Mg / L	1.5 Mg / L
Manganese as Mn	0.1 Mg / L	0.3 Mg / L
Phenolic Compounds as C_6H_5OH	0.001 Mg / L	0.002 Mg / L
Mercury as Hg	0.001 Mg / L	No relaxation
Cadmium as Cd	0.01 Mg / L	No relaxation
Selenium as Se	0.01 Mg / L	No relaxation
Arsenic as As	0.05 Mg / L	No relaxation
Cyanide as CN	0.05 Mg / L	No relaxation
Lead as Pb	0.05 Mg / L	No relaxation
Zinc as Zn	5 Mg / L	15 Mg / L
Anionic Detergents as MBAS	0.2 Mg / L	1.0 Mg / L
Chromium as Cr^{+6}	0.05 Mg / L	No relaxation
Mineral Oil	0.01 Mg / L	0.03 Mg / L
Aluminum as Al	0.03 Mg / L	0.2 Mg / L
Boron as B	1 Mg / L	5 Mg / L

Table 11. Acceptable level of pollutants in effluent to be discharged into surface water MNS 4943:2000

#	Pollutants	Measuring unit	Acceptable level
1	Water temperature	^{0}C	20
2	Hydrogen indicator		6-9
3	BOD	mgO/l	20
4	COD	mgO/l	50
5	Permanganit oxidation	mgO/l	20
6	Particular matter	mg/l	35
7	Dissolved salt	mg/l	800
8	Cianyte	mg/l	0.05
9	Fhenol	mg/l	0.05
10	Mineral grease	mg/l	1
11	Fat	мг/л	5
12	Sulpfide	мг/л	0.2
13	Cuprum	мг/л	0.3
14	Cadmium, Cd	мг/л	0.03
15	Manganuim	мг/л	0.5
16	Mercury	мг/л	0.001
17	Sb	мг/л	0.05
18	Nikel, Ni	мг/л	0.2
19	Selenium	мг/л	0.02
20	Ferrum	мг/л	1
21	Plumbum	мг/л	0.1
22	Chromium total	мг/л	0.3
23	Chromium 6	мг/л	0.05
24	Zinc	мг/л	1
25	ammonium	мг/л	8
26	Total nytrogen	мг/л	20 2.5’ 21
27	Total Phosporius	мг/л	1.5 0.3’
28	Left chloride	мг/л	1.5
29	Threchloretilen	мг/л	0.2
30	Tetrachloretilen	мг/л	0.1
31	Phosporius organic compounds	мг/л	0.2

Table 12. Acceptable level of pollutants in effluent to be discharged into ground soil MNS 4943:2000

#	Pollutants	Measuring unit	Acceptable level
1	Water temperature	^{0}C	20
2	Odor		Odor has not to be smelled
3	Hydrogen indicator		6-9
4	BOD	мгО/л	50
5	COD	мгО/л	100
6	Permanganit oxidation	мгО/л	30
7	Particular matter	мг/л	150
8	Dissolved salt	мг/л	1000
9	Cianyte	мг/л	0.2
10	Mineral grease	мг/л	3
11	Fat	мг/л	10
12	Sulphide	мг/л	0.5
13	Cu	мг/л	0.5
14	Cd	мг/л	0.05
15	Manganuim	мг/л	1
16	Mercury	мг/л	0.001
17	Sb	мг/л	0.1
18	Ni	мг/л	0.5
19	Selenium	мг/л	0.02
20	Fe	мг/л	2
21	Pb	мг/л	0.5

22	Chromium total	мг/л	0.5
23	Chromium 6	мг/л	0.1
24	Zn	мг/л	2
25	Ammonium	мг/л	15
26	Nytrogen total	мг/л	30
27	Phosphor total	мг/л	5

Table 13. Acceptable content of chemical susbstances in water sphere . MNS 4586:1998

#	Substances	Measuring unit	Acceptable level
1	pH		6,5-8,5
2	Oxigen dissolved*	mgO/l	Not less than 6 and 4
3	BOD_5	mgO/l	3
4	COD- Mn	mgO/l	10
5	NH_4-N	mgN/l	0,5
6	NO_2-N	mgN/l	0,02
7	NO_3-N	mgN/l	9.0
8	PO_4-P	mgP/l	0,1
9	Cl	mg/l	300
10	F	mg/l	1.5
11	SO_4	mg/l	100
12	Mn	mg/l	0.1
13	Ni	mg/l	0.01
14	Cu	mg/l	0.01
15	Mo	mg/l	0.25
16	Cd	mg/l	0.005
17	Co	mg/l	0.01
18	Pb	mg/l	0.01
19	As	mg/l	0.01
20	Cr total	mg/l	0.05
21	Cr^{6+}	mg/l	0.01
22	Zn	mg/l	0.01
23	Hg	мkg/л	0.1
24	Mineral fat	mg/l	0.05
25	Phenol	mg/l	0.001
26	Surface active complex substances	mg/l	0.1
27	Benzo (a) pyren	mkg/l	0.005

* It has to be not less than 6 mgO/l in warm season and not less than 4 mgO/l in the period with ice cover.

Table 14. MNS 5457- 2005 "Maximum acceptable level and measuring method of toxic elements (CO, SO_2, NOx, ash) in the exhaust gases contents of heating boilers and home stoves"

Table 14.1.

	Boiler installed capacity (Q), MW	(NO_x)				(SO_2)			
		Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m^3	Emitted in unit of time, g/s	Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m^3	Emitted in unit of time, g/s
1	$Q \leq 0.8$	6.75	0.23	450	0.3	12.0	0.4	800	0.4
2	$0.8 \leq Q \leq 3.15$	6.0	0.2	400	0.25	9.0	0.3	600	0.5

Table 14.2.

	Boiler installed capacity (Q), MW	(CO)				Ash			
		Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m^3	Emitted in unit of time, g/s	Emitted by burning 1kg fuel equivalent, g/kg f.e.	Emitted by 1 MJ heat produced, g/MJ	Concentration in the exhaust gases mg/m^3	Emitted in unit of time, g/s
1	Home stove			4000				2500	
2	$Q \leq 0.8$	37.5	1.28	2500	1.8	6.0	0.15	400	0.34
3	$0.8 \leq Q \leq 3.15$	30	1.02	2000	1.5	4.5	0.2	300	0.23

Annexure - 5: Sample Environment Monitoring Report

Environmental Safeguards Document

Environment Monitoring Report

(-XX)

Document Stage:
Project Number:
Period –
Reporting –

Mongolia: Sustaining Access to and Quality of Education during Economic Difficulties

Prepared by Ministry of Education, Culture, Science and Sports (MECSS) for Asian Development Bank

The environment monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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Annexure - 6 : Details of Public Consultation (Environment)

1. Details of Public Consultation (Environment) (1-5)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
1	Do you support for the construction at school?	All of the 61 /28 men and 33 women/ participants support the construction of school building extension. Schools and kindergartens being in the vicinity of their home is very important to the parents	68 participants are 100% supporting the construction of the new kindergarten. They expressed that accessibility to kindergartens/schools and those being in the vicinity of their homes are an important necessity. 149 children in the bag have no access to kindergarten.	We are supporting the construction of new kindergarten. The only kindergarten in our sum is overcrowded and operating in an apartment unit.	All of the participants of the discussion supported the construction of new kindergarten building. Population of the bag is increasing every year. Those children who could not go to kindergarten will be provided with an opportunity to have pre-school education.	Construction of new school building is supported 100%.
2	What is educational status of your community?	People's educational level is average and the most of the households are below subsistence level. Extension of the school building will help pushing educational level forward.	Our educational level is above average.	Half of the population has higher education degree and the other half has completed secondary education. Some of the households in the area of the kindergarten are sedentary and the others are herders who came to the town to send their children to school. Most of them completed secondary education.	Erdenet city is one of the major cities in the country and has relatively high education level.	We do not have a secondary school in the area.
3	Will this construction at Schools/Kindergarten give any negative impact to your apartment complex?	Majority of the participants said there would be no significant negative effects and the minority of the participants said that there might be some negative effects such as noise and dust. It was also said that the negative effects can be managed since a favorable	There will probably be negative effects /dust, noise etc./, but these effects can be managed since favorable learning condition for the children will be created. If the construction hoarding is good enough, dust from the construction work can be less.	We think there will be no or less effects, because we understand the kindergarten will be constructed within its plot of land. We want one road to be used for transportation for the reason that there will be a lot of puddles after raining during summer.	Households in the front might face dust issues. Some streets and ways, especially 42th, 27th, 15th and 1st ways, might get damaged from heavy equipment to be used for earth work of construction.	There will be no effects to the kindergarten since it is 450 m distant.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
		condition for learning is created for the children.				
4	What benefits do you perceive from this construction?	Favourable condition for learning is created for the children and access to education will be increased. Children's commute to school and back to home will be safer. Time will be saved and the parents will be more satisfied. Children's enthusiasm to learn will be raised and the number students will increase. Appearance of the city will be elevated. And the income of the near service centers will increase.	Kindergarten conditions and accessibility to education will be improved. Less time will be required for the parents to take their children to kindergarten and their level of satisfaction level will be increased. It will also affect the appearance of the city positively.	Apart from the access to kindergarten, a space per child will be in compliance with the norms and standards. Children of the Soum will have access to kindergarten 100%. We want our children to go to kindergarten from young age and be educated in safe and comfortable environment. Those people who could not send their children to kindergarten will have more time on their hands to improve their livelihood.	Of course, it will make it more accessible to education. A safe learning environment for the children will be ensured. We are happy that there will be a kindergarten near our home.	Construction of this school shall allow those children, who commute 2-4 km from home to school, to go to a school that is near to their homes. Construction of apartment area is planned in the area. Thus, children living in the apartments can go to this school too.
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	If a road for construction work is determined, there shall be a little effect on the parking. Due to having a little space in that area, vehicles should be parked in the construction area. There is a cultural place near construction site. Therefore, no difficulties should be caused to its operations. Some of participants said that there will be no impact because the parking area is distant.	The construction site where the kindergarten will be built is already in the urban plan of the province to be developed into apartment area. There is plenty of space, thus no violations.	If the road is determined, there will be lesser effects on the parking. A road which will have the least impact for the citizens and organizations should be used. The kindergarten area enough space, and the cars that cannot be parked in the area should be parked appropriately out of the area.	The place where kindergarten is going to be constructed is spacious and is reflected in the urban plan. Therefore, there should be no conflicts related to the installation of pipes and facilities.	If the road for the construction work is settled, there shall be a little effect on the parking. Due to having a little space in that area, vehicles should be parked in the construction area. There is a cultural place near construction site. Therefore, no difficulties should be caused to its operations.
6	Would you be having any construction causes some dust during digging and storing in the school premises?	Dust and noise will affect to a certain degree. However, construction of kindergarten is more important for the local development. We, the	Dust and noise will affect to a certain degree. However, construction of kindergarten is important for the local development, so the noise is perceived	Our Soum located in mountainous region of the country with wet climate, thus we have no dirt and dust issues. For issues such as noise, too loud and	Noise and dust will cause a problem to a certain degree. But the location is across the road and is distant from where we live.	Construction site is 600 m distant from the settlement area. Therefore, there will be no issues.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
		residents, will try to stay level-headed and will be involved in mitigating difficulties.	as inevitable. We, the residents, will try to stay level-headed. Also, the construction site is in a place with river grass, and dust is expected to be less.	continuous noise will be difficult.		
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	There will be no difficulties caused for the people who work in offices and service centers, because they will be in the area only during the day time. Households in the immediate vicinity of the construction site are expected to have more difficulties. We hope they will not be transporting construction materials every night. And also, we will be involved in mitigating difficulties.	Households in the immediate vicinity of the construction site are expected to have more difficulties. We hope they will not be transporting construction materials every night since it's not construction of skyscrapers. It is safe to warn to be careful when pouring the foundation, because water flows easily in that place.	People who work in the near offices and service centers expressed no concerns since they work during day time. For households, they will not cause difficulties for the construction, because the development is appreciated by them.	There will be no problem, because the construction site is next to the main road and timber market.	Construction site is 600 m distant from the settlement area. Therefore, there will be no issues.
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	There will be no difficulties caused to the people who work in offices and service centers. Compared to young people, the elderly might have more difficulties such as having trouble to sleep. So, we would like the construction company to properly manage their works.	Compared to young people, the elderly might have more difficulties such as having trouble to sleep. So, we would like the construction company to properly manage their works and inform about necessary night works.	Night time construction work will have no effect for the people who work in the near offices and service centers. It is very peaceful and quiet during the night, and the construction work noise is expected to be even louder due to our Soum's location between high mountains. We see this as a force majeure. Most of the households go to countryside during summer and this should be taken into account by the construction company.	There will be no problem, because it is distant from where we live.	Construction site is 600 m distant from the settlement area. Therefore, there will be no issues.
9	How would you react to construction company transporting waste and construction material	There will be no problem if transportation norms are observed. Any accidents related to falling	There will be no or less difficulties if the transportation norms are observed. We would like	There will be negative effects due to transporting construction waste uncovered or	There will be no problem if transportation norms are observed. Any accidents related to falling and	Construction site is 600 m distant from the settlement area. Therefore, there will be no issues.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
	through your apartment area or parking area?	and dragging of things being transported should be prevented. Wastes that are harmful to health must be removed immediately in a timely manner. There will be no negative impressions if these are taken care of.	it if the construction waste is transported as distant as possible from the households.	without observing transportation norms. In order to prevent from such incidents, transportation norms should be observed. Incidents such as falling and dragging of things being transported should be prevented. There will be no problems for the households when the transportation is properly handled without having things fallen on the road. In addition, due to high rainfalls, there will be a lot of puddles in the streets. Therefore, there should be a dedicated road for transportation to prevent our cars getting damaged from something fallen in the puddles during transportation related to construction.	dragging of things being transported should be prevented.	
10	Are you concerned about Health & Safety of residents and children during the construction?	All of the participants expressed their concerns related to safety of children. Works such as patrolling should be conducted by involving the patrols of the construction site, school teachers, workers, parents and the people who live in the area, especially during the time when school starts and finishes.	Every participant expressed their concerns regarding children's safety. Parents said that construction work signs, temporary fencing and construction zone must be set and placed clearly and satisfactorily. They said that they will also warn their children not to play or go to the construction area.	Construction work shall be carried out within the kindergarten plot of land. Kindergarten does not work during summer and parents pick up their children from the kindergarten when it is working. Therefore, we do not see immediate danger to safety of the children, but the kindergarten employees should take potential issues into account.	We do not have concerns on that. Because it is going to be built in a safe zone from our homes.	Construction site is 600 m distant from the settlement area. Therefore, there will be no issues.
11	Would you like to participate	People who work in	Please clarify more about	People who work for	As mentioned earlier, we are	Such council can be established.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
	in safety monitoring and controlling activities?	offices and service centers expressed their interests not to be involved. However, the residents were supporting the idea of conducting inspections and they expressed their interests in being involved in conducting inspections.	the inspections. We would like to have more information and we will show support if necessary.	service organizations and private sector expressed their interests not to be involved. Governor's office expressed their willingness to provide professional support for the council. It must have been noticed that the households are living in the immediate vicinity to the construction site. So, there are concerns over children's safety of those people who do not go to countryside during summer.	not interested in being involved because we do not have any concerns over safety. If it is required by the governor of the bag, we will be involved.	
12	Would you be willing to form a Committee to help to school during the construction period?	Most of the participants proposed an establishment of a council to ensure the safety of children and to protect the rights of the residents. Also, it can conduct inspections for the construction work.	We think it is right to hold discussion about this issue between the construction company and us, local representatives. We will be willing to take part if the residents request us to do so.	It would be better if such council is established. Governor's office will be actively involved in the activities of the council. Citizens support the idea of establishing a council. Citizens wish the kindergarten building to be durable for a long time by using quality materials for construction and are interested in being involved in the process.	We fully support the idea of establishing such council. There are number of unemployed people with profession of construction in our bag and we would appreciate it if the construction company supports our involvement in the process.	We want it.
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	Number of things should be taken into account. For example, damages to school building, its green area, roads and the environment should be prevented. After the construction, the area should be maintained. Construction materials such as sand and aggregate	The environment should be maintained after the construction. It should be taken into consideration that water show after digging 2-3 meters in the area.	Administration of the sum is interested in cooperating with the construction company regarding provision of construction materials such as sand, cement and water. Our Soum has number of natural attractions and receives	Public and administration organizations should focus and work on such matters.	Environmental impact assessment should be conducted by professional organization. And the assessment should be observed for the works.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
		should be supplied from a designated place.		many tourists. For this reason, there should be a dedicated road for transportation of construction materials. Heavy equipment might damage the surface of the soil. We do not have a paved road except for the main road.		
14	If you have any problem caused by this school/kindergarten construction, whom would you like to contact? (Construction company, school, urban department etc.)	Management of the contractor / company/; Administration of the school; Responsible person of the sum administration; Responsible person of the province administration and/or State professional inspector.	Clear information cannot be given on this issue. It should be informed to the administration of the province, governor of the bag and/or the construction company.	Management of the construction company, kindergarten and the other public, administrative organizations	Governor of the bag.	Will contact the Darkhan city Governor's office and urban development office
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	Heating is supplied from steam boiler in Govi-Altai province, but it is not enough to meet the standard. Due to issues related to heating, many new buildings cannot operate during winter. Poor heating of building deteriorate its quality and durability. Therefore, we prefer electric heating.	Heating loss of the new kindergarten should be taken into account. Because it is located in a place with cold breeze of river.	We hope the outside of the kindergarten will have modern playground.	Build according to blue print	The building to be constructed should use environmentally friendly solar energy and power for its heating. Energy saving technology should be used.
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	There will be no problem, because there are no shops, business, industrial or service centers in the school area. However, there is the cultural place of the province, thus construction works should be managed when the	There are no such organizations in the area.	Heavy equipment and machinery should not be blocking the door of the shop or parking space. Due to the development, population will increase and economy will improve.	There will be no negative effects.	There are no shops or business/service centers in the area.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
		cultural place is operating.				
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	Environmental protection works are actively conducted in the area. There are no NGOs and civil society organizations. We have public servants, state inspector in charge of environmental matters of sums and inspector in charge of environmental matters of professional inspection agency.	None	None	There is but cannot remember the name as of now.	No information.
	Other issues	-To construct the building with quality material within the expected date; -To observe health and safety norms and standards during the construction work; -To consider comments and proposals from local administration and citizens; -To fulfill its social responsibility to rehabilitate the environment after the construction;	None	-To conduct transportation using a dedicated road in order to ensure safety of the citizens; -To park the vehicles in the dedicated parking space; -To not to conduct loud works during night time; If Ger area street road must be used for transportation, the least populated street shall be used; -To cooperate with the administration of the sum to prevent from environmental damages; -To construct the building according to modern standards; -To take the landscaping and maintenance of the environment into account; -To commission within the expected date; -To establish inspection council;	-To construct the building with quality material within the expected date; -To observe health and safety norms and standards during the construction work; -To consider comments and proposals from local administration and citizens; -To fulfill its social responsibility to rehabilitate the environment after the construction; -To involve citizens in construction work; Given the fact that our city is populated and has small land, the new kindergarten should be of large capacity.	-Landscaping and maintenance of the environment and green area should be taken into serious consideration; -Safety should be number one importance during construction and the workers of every stages of the project should be trained on HSE. -Professional and experienced company should be selected for the construction. -Clean water should be used properly for the activities of the project. -There should be a dedicated point for landfill and a contract should be concluded with the authorized organization regarding landfill. Wastes should be taken to the landfill on a regular basis. Sanitation and disinfection shall be carried out regularly and environmental pollution should be prevented. -To cooperate with

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**1. School Khantaishir in Gobi-Altai Aimag**	**2. New KG in Baynkhongor, Aimag**	**3. New KG in Teshig Soum Bulgan Aimag,**	**4. New KG in Erdenet city of Orkhon Aimag**	**5. New school in Mangirt bag of Darkhan Uul Aimag**
		1	**2**	**3**	**4**	**5**
				-To ensure citizens involvement in the process.		organizations and agencies in charge to ensure the implementation of law on environmental protection; -Information board shall be operated for the public, vehicles should be properly parked without blocking movements and signs should be placed. -For the lighting of the building, energy saving lights shall be used. -Tools and equipment to prevent from fire and other disasters should be ready for use. -To create conditions for vehicles to move and pass freely in case of emergency.

2. Details of Public Consultation (Environment) (continuing-6-10)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
1	Do you support for the construction at school.	Citizen, Battumur: An idea to extend the kindergarten building is supported for a reason that there is no land for construction of new school or kindergarten in the area. With the extension of kindergarten building, number of enrollees at the kindergarten will increase and the parents will be enabled to work.	Supported by the 94% of the participants.	Number of children in one class will be less, teachers' work load will reduced, and they will be given an opportunity to work with every child. Children will be learning in safer environment. Parents will have time to work and increase their income. Our kindergarten has a land for extension. According to a law, there should be 25 children in a class, but we have 60-70	We support the construction. The kindergarten should have 8 to 12 classes.	School building extension is 100% supported.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
				children. Due to this problem, children get sick easily and there is not enough air. Kindergarten building extension is what we want.		
2	What is educational status of your community?	Our district is one of the oldest districts of the capital city and the residents of the 1st khoroo are sedentary or hardly resettled, and their educational level is above average.	Of the participants, 17% said the enrolment is satisfactory; 35% - average; 5% - no; 28% - not satisfactory.	The 65th kindergarten became one of the top kindergartens among state owned kindergartens in 2016, the best kindergarten of Khan-Uul district twice, and the best kindergarten award from "Kharaatsai" cultural competition organized by the World Vision. Teachers and the employees have many years of experience.	Educational level is average.	Quality education is provided at the school and the classrooms are adequate. However, there are no auditorium which contributes to the art and aesthetics knowledge and education of the students.
3	Will this construction at Schools/Kindergarten give any negative impact to your apartment complex?	There will be no effects. If labor safety is observed in a dedicated area, there will be no effects. Many new buildings were constructed in a place where we live and we had no issues related to noise or dust.	77% answered "no" because children will be enrolled in kindergarten. 2% answered there would not be significant negative effects. 10% answered there would be negative effects. 11% did not answer.	The kindergarten has a land for extension on its left side. Thus, there will not be negative effects in the area.	No negative effects, because it is distant from houses and apartments located along the road.	There will be no effects, because the school building is located in the westernmost area of the sum.
4	What benefits do you perceive from this construction?	Every child will go to kindergarten and a favourable environment will be created for children to learn and develop. Access to kindergarten will be increased as well as workplace.	Every child will go or will be given an opportunity to go to kindergarten. 84% of the participants answered a favourable condition was created for the children. 16% answered no.	Children will be 100% enrolled in kindergarten. Number of children in one class will be less, teachers' work load will reduced, and they will be given an opportunity to work with every child. Children will be learning in safer environment. Parents will have time to work and increase their	Children will be provided with an opportunity to learn in more comfortable environment and the number of enrollees will increase. With the increase of number of enrollees, workplace will be added. We see it as an investment for the children. Number of children in one class will be reduced.	Learning environment will be improved and access to education will be increased. Art and aesthetics knowledge and education improved. Students will be more active and the number of students will increase.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
				income.		
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	It is a temporary difficulty and we should see the development in the future. Construction company should be accountable for the works they had done and the environment should be rehabilitated after the installation of utilities facilities /pipes etc./. After the construction, road must be maintained due to damages occurred by mixer truck. Possible difficulties such as power shortage and closing of road can take place when installing utilities facilities, and they should be taken care of.	67% of the participants answered "it can be managed temporarily", "it is ok during summer time" and a "big issue is being solved" expressing that there would not be any conflicts. 7% answered there would be issues. Remaining 26% did not answer the question.	There will not be a problem related to vehicles entering and exiting construction site and installation of pipes etc.	There will not be a problem. We expect the roads and pavements would not be used, because the construction will be conducted in the plot of the kindergarten.	There will not be such issues.
6	Would you be having any construction causes some dust during digging and storing in the school premises?	It would be better if construction work is conducted after children and elder people are off to their summer houses. Other than this, there will not be a problem. Infants might have difficulties to sleep due to loud noise from construction. And construction dust might have negative effects on human body. So construction work must be finished at scheduled hours.	64% of the participants answered "it can be managed temporarily", "it can be worked out" and "no". 2% answered "a little bit". 21% answered it will be a difficulty, thus it should be conducted during day time.	Dust and noise will not be cause issues for children and kindergarten teachers, because they will be on holiday during construction. Apartments are 120-250 m distant from construction site.	Noise will be a problem. But it can be managed by closing the windows etc.	Dust will cause difficulties for apparent reasons. Regarding noise, very loud noise might cause difficulties.
7	Will you have a problem if the construction company required to work during the night to bringing construction	There will not be a significant problem. The other construction companies might have transported construction	77% of the participants answered "it is not a big issue since it is for the children", "it can be worked out if it is not very late" and	Night time construction and transportation is acceptable, because apartments are 120-250 m distant from	We, the citizens, will support the construction if it is carried out according to the relevant legislations.	There will be no difficulties caused for the people who work in offices and service centers, because they will be in the area only during the

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
	material?	materials during night time. We did not hear any noise and slept through it.	"no". 12% answered it is unacceptable during night time, thus it should be conducted during work hours.	construction site.		day time.
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	Since the Government is not building a kindergarten for us, we will try to negotiate on the terms. If labor safety is observed in the area, there will be no effects.	74% of the participants answered "it is ok if not for many days", "it can be worked out" and "no difficulties". 21% answered "the construction company should take the residents into account" and "there will be issues".	There will not be a problem.	We will try to be patient, because it is a construction of kindergarten. We hope there will not be loud noises every day and night. The construction company should understand that there are people trying to rest and sleep.	Night time works will not cause difficulties for the people who work in offices and service centers during the day time.
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	There is nothing to object the night time transportation. It should be conducted taking the parking load into consideration. Heavy vehicles and trucks might collide with the other cars when they enter and exit the construction site, thus such incidents must be prevented.	70% of the participants answered "there will not be problems if kindergarten is being constructed", "it is ok" and "no difficulties if it is rehabilitated after the work". 17% answered "there will be negative effects".	The fact that there are 65-70 children in one class is one of the biggest difficulties and it is bigger and more serious than construction waste.	They should inform us about how they are going to manage construction waste. We can stay unworried as long as there is a contract or rules applied regarding waste management and transportation.	There will be no problem for use when the transportation norms are observed.
10	Are you concerned about Health & Safety of residents and children during the construction?	There will not be a problem if the construction company is accountable for its actions by observing relevant safety norms. And we, parents, will keep an eye on our children.	Very concerned. It should be conducted during holiday and safety must be ensured. A person who is in charge of construction work must take these into consideration. Construction company is responsible for the safety. 70% of the participants answered "it is ok when it is taken into account" and "yes". 30% answered "there is nothing to object since there are a lot of	We do not have concerns over children's health and safety because they are sent to camps or summer houses during that time. Signs should be placed around construction area.	Safety norms and standards must be observed during construction to prevent from potential accidents. A contract on accountability should be concluded. Safety should be a priority in the works of the construction company.	Entrance to the school is on the left side and the extension shall be conducted on the right side of the building. Thus there will probably be no issues.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
			buildings in the area".			
11	Would you like to participate in safety monitoring and controlling activities?	If no specialization is required, we can take part in it. Citizen, Otgonsuren: I think professional people should be recruited.	67% of the participants answered "acceptable if possible" and "wanted". 30% answered "no or not wanted".	We would like to take part in it.	We, teachers and kindergarten employees, can conduct inspection. The construction company can inform us about how we can be involved.	We support the inspections and are ready to take part in it.
12	Would you be willing to form a Committee to help to school during the construction period?	We want it and professionals should be recruited. And the other people should not intervene when there are people already recruited.	84% of the participants answered "inspection committee should be established" and "will take part in it if possible". 7% answered "inspection committee is not wanted". 9% did not answer.	Council of the kindergarten, parents' council, and teachers' council should be involved.	A council which will help works of the kindergarten should be established. A council comprised of teachers of the kindergarten and representatives of parents can be established, but we want to understand the benefits of establishing such a council first.	Most of the participants supported the idea of establishing council. It can conduct inspections for the construction work.
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	Environment should be rehabilitated after construction. The area should be sprinkled with water to prevent from causing allergies to the people during the construction.	Green area should be established. 68% of the participants answered "trees should not be cut", "not concerned because it is conducted during children's holiday" and "construction work should be conducted by taking the area where children will play into account". 11% answered "nothing to be considered".	Construction wastes should be removed in a timely manner. Signs with pictures that can be understood by children should be placed around construction waste area.	Outside of the kindergarten should be maintained. Vegetation and establishment of green area must be carried out satisfactorily. It should be carried out by professional people, not a construction company.	Damages to school building, its green area, roads and the environment should be prevented. After the construction, the area should be maintained.
14	If you have any problem caused by this school/kindergarten construction, whom would you like to contact? (Construction company, school, urban department etc.)	30 people answered to contact the construction company; 9 people answered to contact the kindergarten administration;12 people answered to contact the administration of the district; 5 people answered they did not	70% of the participants answered "construction company". 4% answered "administration of the district". 21% answered "administration of the kindergarten".	If any issue arises, we will contact the construction company for resolution.	Construction company and the other responsible people.	Will contact the management or the person responsible of the construction company.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**6. KG#22 in Ulaanbaatar**	**7. KG #82 in Ulaanbaatar**	**8. KG #65 in Ulaanbaatar**	**9. KG# 8 in Ulaanbaatar city**	**10. School in Baruunburen Soum of Selenge Aimag**
		6	**7**	**8**	**9**	**10**
		know;				
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	It is very cold during winter unless heated by electricity. An advanced technology should be used.	24% of the participants voted for "restructuring classrooms, maintenance for ceiling, walls, other parts, playground, physical training hall, plumbing maintenance, heat loss, roof, kitchen, auditorium, extension of the building and rooms and ventilation system". 31% voted for "extension of building". And 25% voted for "improvement of green area".	Power source equipment should be renewed, bathrooms of the classrooms should be maintained, some of the pipes should be re-installed and kitchen should be extended to the principal's room.	It is connected to the central heating, thus not necessary. Auditorium, physical training hall, bathrooms and bedrooms must be separate. Ventilation system must be properly installed.	As of now, only elementary class students use the 1st floor toilet and the rest of the students use outside toilet. 2nd floor bathroom should be put into use and heat loss by window should be reduced.
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	Construction work such as blocking the road by heavy vehicles, digging and excavating holes and trenches should not affect the business of the area.	62% of the participants answered "no" and "it would be ok". 7% answered "there will be issues" and "construction company will resolve the issues". 16% answered "do not know".	A problem will not be caused to the shops, business and service centers that are located around kindergarten building.	There are no service centers in the area.	None
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	No information.	No information.	None	No information.	None
	Other issues		Playground should be renovated and maintained; Building extension should be completed prior to the commencement of the next academic year; Ventilation system, plumbing, building insulation and the roof should be maintained because of mold and	Extension of kindergarten building be completed before the start of the next academic year; Proposals from the administration of kindergarten be reflected; Bedrooms of the classes to be separate; Music lesson hall, storage, rooms for principal and senior teacher must be	New building of the kindergarten must be meeting the standards and be completed within short amount of time by using quality construction materials. Each class should have a place for eating and bedrooms etc. Ventilation, heating and plumbing system should be taken	

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	6. KG#22 in Ulaanbaatar	7. KG #82 in Ulaanbaatar	8. KG #65 in Ulaanbaatar	9. KG# 8 in Ulaanbaatar city	10. School in Baruunburen Soum of Selenge Aimag
		6	7	8	9	10
			fungus caused by humidity; The building has been in use for many years and it should be extended. Population is growing year by year as a result of construction of apartments in the area and all of the children could not go to kindergarten. Therefore, the building should be extended.	reflected in the design;	into serious consideration. We hope many kindergartens will be constructed. Construction work should be started with proper construction hoarding without stopping the operations.	

3. Details of Public Consultation (Environment) (11-15)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	11. New KG in Sumber Soum of Gobisumber	12. KG #6 in Kherlen Soum of Dornod Aimag	13. School in Bogd Soum of Uvurkhangai	14. KG# 176 in Ulaanbaatar city	15. KG# 68 in Ulaanbaatar
		11	12	13	14	15
1	Do you support for the construction at school.	We support the idea of constructing a new kindergarten because the currently operating 5 kindergartens are overcrowded. Those children who could not go to one of these 5 kindergartens go to private kindergarten, so we definitely need a new kindergarten in town.	The participants 100% supported the construction that would increase the number of those who go to kindergarten. Also it is expected to affect the reduction of unemployment.	Because of the exceedingly number of students in a classroom, we work with 3 shifts with heavy workloads. So our citizens are fully supporting the school extension work.	Out of over 800 children in the age of 2 - 6 living in micro district 31, only 125 children are brought up at the kindergarten. For this reason, it is reasonably required to build extension for kindergarten.	Since all the children in the age of 2 to 5 of all households residing in micro district 3 and 5 of this district cannot attend in kindergarten, we strongly support construction of new extension building for the kindergarten.
2	What is educational status of your community?	Education sector activities are perceived to be satisfactory.	Educational level of the people is average.	Since there is an insufficient amount of school in the area, our education level over all is in low grade.	Mostly people who have lower-than-average income or minimum income reside here. According to the studies of parents, educational attainment of residents includes complete secondary education and even illiteracy.	According to our consideration, educational attainment for the residents is excellent since it is within "A" class location of the city.
3	Will this construction at	Teachers and the other	No negative effects are	There won't be any	Considering that it won't	Since the playground outside

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
	Schools/Kindergarten give any negative impact to your apartment complex?	employees see no negative effects.	expected, but safety norms and standards should be followed.	negative impacts on us regarding the noise and dust caused by the construction works since our residential area is located nearly 200 meters away from the school grounds.	affect comfort and convenience of residents.	kindergarten is large and spacious, no negative impact would be exerted when constructing a building.
4	What benefits do you perceive from this construction?	Pre-school age children at home will be provided with an opportunity to go to kindergarten. Every child should have pre-school education.	Every child will be given an opportunity to develop. Every child can go to kindergarten. Parents will be given an opportunity work. Time and money will be saved.	By building the school extension our children will have the opportunity to choose their desired classes, and they will have a better environment to study resulting a positive impact on their extracurricular activities. Furthermore, we expect that our children will have a healthy, warm and comfortable environment to study on, and significant improvements in their educational level can be made in the future.	Many parents say that they would give their children to kindergarten, be provided with opportunity to start children's education and upbringing correctly, and do any job for a better life if the new kindergarten is constructed.	We conclude that it can provide those who cannot attend with kindergarten, reduce number of children per teacher and enable to work with every single child.
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	We do not object since an environment that enables provision of education for our young children is created.	There is plenty of space where kindergarten building will be constructed and it is distant from where we live. So, no conflicts are expected.	We want to request that not to let our children cross roads during the construction work. We don't think there will be any violations. If the particular roads for using a construction work are set, there should be less impact on parking cars. There should be a clear exit and entrance route, and paths that are located away from the residential and commercial should be	No problem arising from. We strongly support construction of extension for the school/kindergarten.	No conflict will be raise.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
				chosen for the transportation. If there is a bare necessity to limit the power or to install a pipeline, it should be done during the afterhours, or it needs to be notified before hand		
6	Would you be having any construction causes some dust during digging and storing in the school premises?	We do not think it is impossible. It is important to carry out quality work during the construction. Other than that, there are no difficulties.	There is plenty of space where kindergarten building will be constructed and it is distant from where we live. So, no conflicts are expected.	We think there should be no problem about the construction noise, but dust caused by it may cause some problems for the nearby neighborhoods. Therefore, please take wind direction and speed into consideration while your work, and take into consideration that we are located in a desert area that has low rainfall. Dust raise here more often than not, so in order to prevent that watering roads and other areas is a must, and transportation should be carried out early in the morning or after working hours.	Noise and dust from construction work won't affect residents and those who are living around.	If they consider it from the perspective of constructing kindergarten, they will indeed respect us, instead of interrupting.
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	Noise from construction will not be a problem.	There is plenty of space where kindergarten building will be constructed and it is distant from where we live. So, no conflicts are expected.	We respect that since it's a development work, and there should be no problems. Offices and service establishments around the area works during the day time, so we won't be having any difficulties.	Transportation of building materials won't affect comfort and convenience of residents.	We assume there won't be any difficulties since residents in micro district 3 and 5 are pleased with construction of extension for kindergarten.
8	Will you have a problem if the construction company required to	The 5th kindergarten is distant from the new kindergarten location. So,	There is plenty of space where kindergarten building will be constructed and it is	A lot of the buildings are located far away from the construction site,	Noise from construction work won't affect residents and those who are living	It is impossible to predict about any potential hindrance or risk prior to

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
	work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	there will be no problems related to noise. And the kindergarten operates until 5 PM.	distant from where we live. So, no conflicts are expected.	therefore we don't think there will be any problems. Since we work during the day time, construction work during the night won't cause us any difficulties.	around.	commencement of work, since the construction company and client work together for the sake of children by concluding tripartite agreement.
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	We do not think there is a negative impact related to transporting construction waste.	There will be no negative impressions if construction waste is transported with proper cover and dumped in landfill site.	Disposal and the removal process of all the wastes should be carried out daily. Every damage on nature caused by the construction work should be restored afterwards. Open loading wastes and failing to follow the waste removal procedures can cause some negative impacts. If all the waste removal procedures carried out properly, we don't think there should be any problems. All the accidents while transporting materials such as things falling off or dragged through the road must be avoided.	No negative impression on transporting debris.	If the construction company performs well and responsibly, we won't express any negative comment or impression.
10	Are you concerned about Health & Safety of residents and children during the construction?	If the health, safety and environment norms and standards are followed properly, we do not think there will be any danger to the safety of the people.	There are no concerns because there is plenty of space where kindergarten building will be constructed and it is distant from where we live. However, there might be some cases where livestock or animals might fall into the excavated holes. Thus, there should be fences preventing from such incidents. We will warn our children too.	We are worried about it, therefore setting safety zone and putting warning signs around the site is a must. We think the construction work will be carried out during the summer break which is from June to September. We don't think there will be any problems during this time, but during the	Consider on warning residents not to let their children play around the building when it is under construction.	Introduced recommendations and proposals from parents in tandem with residents and governors. We consider there is nothing to worry about since all residents and parents warn to ensure safety and health of children.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
				other months our children will be going to their school, so we are worried about that.		
11	Would you like to participate in safety monitoring and controlling activities?	The commission from professional organization should include representative of the parents.	60% will not take part in it. The rest of us can take part to stay informed.	We want to be involved if we are free during that time. We want to have a graphical schedule for involvement. Service establishment employees expressed that they won't be involved on this matter. Governor's office expressed their readiness to provide professional support such as giving guidelines and evaluation through their civil servants during the construction work.	Would like to engage in ensuring safety and health of children.	
12	Would you be willing to form a Committee to help to school during the construction period?	Yes	It is possible.	If deemed necessary it can be either voluntarily or in accordance with the appropriate procedures. Polls needs to be taken. It would be better if that type of committee or council is formed. Our private sector organizations are not willing to be involved in a committee or a council activities. Therefore all the citizens should be actively involved in this situation.	Fully able to establish committee for assisting construction work.	Parents' council of kindergarten consists of 24 members and we request for activating the council.
13	Any other critical environment related issue and concern by the residents for the during construction and	Clean and waste water pipes should be installed according to the standards and the ventilation system of the	The kindergarten obtained land where there was boiler station in the past. Eco environment should be established there.	The contractor company will need to carry out a gardening and clean-up work after completing the construction.	No problems will occur in terms of environment	Proposing to construct playground and make improvement work within the environment after completion of extension.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
	operation stage?	bathroom should be taken into account.		Because there will be soil erosion caused by a building constructed inside the school grounds. We are against using any chemicals during this time. Prevention of damaging green areas and roads of the school grounds and the surrounding areas needs to be taken into consideration of all times, and disposal of the construction waste in the open will not be tolerated.		
14	If you have any problem caused by this school / kindergarten construction, whom would you like to contact?(Construction company, school, urban department etc.	Contact to the client organization of construction is preferred.	Construction company and local administration organizations.	Management of the contractor company, Provincial administration officials	Will apply to the construction company, district administration, educational department and other applicable organizations.	Will apply to kindergarten and Educational Department of Ulaanbaatar.
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	Wastewater from the kindergarten should be well thought out and the heating should be taken into account. Cold classrooms are the main cause of children catching cold and flu during winter.	We want the kindergarten to be a modern one that connected to engineering network and centrally heated. For instance, rubber protections placed under the handle of the door, classrooms with enough space and good lighting, physical training and cultural halls etc.	There should be enough spotlights around the area, and we want a reliable heating and sewage systems. We use boiler heating system in our Soum, if there is an electrical heating system available, we want the following research to be done for it.	There are 2 Ger groups. It's appropriate and more convenient to provide the ones who have steam boiler for heating with electric heating.	Nothing to say
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	Due to construction work in progress, there will not be much of that issue.	There are no shops or service centers in the area.	There could be some problems such as blocking a sunlight and entrances by parking heavy vehicles and raising up dust around	There aren't any stores or other organizations that cancelled their operation due to construction work as of now.	Nothing to say

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**11. New KG in Sumber Soum of Gobisumber**	**12. KG #6 in Kherlen Soum of Dornod Aimag**	**13. School in Bogd Soum of Uvurkhangai**	**14. KG# 176 in Ulaanbaatar city**	**15. KG# 68 in Ulaanbaatar**
		11	**12**	**13**	**14**	**15**
				the area by driving too fast.		
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	An agency in charge of environmental issues is doing a lot of work. Teachers, students, parents and the other employees work to establish green area outside schools and kindergartens.	No information.	School's eco club for environmental protection, Governor's environmental protection department	N/A	Nothing to say
	Other issues	The building in which the 5th school is operating is for 640 students and the number of enrollees is increasing every year. Therefore, the building should be extended. Currently 910 students are attending in the school from 2016-2017. Due to lack of classrooms, students cannot have practice time or optional classes that are designated to contribute to the development of students. And it is inevitable that there will be new classes due to population increase.	People have high expectations and are asking when the construction would start. Besides the construction of the kindergarten building, external landscaping and maintenance are proposed. For example: fence, road, lighting and play equipment. Construction of modern standard kindergarten Solutions for water supply (clean and waste)	The building must be constructed using modern standards Improvements of the surrounding areas Must be completed in the given timeline Monitoring committee must be formed during the construction work Must provide all the opportunities for local communities to engage on this work. The director of the Cultural Center Nyamsuren must form a monitoring committee and should focus on inspecting the quality of the building. Contractor on this construction work should be a local company. Must not use any adverse toxic chemicals.		

4. Details of Public Consultation (Environment) (16-20)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**16. KG #160 in Ulaanbaatar city**	**17. KG #72 Ulaanbaatar**	**18. KG # 66 in Ulaanbaatar city**	**19.School # 51 in Ulaanbaatar city**	**20. Branch of KG# 168 in Ulaanbaatar**

		16	17	18	19	20
1	Do you support for the construction at school.	Since children cannot be provided with pre-school education on the whole, we fully support construction of new building for kindergarten. It would be appreciated if extension building is constructed. In our opinion, it is so important to have bedrooms in classes with high number of children. If there are bedrooms, children are able to develop within comfortable and free environment.	Although there are so many pre-school children in our khoroo, they cannot acquire pre-school education. For this reason, the right of child to study is seriously violated. From this perspective, we support this extension of building for kindergarten.	The current kindergarten operates within the 2nd micro district. Many pre-school children live in this micro district. Since all pre-school children in 2nd micro district simply attend in the kindergarten, demand is relatively high. Therefore, this proposal received 100% of vote.	Participants showed 100% support. "We are all delighted to hear that construction issues of our school extension is finally being resolved. It was discussed last year but never heard from it ever since. We are happy to hear that our children will be studying in a comfortable and healthy environment".	All the participants showed 100% support. Currently children are enrolled in Mongolian yurt kindergarten but it can't provide enough space for more children, and since there are many rainy days during the summer, all the roof sheadings can get bit smelly in the autumn resulting bad uncomfortable environment for our children. Mongolian Gers /yurts/ always needs extra care in order sustain its sanitation, so it's not a healthy option for our children.
2	What is educational status of your community?	Higher-educated.	Since there are so many young families and new apartment buildings out there, it can consider that educational attainment is generally good. Educational background and knowledge of parents to children who attend in the kindergarten are good.	Educational attainment of residents is good.	"We think that we are in a good position regarding our education level. This extension work is what we all here have been waiting for such a long time".	There are currently no kindergarten in 24th micro district, so a lot of children currently don't have a kindergarten to go to.
3	Will this construction at Schools / Kindergarten give any negative impact to your apartment complex?	No negative impact. Since there are so many buildings over the place we are living in, we have no right to interrupt children's development, considering that the building for kindergarten would affect our living.	No negative impact since the ongoing building is not tall enough to shade sun and relatively far from homes.	No negative impact found.	If all the proper safety guidelines are met, we see no problem there. There should be a fencing around the construction site at all times and we prefer less heavy machinery driving around during the daytime. Obviously there will be some negative impacts such as noise and dust caused by construction site and lesser space for our children to play on. The construction company that will be working at this site need	We don't think there will be any serious problems or negative impacts.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**16. KG #160 in Ulaanbaatar city**	**17. KG #72 Ulaanbaatar**	**18. KG # 66 in Ulaanbaatar city**	**19.School # 51 in Ulaanbaatar city**	**20. Branch of KG# 168 in Ulaanbaatar**
		16	**17**	**18**	**19**	**20**
					to concentrate heavily on these types of problems such as building a temporary pedestrian bridges on dug out holes.	
4	What benefits do you perceive from this construction?	Children will be enabled to attend kindergarten. Upon reducing number of children in class and group, teachers will be enabled to work with every single child. Children will develop within much comfortable environment.	Will provide all children who are within must-attend area with kindergarten. Providing children with pre-school education and ensuring their rights to study and develop.	Pre-school children will be provided with opportunity to learn things at kindergarten. Parents to be enabled to work freely.	"It will affect our children's grades, and it will benefit both parents and their children. Our children will be able study in a comfortable environment, and it will be convenient for our children".	There will be a 100% kindergarten enrolment rate in our micro district. Our children will be able to grow up in a comfortable environment, and kindergarten availability will increase.
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	No conflict out there. We fully support construction since this activity contributes to the development and prosperity of our city. It is advisable that the construction company needs to complete work within scheduled time.	No hindrance since the main way to kindergarten is available. It won't seem tiresome for residents if construction work is performed fast.	No difficulty will be arising from when the construction company plans space and installs pipelines or grids around your parking lot.	Pedestrian bridges need to be placed after digging a hole for installing some plumbing pipes. All the safety procedures and protective measures need to be taken during the construction work.	47 people answered that there will be no violations, "We can park our cars in a different place".
6	Would you be having any construction causes some dust during digging and storing in the school premises?	Won't interrupt since they are working for well-being and future of our children.	No hindrance since the building of kindergarten is short and construction area is large. It won't seem tiresome for residents if construction work is performed fast.	Noise and dust arising from construction work may be great but we don't worry about it anymore. All we want is kindergarten, urgently.	Noise caused by construction work will be a problem but even though there will be a lots noise and dust caused by this construction work, we understand that it's for our children and improvement of their study environment. Also construction works nowadays can be completed in short amount time.	44 people answered that there will be no difficulties, because kindergarten extension will not be a big building.
7	Will you have a problem if the construction company required to work during the night to	Having probability to influence to some extent. However, it is not that serious, according to our	No hindrance since the main way to kindergarten and special fencing are available. We consider	We consider that there won't be any problems about carrying building materials at nights by	There will be a disturbance if there is a lot of noise coming from the construction site	49 people voted that there will be no difficulties, because there is an enough entrances and crossings.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**16. KG #160 in Ulaanbaatar city**	**17. KG #72 Ulaanbaatar**	**18. KG # 66 in Ulaanbaatar city**	**19.School # 51 in Ulaanbaatar city**	**20. Branch of KG# 168 in Ulaanbaatar**
		16	**17**	**18**	**19**	**20**
	bringing construction material?	consideration.	construction work will be completed within the time specified.	the construction company.	during our sleeping times. Take this in the consideration and other than some rare instances, all the transportation of heavy machinery or vehicle need to be done during the day time.	
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	Not happening. It has to be gift behind hindrance.	No hindrance since the building of kindergarten is short and construction area is large.	Most households go to their summer house or travel around countryside which results in less number of residents during summertime thus we consider the problems relating to construction work will be slight.	Working hours should be short and need to finish before the night. The majority of the residents reside at their summer camp house during that time, so there should be no problem there.	47 people said that there will be no problems, majority of the residents will be out of the city at their summer camp houses, and kindergarten for our children is in vital need for our community, so we respect that. 1 person agreed that he/she understands the situation. 1 person agreed that proper procedures needs to be taken.
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	If anyone throws rubbish, we will require that person remove it from time to time. It definitely contaminates our environment.	No negative image since the kindergarten has concentrated dumpsite and it won't seem tiresome for residents if construction work is performed fast.	Since residents are desperate for having a kindergarten for years, they won't complain about it.	Heavy and large vehicle could cause some traffic issues, but since it's for our own good we can tolerate that.	There will be no negative comments, but proper transportation vehicles needs to be used.
10	Are you concerned about Health & Safety of residents and children during the construction?	This worries us. So many buildings are constructed in the eye of the public. They ensure safety on their own. Hopefully the construction company allowed to construct building for kindergarten will ensure occupational safety like them.	If the construction work is performed fast, our children will acquire pre-school education. For this reason, we have no worry.	If construction work is perfectly done within the time specified, any high-level risk can't be found.	We are worried that people could fall into these holes cause by a construction work. Following all the safety guidelines is a must. Fencing should be around the construction site of all times, and there should be less heavy vehicles in our roads during the day time. All the drivers of these heavy vehicles transporting a building materials must work cautiously with in the	There will be no problems since our children will be in their summer vacations.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**16. KG #160 in Ulaanbaatar city**	**17. KG #72 Ulaanbaatar**	**18. KG # 66 in Ulaanbaatar city**	**19.School # 51 in Ulaanbaatar city**	**20. Branch of KG# 168 in Ulaanbaatar**
		16	**17**	**18**	**19**	**20**
					safety procedures, since it's close to the children.	
11	Would you like to participate in safety monitoring and controlling activities?	Not interested in engaging.	Would like to collaborate to defend children's rights and secure them against any danger or accident.	Monitoring on safety and health of residents and children to be allowed.	Since I go to this school and I live close by, I can do the monitoring every now and then. This includes me and all the children who live in this area, so placing warning signs is a must.	12 said that they will be involved, 2 said they are busy, 5 said they will be involved if they are available during that time, 31 said they will not be involved.
12	Would you be willing to form a Committee to help to school during the construction period?	Since it is clear that kindergarten manages activities on its own, it is not required to establish committee or board for assisting the kindergarten.	Would like to collaborate to defend children's rights and secure them against any danger or accident.	We request for assigning committee or board to assist kindergarten during the course of construction work.	There is a Parent-Teacher Association already in the school, they should be involved on this matter.	29 people said that they want this to happen, 3 answered don't know, 19 said no
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	There are so many trees outside our kindergarten. How to deal with these trees? If trees are required to be carried or transplanted, only specialized people must do it.	It is advisable to commence construction work when spring comes and climate becomes warm. Since August is heavily rainy, it may affect construction work. Therefore, we would like you to perform construction work fast, overcoming any difficulty.	We consider it is possible to restore green facilities for kindergarten by using all resources and capabilities we have.	We need to prevent our children from going into this construction sites during the summer time, safety procedures and preventions must be followed at all times. They should not cut down trees around the area, if necessary trees must be transplanted.	Waste disposal service needs to be carried out after the construction work, damaging children playground must be prevented. The green area needs to be restored after the construction work.
14	If you have any problem caused by this school / kindergarten construction, whom would you like to contact?(Construction company, school, urban department etc.	Will apply to the construction company and kindergarten administration if there is any problem arising from. In case of failure to solve problem to some extent, will request for further organizations/competent authorities.	Will apply to the construction company, municipal and district administrations, management of kindergarten and governor of the district, respectively.	If there is any problem arising from construction work, it should be informed to directly to the head of the organization or governor of 2nd micro district.	Contractor company, Client organization, School, Micro district or the district administration	43 said Construction company, 8 said Kindergarten, 2 said District governor, 8 said District administration, 2 said City administration
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	Nothing to say	Requesting for arranging façade of kindergarten and extending building of kindergarten.	For current building of kindergarten, electricity and heating to be separated from "Mongolian Business" Institute, Ikh Zasag	Hot water pipelines must be renewed and reinstalled, and sewage pipelines must be replaced. I think outside facade of the current	Improvement of the surrounding areas, adding more playground for children

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**16. KG #160 in Ulaanbaatar city**	**17. KG #72 Ulaanbaatar**	**18. KG # 66 in Ulaanbaatar city**	**19.School # 51 in Ulaanbaatar city**	**20. Branch of KG# 168 in Ulaanbaatar**
		16	**17**	**18**	**19**	**20**
				International University, 3rd floor of building to be released and dedicated building to be constructed.	building needs renovation.	
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	Not happening. Service centers like store is located far from the construction site.	Kindergarten No. 72 in our khoroo has large and spacious outside area, and fencing around kindergarten; hasn't store and service organization around fencing.	It is unlikely to cause any disturbance to surrounding store, business or manufacturing due to construction work.	There are only few industrial and shopping areas, so there should be no problem.	There will be no problems unless parking heavy machinery and other vehicles in front of the store.
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	Unlikely to exist.	Nothing to say.	N/A	N/A	51 said there is none.
	Other issues	School building to be satisfied in terms of appearance, chairs and desks, doors and entrances, and environmental improvement. Building to be used for only purpose of school activities. After completion of construction work, rubbish and debris must be removed from site.	Total number of children who must attend in our kindergarten within the must-attend area is 734. Only 320 among them acquire pre-school education in our kindergarten. Upon extending building of kindergarten, all children within the must-attend can attend kindergarten.	We have proposal to have new extension with possibly 8 groups. Improvement work to be done for playground, phantom, shelter, chair and square around the school. Also a lot of improvements needs to be made. Since school area is large, you should plan your building properly and correctly.	Since there are lots of apartments around parking heavy vehicles and especially blocking roads and entrances are not tolerable. Pedestrian bridge must be built over any dug-out holes. There must be some spotlights at night times.	Kindergarten playgrounds must be built with quality materials. There is not much space in the outer area, so the playground that can provide enough game or equipment in a small space is needed. There should be a playground for our children to play in the summertime, and there should be enough of it.

5. Details of Public Consultation (Environment) (21-25)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**21. Ireedui Primary school in Ulaanbaatar**	**22. KG # 17 in Ulaanbaatar**	**23. KG # 164 in Ulaanbaatar city**	**24.School # 110 in Ulaanbaatar city**	**25. Branch of KG# 158 in Ulaanbaatar**
		21	**22**	**23**	**24**	**25**
1	Do you support for the construction at school.	Those who voted fully supported.	We support this activity since it is important to engage pre-school children in kindergarten.	Since there is a poor availability of kindergartens in this micro district, majority of	The participants in the meeting showed 100% support for building kindergarten extension,	There is a dire need of a kindergarten for us because of the only one kindergarten currently operational in our

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**21. Ireedui Primary school in Ulaanbaatar**	**22. KG # 17 in Ulaanbaatar**	**23. KG # 164 in Ulaanbaatar city**	**24.School # 110 in Ulaanbaatar city**	**25. Branch of KG# 158 in Ulaanbaatar**
		21	**22**	**23**	**24**	**25**
			Many children cannot attend kindergarten due to outdated technology and exceeded capacity. For this reason, we, the parents and custodians, are in favour of building extension for the kindergarten.	participants 100% agreed upon supporting the kindergarten building extension work more preferably new building constructed near the kindergarten.	and any work being done for their future generations. The participants also agreed that by building extension for the kindergarten, there will be a healthy and safe environment for children to grow up. It was also discussed that teachers and employees getting heavy workloads affecting negatively for their well-beings resulting with diseases such as neurosis, so building extension is vital for solving these problems.	coverage area. There are currently 200 children attending in our kindergarten with 50-60 children in one class, but it has only limited capacity of 100 children, thus resulting us teachers with heavy workloads. So building an extension for this kindergarten is a must. Our "Ger" kindergarten /yurt kindergarten/ branch has 10 yurts for schooling with difficult working conditions, and in some cases are under violation of fire safety regulations. And most of all our children are studying in difficult conditions with limited space, so we are sincerely supporting the construction work of a new extension. We teachers always assist our children with toileting needs outside in a harsh winter conditions, this results us catching cold more often than not. We use excessive amount of coal and firewood just for heating these yurts in the winter. Also there are lots of water leakage from the roof in the rainy season. All of us here at our micro district, kindergarten staff members and our children are looking forward to our new kindergarten, and we are all supporting its extension work to start as soon as possible.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**21. Ireedui Primary school in Ulaanbaatar**	**22. KG # 17 in Ulaanbaatar**	**23. KG # 164 in Ulaanbaatar city**	**24.School # 110 in Ulaanbaatar city**	**25. Branch of KG# 158 in Ulaanbaatar**
		21	**22**	**23**	**24**	**25**
2	What is educational status of your community?	While 84% considered educational attainment is good, 16% said it is fair.	Those who are around kindergarten have various educational backgrounds. People who run private business constitute majority of the residents; people from target groups who are often poor and uneducated live there, too.	The government is very keen on its citizen's and children's education. Children's education in particular is much defended on how they enrolled in kindergarten, so it's necessary for us to socialize our children and enrol them in kindergarten. Children who did not enrolled in kindergarten, has more hard time to get further education and schooling.	The majority of residence here living in our micro district are middle class residents with educational level varying between mid to high. Representatives of residents participated in this survey unanimously supported the kindergarten extension proposal and have expressed their desire to work together.	To be honest education level here is low.
3	Will this construction at Schools / Kindergarten give any negative impact to your apartment complex?	While 119 citizens said it has no influence, 1 person considered it may influence.	Construction work for kindergarten building won't affect residents. Since it is quite far from the apartments, construction work won't impact us.	48 people answered that there will be no serious negative impacts or difficulties. "There will be some temporary negative impacts. Ulaanbaatar city already has its own problems with air pollution, so I don't think adding dust caused by constructing a kindergarten will give us any more difficulties. Although, before starting the construction work plan all the heating and sewage pipelines going in and out from my house needs to be taken into to the consideration.	Couple of respondents participated in this survey stated that construction companies should use the modern methods of dust control on the construction site, but noise caused by construction process and other negative effects can be allowed at that time.	Residents were very positive about the new extension. "There is nothing negative about adding more kindergartens in our residence". "I don't think there will be any negative impacts in our environment by doing this extension work".
4	What benefits do you perceive from this construction?	Environment for children's academic learning to be improved. Educational attainment and accessibility to be enhanced. Teacher to be enabled to work with every single child, thanks	With giving their children to new and advanced kindergarten, employment circumstances will be enhanced. Residents will be satisfied with improvement in the	41 people agreed that our children will enrol in kindergarten, 2 agreed that we are in dire need, 2 agreed that its beneficial for us to enrol our children in the kindergarten, 1 person agreed that there	There will be favourable learning environment for young children. Positive changes will develop for educating young children. Healthy, comfortable and safe learning environment for	12 people agreed that working conditions of the teachers that are working at yurt kindergartens will increase, 5 agreed that teachers will stop complaining about the children capacity, 20 agreed

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**21. Ireedui Primary school in Ulaanbaatar**	**22. KG # 17 in Ulaanbaatar**	**23. KG # 164 in Ulaanbaatar city**	**24.School # 110 in Ulaanbaatar city**	**25. Branch of KG# 158 in Ulaanbaatar**
		21	**22**	**23**	**24**	**25**
		to reduction in number of pupils in a class. This will exert some positive influence in academic quality of children.	environment of kindergarten and pre-school children will be provided with opportunity to learn.	will be more study environment for our children, 1 agreed that we need it because will benefit our future work force, 1 agreed that children will have much more free classroom space, 1 agreed that there will be more jobs, 1 agreed that our children will grow up in a comfortable environment, 1 agreed that there will be more kindergarten availability for our children.	children will be provided. Teachers will develop their creativity, and they can work on young children individually.	that there will be improvements in our surroundings, 12 agreed that children are not attending kindergartens will have a chance to attend, 12 agreed that us parents will have a workplace and an income. "I don't have to give my child to kindergarten by winning a lottery", "I will have a workplace", "Best of luck for your work, our micro district will have a better look after this", "We are in dire need of a kindergarten". "My wife will finally have a job". "I want my children to go to a proper kindergarten". "Children will have warm and clean environment to go to". "This will prevent children to be abused behind locked doors". "My child also wanted to go to a kindergarten". "It will benefit my work if the tap and wastewater problems are solved". "We want to use comfortable indoor bathrooms, not the outdoor toilets".
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	While 97 citizens answered there is no conflict, 23 considered conflict is mild. 5 people expressed they are patient with any issue.	Since it is a building for kindergarten, nothing will stop this. We, the residents, will support for releasing areas, and installing and repairing pipelines. Parking lot to be emptied for free arrival and departure of construction machinery	47 people agreed that there will be no violations, "We can park our cars in different area".	Participants stated that there should be a preliminary guidelines on working area of the construction site and it should be provided for the residents so that it can prevent negative effects on parking cars around the construction	23 people agreed that there will be no violations. "There should be no problems since there are no parking lots and no pipe lines. We have so much space for putting pipe lines and roads here".

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		21	**22**	**23**	**24**	**25**
			and equipment for construction work.		site. There is so little space around this area so if larger machines parked on the construction site itself or the working area, there should be no problem for the residents around the area.	
6	Would you be having any construction causes some dust during digging and storing in the school premises?	While 74 citizens told there is no barrier, 12 considered there causes a problem. Others said they are prepared for the problems.	Since it is extension of kindergarten building, it will be appropriate for completing it within summertime. Temporary noise and dust won't affect us, and thereby construction of kindergarten is the most important issue among others.	44 agreed that there will be no difficulties, because new building will be small in size.	They also stated that construction noise and dust pollutions are the problems we cannot avoid so we have to allow it because it is all for our micro district development and creating comfortable environment for our children. Residents also agreed upon handling this type of issues with tolerance and will be taken in their part to reduce the negative impact of that time.	"Since we are having a kindergarten for our children I don't think noise is a problem." "Nowadays construction works finish faster than it was before." "My children will be at the countryside when there is a construction dust." "I live far away from the kindergarten, so I don't think dust caused by the construction work can reach where I live." "It's a temporary situation so we will overcome the given difficulties at that time." "Construction work will be in the fenced kindergarten area, so there will be no problem." Majority of the participants answered that since there are separate fenced area for the kindergarten, there should be no problem.
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	While 99 citizens said there is no occurrence of problem, 12 said there is occurrence.	Night-time operation will be allowed. This is not building for a mall. This is the building for kindergarten. For this reason, nothing can stop it. Any problem arising from construction work won't be problem indeed.	49 agreed that there are no difficulties, because there are lot of entrances and crossings. 1 person agreed to respect any proposals.	Offices and service establishment around the area works during the day time, so there should be no problem there, but there might be a slight problem for residents living near the area. Although, residents	"The construction work should finish as quickly as possible, so that it doesn't cause difficulties for us."

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		21	**22**	**23**	**24**	**25**
					agreed upon working together for resolving problems if there are less night time transportation to the construction site. Residents also stated that if the construction company carry out their work with proper working schedules there should be no problem.	
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	While 97 citizens answered no problem occurs, 23 stated they will be tolerant since it is temporary, underlining that the most important of all is to construct school building in a qualified manner within the time specified.	Since it is extension of kindergarten building, we will support even when it is noisy. We need to construct kindergarten by working even at nights. Everyone will support building of kindergarten at the present time where Mongolia is in lack of kindergarten and number of pre-school children is growing rapidly. There must not be any hindrance to construction work.	47 agreed to there will be no difficulties, majority of the residents will be at their summer camp house, so we understand that there is a vital need of a kindergarten so we respect that. 1 says that we understand the current situation. Also 1 person agreed that choosing proper procedures where it's possible.	Residents also stated there will be no difficulties for residents if the proper transportion procedures are followed during this time, and all types of accidents caused by transporting building equipments and materials must be avoided such as things falling off or dragged on the road during transportion. Transportation of each hazardous materials to human health must be carried out carefully with caution. If all above requirements are met during the construction work residents stated that they will be happy to cooperate.	"The construction work will be far away from us, and kindergarten has its own separate area, so there will be no problem. The construction work should start in the summer, we will be gone to the countryside by then. "
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	120 citizens answered they have no negative image/impression.	It is clear that debris to be transported during construction work. No negative influence to be exerted during the transportation of debris. Areas must be freed and debris must be carried.	48 agreed that there will be no negative comments, but proper trucks must be used for the transportation.	The participants in the poll were expressing their concerns about the child's health and safety. Therefore residents suggested that there should be fencing and security around the	"It's a garbage disposal area anyway, there should be a disposal area for construction material waste nearby so I don't think there will be any problem. If the construction company carry out their work properly, there

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		21	**22**	**23**	**24**	**25**
					construction site at all times, also neighbourhood safety patrols including residents around the area and kindergarten teachers must be organized. Residents also stated that the safety of children going for kindergarten in the morning and the coming back time should be the main focus.	will be no difficulties whatsoever."
10	Are you concerned about Health & Safety of residents and children during the construction?	All of the participants expressed their worry, warning the construction company to ensure safety to its fullest extent since the place is crowded.	No harm to be caused to safety and health of residents and children during the course of construction. Safety harness, support and protection are required to be excellent and reliable during the course of construction.	We have worries because our children will be on their summer vacation.	The public representatives participated in the poll had expressed their desire to work together for monitoring the construction work. And also have expressed their readiness to cooperate in the safety of this construction work and its surrounding areas.	"I'm worried on that matter, construction companies must carry out their work according to the proper safety guidelines, but if it's done in a short amount of time, I see no problem there. The construction work should start in the summer, and proper security fences and warning safety signs must be around the area. Also parents must be responsible for their children."
11	Would you like to participate in safety monitoring and controlling activities?	While 8 people answered they are to engage, 89 said "no". 23 citizens have no idea.	It is a duty of professionals. The company which is in charge of construction work, not the residents, will be responsible for securing safety and health of children.	12 agreed to be involved, 2 said they are busy, 5 said they will be involved if they available during that time, 31 said they will be not involved	The majority of the citizens participated in the poll had expressed their support for running a committee board to help in protecting the rights of residents and child safety. They also suggested that they can provide outside monitoring during the construction work.	"We will interfere if it's deemed necessary".
12	Would you be willing to form a Committee to	While 69 citizens answered "they won't	No committee or board to assist construction will be	29 said they want it, 3 said don't know, 19 said no	Residents stated there could be several issues	"We will interfere if it's deemed necessary".

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	help to school during the construction period?	engage", 35 supported it is right choice, and 16 people answered the decision is up to school administration.	required. Professionals will be responsible for the construction work.		during the building extension work including: prevention of damaging green area and roads inside the kindergarten and its surrounding area, closing possible roads and crossings during the construction work, renovations of the surrounding area after the construction work, construction materials such as sand and gravel must be brought from the proper supplier, children playground area must not be degraded.	
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	While 109 citizens are aware, but the remaining people have no idea.	Since building of kindergarten is the most significant activity, no negative impact relating to environment will be found.	Waste disposal service needs to be carried out after the construction work, damaging children playground must be prevented, and green area needs to be restored after the construction work.	Management of the current construction company. Kindergarten administration, General Agency for Specialized Investigation, Monitoring group consisting representatives of residents	"We need to build roads after the kindergarten construction work".
14	If you have any problem caused by this school / kindergarten construction, whom would you like to contact?(Construction company, school, urban department etc.	77 citizens answered they would apply to construction company, 9 to specialized inspection agency, 16 to the Ministry of Education, 1 to the Office of District and 17 to school administration, respectively.	No problems will be arising from since it is construction work of kindergarten building. We hope that the responsible company will be reliable and qualified. If problem arises, the company will be held responsible.	43 said Construction company, 8 said Kindergarten, 2 said District governor, 8 said District administration, 2 said City administration	Improvement of kindergarten's plumbing pipes and electrical wirings must be made.	Construction company, Kindergarten, District governor, District administration
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	Add more green facilities and build sport courts, gyms and laboratories. Electric heating has to be installed.	Current construction must be connected to central heating line. If it is connected to central heating line, comfort and	Improvement of the surrounding areas, adding more playground for children	There are no public service establishments near the area, so there should be no problems.	12 agreed that it should be electrically heated, 15 agreed that there should be playground for children, we need more spotlights in street, we need to

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			learning environment will be excellent.			have central heating system, we need more water supply, we need a cheaper budget solution for air pollution, we need a public transport, we need more sidewalk.
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	Majority of the participants answered they won't face difficulties.	A hotel named Khaan is located at north of kindergarten. This hotel needs to be warned and informed with written statement. We hope it would understand which is more important: kindergarten or hotel.	There will be no problems unless parking heavy machinery and other vehicles in front of the store.	There are no public service establishments near the area, so there should be no problems.	We don't have that kind of organization here.
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	120 citizens responded "not available".	No organization to protect environment found. Teachers and employees from kindergarten make efforts on furnishing green environment.	51 said there is none.	There are no non-profit organizations and civil society organizations for protecting environment active near the kindergarten area or in the micro district territory. However, there are district and city environmental inspectors, and environmental inspectors of "General Agency for Specialized Investigation" active in this territory.	There is no organization like that in here.
	Other issues	No prohibition over any activity for children, school, and kindergarten. Supporting extension for school building. Paying attention on building-up academic environment for our children – the light future of Mongolia is the foremost duties of government and parents. Since children are likely to get in traffic accident	10th micro district of Sukhbaatar district has the highest number of apartment buildings among others. Along with it, there are thousands of pre-school children who have to be attended in kindergarten. Since number of groups at kindergarten No. 17 is insufficient, all children cannot be attended. Therefore, we are confident	If warm, comfortable and hygienic kindergarten built for us, our children will grow up in a healthy environment. If there is less workload for teachers, our children will learn much more. Kindergarten playgrounds must be built with quality materials There are lot of children that needs to be enrolled in	Considering views of the residents and user organization during the building extension work Restoration work of the surrounding areas of kindergarten and its green areas after the building extension work Keeping the safety of the residents and construction company staffs, following the labor	"Construction work needs to be completed fast", "It's difficult to teach physical education, music and other classes that involves a lot of movement in Mongolian yurt, we want to have a kindergarten with separate hall (physical education and music teachers)".

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		21	**22**	**23**	**24**	**25**
		over parking lots near the school, this issue should be paid higher attention. Please secure path where children go to school or home against any possible danger as soon as construction work starts.	that a new kindergarten with 4-6 groups would be constructed and our children would be provided with pre-school education.	this September, so building a kindergarten is a must.	protection guidelines during the construction work. Completing the construction work in the given timeline with quality materials.	

5. Details of Public Consultation (Environment) (26-30)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
1	Do you support for the construction at school?	All participants supported the construction because there is lack of kindergarten space for children.	Increase the size of kindergarten is first priority in our khoroo and they support the construction expansion.	All participants supported the construction.	All participants supported to the expansion construction work.	105 participants out of 111 are supporting of expansion. 5 participants say they don't support if the construction will be a new commercial building because they are not sure if Kindergarten will be made.
2	What is educational status of your community?	98% of all participants expressed that the education level of khoroo is sufficient.	245 participants said Good quality of education, 69 participants said "Medium".	This area is newly established and constructed area that is why 80% of all residents are young families and they have mostly high education.	The education of the area is sufficient.	49 participants replied good, 38 replied medium and 17 evaluated bad.
3	Will this construction at Schools / Kindergarten give any negative impact to your apartment complex?	They feel there will be no negative impact if the construction company does not park any trucks and cars blocking any residential roads.	300 particpants replied that there would not be any negative impact. 16 replied that they will negatively impacted if childrens playground in front their building is used.	Ready to cooperate with construction company and school management because of it will help in improving children's education condition. 44 out 50 participants expressed concern about garbage/waste	There is no negative impact as the construction work will be carried out in Kindergarten premises.	92 participants replied that there will be no negative impact. 14 felt that there will be impact because of lack of car parking area in the vicinity.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
				issue.		
4	What benefits do you perceive from this construction?	All children of khoroo can get education at this kindergarten.	All children of khoroo can get education at this kindergarten. They hope the condition of education will improve and parents will be satisfied.	The children's learning condition will be improved through school that is closer and thereby enhancing safety concerns of the children	The Kindergarten enrolment will increase and the children's educational condition will be more comfortable. More children will be included in the Kindergarten. Working place of some will be crated. The Class size of Kindergarten will reduce.	The Kindergarten enrolment will increase and household income will increase as parents will have more free time as more children will be involved in kindergarten.
5	Would you be having any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	There will be no conflict. They will be happy if the kindergarten is constructed for their children.	If the construction company will have good coordination and organising for keeping construction material, trucks, cars, there would not having any conflict. Because the kindergarten area is big enough fenced area. The construction will be carried out inside the kindergarten construction area. Activities such as digging of soil etc. should be inside the fenced area of the kindergarten. If they dig some channels, and carryout some piping activity, there should be enough signages and warnings.	48 particpants agreed to participate the parking area with Construction Company as they have many parking areas available.	No conflict will arise if the construction will be in Kindergarten premises. It would not impact cars and roads.	76 participants said that there is no problem expected as the construction will be in Kindergarten premises. Compared with big building construction it is a very small construction. 18 felt there may be some conflict will arise and 10 said no.
6	Would you be having any construction causes some dust during digging and storing in the school	Maybe noise can be increased and disturb them. Within their residential area, generally there is no dust	312 participants replied there would not any interruption in the work	48 participants replied that during construction, there will be increase in noise but the construction is only for	The noise will be increased but we can bear with the same as it is for Kindergarten	78 persons replied there will not be any interruption. 26 replied that interruption could be there, 4 said no idea.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
	premises?	rising because all roads are constructed roads. If the construction company inform and introduce the plan and schedule of activities, they can coordinate their work and life to that schedule thereby making it easy for all parties.		building school, so they will support it.		
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	There will be no problem as they are expecting that construction company will not transport construction material every day and regularly at night.	297 participants said there will not be any problems. 15 said if they create big noise in sleeping time it will be difficult.	47 participants answered that they will be patient for construction work during night since it is a school.	All residents will support if the construction is carried out as per law and regulations.	81 people said no problem, where 24 said if the Construction Company works during the night, it will be difficult. 4 people said no idea.
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	There would be some problem but the construction company will have to collaborate with residents of the area and inform and negotiate when such activities will happen.	282 participants said there will be no problem. 32 participants replied the noise making activities should not continue for long time. They will be patient in this regard.	47 participants answered that they will be patient for construction work during night since it is a school.	They will be patient because of the construction of the kindergarten. They hope the noise making acitivities would not continue long time day and night. We hope Construction Company will follow all laws.	70 people answered if they work during day time it is no problem as they are working for Kindergarten. 36 persons felt if the noise increased beyond limitations norm, it will be difficult.
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	They hope that the construction company will be transporting the waste regularly in time.	The kindergarten has separate garbage point. If they can collect all refuse from that point then there would be no problem. The construction company if does not organise its storage of waste, there may be some problem.	46 replied that there will not be any difficulty if the Construction Company have good organisation of waste management and disposal.	The construction company has to inform them about the disposal of waste and debris. All rules for debris and waste management will have to transparent and clear to understand for residents.	73 replied there should not be any negative perception. 31 said if the transportation will be according to guideline, there will be no problem.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
10	Are you concerned about Health & Safety of residents and children during the construction?	They not worried about that as construction company will follow all norms and regulations. Even now many buildings are ongoing construction besides the kindergarten.	They are little bit concerned if there will be rise of dust from construction. The construction company have to link the construction to weather and wind condition.	48 participants felt that there will no negative impact if the Construction Company follows safety guideline correctly.	The Construction Company has to follow the labour safety rules and contracts and adhere to all safety guidelines.	66 people replied that construction should be continued for short period of time. 35 people replied that labor safety rules have to be followed accurately and Construction Company must take into account installation of barrier and other safety measures.
11	Would you like to participate in safety monitoring and controlling activities?	They were not sure to participate according to most participants	235 replied that it is not necessary to participate. 75 participants said they can be involved in safety and environment pollution controlling at the site	41 participants answered that they are willingness to participate.	School management can coordinate this controlling and monitoring. The Construction Company has to inform the residents to participate.	52 people said that they do not want to participate. 46 relied if they have time, they can participate. 6 people have no idea.
12	Would you be willing to form a Committee to help to school during the construction period?	They were not interested to participate in the committee.	It is not necessary to establish such as a council by 263 participants. 49 participants said they would need such a council because of after completion of construction, the Construction company must clean up and restore the area.	47 participants answered that they are not sure to form a committee but they need some clarification regarding a council formation.	Such a council is required to established to help the kindergarten. They will establish council consisting of representatives of parents, Kindergarten management. The role of council will have to be established.	71 people said it was not necessary, 28 persons said they want to form a council whereas 2 have no idea.
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	Do not destroy the playground and the young trees planted a few years ago. If the trees are removed, there should be planning and implementation for landscaping and greening the area.	There is big need and demand for not destroying the soil, bushes and planted trees.	100 % all participants replied that since the school building is constructed, so the road, landscaping and improving pathways must be the first concern.	Improve outside green facilities – replanting trees and bushes. This should be done by specialised by landscaping companies.	65 people said no problem, 31 said protection barriers have to be established correctly. The Construction Company has to define the parking area for construction machinery. The children's play ground has to be renovated and trees and bushes should not be destroyed.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
14	If you have any problem caused by this school / kindergarten construction, whom would you like to contact? (Construction company, school, urban department etc.	To inform the construction company and kindergarten management.	Construction company, kindergarten and Khoroo Governor.	All participants answered that they were prepared to cooperate wth Construction Company, school management and district government.	Construction company and khoroo government officials.	Construction Company, Kindergarten management, city and district government and khoroo government
15	What would you expect to improve at current school building (such as changing coal heating to electric heating etc.)	Expecting that the kindergarten rooms will be full of lights (windows), enough space. The construction company will ensure good quality material according to hygienic and sanitation standard.	Improve the heating and insulation and reduce loss of heat.	Improve the electricity supply system.	Expansion should include cultural hall, sport room and improve washing rooms. Air conditioning should be improved.	Improve the plumbing system, the class rooms must be big and have natural light. The current old building has to be renovated.
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	There will be no interruption due to this activity.	There is no shop or commerical organisation in the area.	There is no shop or commerical organisation in the area.	No shop and commercial services in the area.	86 participants said that the construction would not interrupt the commercial and shop business.
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	No	No	Ecoclub of the school children	No	No idea
18	Other issues	Expressed thanks for kindergarten expansion project.	No	It is important for the community if the school is supported.	Kindergarten expansion building has to fit into standard and construction activity should be continued in short time. Use good construction materials. They will support and	One Kindergarten constructed in some part of the same Kindergarten, it was privatised. This should not happen. If that happens again, we are not allowing this construction expansion.

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**A1-4. Kindergarten #88 in Ulaanbaatar Baygol, 18th khoroo**	**B1-13. Kindergarten # 104 in UB Songinokhairk 12 khoroo**	**B1.3 "Erdmiin Orgil" Complex UB Naiakh District**	**A1.6. Kindergarten no 8. UB Baynzurkh District 16th khoroo**	**A1.14. Kindergarten #107, in UB Songinokhairk 14 khoroo**
		26	**27**	**28**	**29**	**30**
					assist in all activities as the same will be for their children.	

5. Details of Public Consultation (Environment) (31-33)

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**B1.2. School #18, in UB, Khan-Uul district**	**B1-6. School #122, in UB Songinokhairkhan district.**	**B1-12. Kindergarten #88 In UB, Songino-khairkhan, 6th Khoroo.**	**B1-2. Kindergarten #100, in UB, Bayngol district, 3rd Khoroo.**	
		31	**32**	**33**	**34**	
1	Do you support for the construction at school.	All participants supported the construction.	All participants supported because of the school has almost 2 times exeeded number of students	100% of the participants are encouraged constructing a new bui ding for the kindergarten. The kindergarten is being run activities in an old building which was built in 1948.	98.8% of the participants promoted the kindergarten construction work. There aren't any other kindergartens in the areas including the 1st khoroo of Altai khothon in Bayangol district, and the 3rd khoroo in Narnii khoroolol except from the 100th kindergarten which has only 3 classes. The extension work of the construction was promoted by the residents because it is the only public kindergarten with 24-hour service in this area.	
2	What is educational status of your community?	Education level of this area is at satisfactiry level	Most of residents of this area are resettled from countryside, and they have low education and lack of livelihood income.	Education level of the people who live around this area is medium. There are many immigrated people from the provinces.	According to the statistics, educational background of the participants is shown as follows: 60% of the people are well educated. 20% of the people are average. 20% answered "don't know". Residents of the "Altai khothon" and	

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		31	**32**	**33**	**34**	
					"Narnii khoroolol" are comparatively young so it was considered that their educational background is good enough.	
3	Will this construction at Schools / Kindergarten give any negative impact to your apartment complex?	No, this consruction is small than other big buildings constructing in this area.	We do not see any negative impact because of this area is more remote from other residential settlement and buildings.	There is no positive influence to the solution of the problems. A new building can be constructed in the north side of the kindergarten building where is an emptier place.	95% of the residents consider that there aren't any negative effects on their living conditions. 5% of the people answered "don't know". The residents of "Altai" and "Narnii khoroolol" consider that the construction work wouldn't cause any negative impacts on their living conditions and apartment complexes because it is located from the kindergarten area for about 800-1000 meters.	
4	What benefits do you perceive from this construction?	Children's educational condition will be improved, more children can involved in school, claas size will be decreased	We hope that the school class shift will be reduced from 3 shift to 2 shift, and students studying condition will be improved.	Pre-school group B student Bilegsaikan's mother Delgertsetseg: I have nursed my children who are 2-4 years old at home and from this year I have started to work. Since this year my children have started educating in the kindergarten. My spouse is also employing and there are many mothers like me around here. Medium group B student Anar-Erdene's mother Munkhtungalag: I am very glad that my youngest child is educated in the	60% of the people answered "We will have a kindergarten" and 40% of the people said "We don't know". The residents' kids go to the private kindergartens with high tuitions in this area. If the kindergarten extension will be built in this area, the kids would have more chances to go to the public kindergartens.	

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		31	**32**	**33**	**34**	
				kindergarten and I have possibilities to work somewhere. Medium group B student Mandakhnaran's father Nyamdavaa: It is already 12 years have passed but there is not have been built new kindergarten around this place. Before the elections to the parliament the nominatees of the parties promised to build new building in the territory of our khoroo. This meeting is one of these kinds of promises. If the promise is real thing I will be pleased to hear it.		
5	Would you be have any problem with school if construction company makes access road in your parking area, dig any pipeline etc. for repair for diversion?	May be some problem in our car parking and there could be increased trafic gem during the transporting construction material.	There would not be any conflict because of the distance between school and households is far more than 250m.	There is no conflict because the new building will be constructed in the territory of the kindergarten. There is spacious surrounding area around kindergarten #84.	97% of the people consider that there will not be any contradictions. The kindergarten is away from the apartment complexes, so there wouldn't be any problems with the construction work, repairing, plumbing and sanitations.	
6	Would you be having any construction causes some dust during digging and storing in the school premises?	There will not be any dust raising because of this is the expansion on top of the school, adding one floor	There would not be any conflict because of the distance between school and households is far more than 250m.	We encourage to built a new kindergarten.	93% of the participants answered "There is no problem with the construction work" 5% of the people were disagree with it. 2% of the participants answered "We don't know". The construction noise will not be heard to the residents	

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		31	**32**	**33**	**34**	
					because it is away from the kindergarten. The construction materials will be carried during the night, so it would not bother the residents in the area.	
7	Will you have a problem if the construction company required to work during the night to bringing construction material?	That is better to bring construction material during the night time, because of preventing trafic gem during day time.	No problem	Difficulties for us will not be created because it will be big investment for our children.	We hope that during the night construction work wouldn't bother to the resident's comfort.	
8	Will you have a problem if the construction company required to work during the night to carry construction requiring extreme vibration and noise such as concreting, cutting, digging etc.?	Do not think so, the expansion can be mostly using wooden material	No problem	There are no difficulties for activities of the kindergarten. The kindergarten is running its activities during the day time.	There wouldn't be any negative impressions for the people because the construction materials wouldn't be carried along the parking areas and near the apartment complexes.	
9	How would you react to construction company transporting waste and construction material through your apartment area or parking area?	If the construction company has proper schedule about the transportation and imforme us, there would not be any problem.	Will not have negative perception	There are no difficulties. It is related to the creation.	The residents also consider that there is no worry about the safety for their kids	
10	Are you concerned about Health & Safety of residents and children during the construction?	We hope so that the construction activity will be carried out during vocation of school and all parties have to set up proper protection barriers around the site.	If the construction will continue during the school time, there should be built proper barriers.	The teachers should inform parents about constructing process and parents have to pay more attention to their children especially during the earth moving work. Also, a construction company should pay more	If there are some suggestions and proposals, we can consider them.	

No	Participants' opinion, comments and suggestions from consultation meetings with residents of surrounding area of sites.					
	Issues	**B1.2. School #18, in UB, Khan-Uul district**	**B1-6. School #122, in UB Songinokhairkhan district.**	**B1-12. Kindergarten #88 In UB, Songino-khairkhan, 6th Khoroo.**	**B1-2. Kindergarten #100, in UB, Bayngol district, 3rd Khoroo.**	
		31	**32**	**33**	**34**	
				attention on the safety.		
11	Would you like to participate in safety monitoring and controlling activities?	If school requires our participation we will be organized.	Yes we would like to participate	Our teachers and workers can control if it is required.	If there are some proposals, we can make a contract with them.	
12	Would you be willing to form a Committee to help to school during the construction period?	Some of participants liked this idea and decided to discuss with school management.	We would establish such acouncil.	If it is necessary we can organize a committee of the teachers and the parents.	70% of the participants in the study answered "We don't have". 9% of the people said "We have". 5% said " We don't know". 14% of them said "We want so solve the problems with green zones"	
13	Any other critical environment related issue and concern by the residents for the during construction and operation stage?	The expansion is on the top of school there for we are concerning for protection measurement against falling down something.	None	I have no idea on it.	The statistics show that construction companies take 52%, kindergartens take 15%, district administration takes 24%. Other organizations take 7% and 1% of the people said "We don't know".	
14	If you have any problem caused by this school / kindergarten construction, whom would you like to contact?(Construction company, school, urban department etc.	School management, construction company and District Government	Construction company and school	A construction company and for other related officials	According to the statistics, 51% of the participants said "The building foundation should be renovated". 6% of them said "Recreation facilities are important". 34% of them said "The loss of the heating systems should be considered". 51% of the participants said- "We don't know".	
15	What would you expect to improve at current school building	The insulation of school has to be improved	Transportation of water should be changed with deep water well, school	The building is old and it was built in 1948. Plumbing and sewage	We want to renovate and improve the heating systems of the	

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	(such as changing coal heating to electric heating etc.)		has to have office for teachers	system will be changed, front side and facade will be fixed and ventilation will be improved.	kindergarten. The kindergarten is cool in the winter because the floor of the kindergarten is frosted, and the roof cover of the building is not good enough, so the kids always go to the kindergarten with woollen slippers.	
16	Any shops/commercial establishments and industrial activity disturbed by this construction?	No any shops, commercial activities disturbed.	None	There are no large markets and stores and shops around the kindergarten.	65% of the residents said "No". 1% of the people answered "We don't know" 34% of the participants said "We don't know" There aren't any shopping centers and stores around the kindergarten. The nearest shop is located within 800 meters of area.	
17	What other organizations of environment & nature conservation (NGOs/CBOs/ Civil Society) active in the area? Name of these organizations	We do not know.	None	No idea.	No ideas.	
	Other issues	None	The construction should be finished on time.	None	All the participants in the study agree with the construction work. The lists of the participants and questionnaire were attached with the document.	

List of People met during the site visit

Sl. Nº	Name of the Participant	Occupation	Contact
Ministries and Departments			
1	Mrs.Uranchimeg	Director, Department of Clean Technology, MNET	99180175
2	Mrs. Bunchinjav	Director of Division of EIA, MNET	99196847
3	Mr. Tumurbaatar	Officer, Department of Clean Technology, MNET	88000813
4	Mr.Batmagnai	Director of Department of Finance and Economy, MECSS.	
5	Mr.Ganbaatar	Senior officer, Department of Finance and Economy, MECSS	99123848
6	Mr. Amartuvshin	Officer, Division of Investment, MECSS	88113529
7	Mr.Enkhtur	Director of Finance and Investment Division of UBMED	99005929
8	Mr.Bayrmagnai	Officer of Finance and Investment Division of UBMED	99112037
9	Mr.Irmuun	Officer of Finance and Investment Division of UBMED	96007892
10	Mr.Jargalsaikhan	Officer, Department of Nature and Environment of UB.	
11	Mrs.Zolzaya	Project officer, Department of Nature and Environment of UB.	
12	O.Batkhishig	Researcher, Institute of Geography	99712339
Aimag or Provincial Governments			
13	Mr.Batzaya	Officer of Nalaikh District Education Department	
14	Mr. Batjargal	Director of Darkhan Uul Aimag, Department of EC.	
15	Mr. Buyanbat	Officer of Darkhan Uul Aimag, Department of EC.	99994613
16	Mr. Batmunkh	Director of Deparment of Education & Culture of Gobi-Altai Aimag.	
17	Mr. Ankhbaatar	Officer of Deparment of Education & Culture of Gobi-Altai Aimag.	99814160
18	Mr. Munkhbat	Director of Deparment of Education & Culture of Baynkhongor Aimag.	
19	Mr. Enkhbayar	Officer of Deparment of Education & Culture of Baynkhongor Aimag.	89442077
20	Mrs. Gereltuya	Land manager of Baynkhongor Soum	
21	Mr. Khurelkhuyag	Architect of Baynkhongor Aimag	
22	Mrs. Uugantsetseg	Bag Governor, Baynkhongor Soum	
23	Mrs. Battsetseg	Vice Governor of Dornogobi Aimag	
24	Mr. Tuvshintur	Chairman of Development Policy and Planning Department of Dornogobi Aimag Government	99151316
25	Mr. Amarsanaa	Officer of Deparment of Education & Culture of Dornogobi Aimag.	99777447
26	Mr. Oidov	Officer of Deparment of Education & Culture of Uvurkhangai Aimag.	99143444
27	Mr. Bileggumberel	Vice Governor of Gobisumber Aimag	
28	Mr. Munkhzul	Director of Deparment of Education & Culture of Gobisumber Aimag.	
29	Mrs.Battsetseg	Officer, of Deparment of Education & Culture of Gobisumber Aimag	99136671
30	Mr. Tamir	Officer of Land Management Agency of Gobisumber Aimag.	
31	Mr. Bat-Amgalan	Director of Deparment of Education & Culture of Orkhon Aimag.	
32	Mrs.Narantsetseg	Officer of Deparment of Education & Culture of Orkhon Aimag.	99023069
33	Mr. Odbaatar	Chairman of Land Management Agency of Orkhon	
34	Mrs. Enkhtaivan	Governor of Tsagaanchuluut bag of Orkhon Aimag	
35	Mrs. Nandinerden	Organizer of Tsagaanchuluut bag of Orkhon Aimag	
36	Mrs.Ikhbayar	Officer of Deparment of Education & Culture of Bulgan Aimag.	99349549
37	Mr. Batsaikhan	Governor of Teshig Soum of Bulgan Aimag	99992974
38	Mr. Altangerel	Officer of Deparment of Education & Culture of Dornod Aimag.	96045192

Sl. Nº	Name of the Participant	Occupation	Contact
39	Mrs. Baigalmaa	Director of Deparment of Education & Culture of Dornod Aimag.	
40	Mr. Ganpurev	Governor of BaruunBuren Soum of Selenge Aimag	
41	Mr. Erdenebaatar	Director of Deparment of Education & Culture of Bulgan Aimag.	
		Schools and Kindergartens	
42	Mrs. Enkhtuul	Manager of Kindergarten #165 in UB, Khan-Uul District, 14th khoroo.	98210956, hola_tula@yahoo.com
43	Navchaa	Kindergarten No.108	91184109 313848
44	Delgermaa	Kindergarten No.82	99192324
45	Tsevmaa	Kindergarten No.22	99105307
46	Naranjargal	Kindergarten No.17, UB, Sukhbaatar District, 10th khoroo.	99017719, naranjargal_az@yahoo.com
47	Sosorbaram	Kindergarten No.82	99942191
48	Tsetsegsuren	School No. 122 UB, Songinokhairhan District, 22nd	96057187
49	Mrs.Tsermaa	Director of School # 51, UB	
50	Mr. Bat-Ulzii	Director of School # 53, UB	
51	Mrs.Odgerel	Director of KG # 160, UB	
52	Mr.Altangerel	Director of School # 6, UB	
53	Mrs.Otgonsuren	Methodologist of KG # 68, UB	
54	Mrs.Sarantuya	Teacher of KG # 68, UB	
55	Mrs. Bayrmaa	Director of KG # 65, UB	
56	Mrs.Erdeneundrakh	Director of KG # 72, UB	
57	Mrs. delgermaa	Director of KG # 100, UB	
58	Mrs.Nergui	Director of KG # 164, UB	
59	Mrs. Namjilmaa	Organizer of KG # 164, UB	
60	Mrs. Burenjargal	Director of KG # 88, UB	
61	Mrs. Odgerel	Director of KG # 66, UB	
62	Mrs. Tsagaantsooj	General Director of School Complex Ireedui, UB	
63	Mrs.Norjmaa	Director of School Complex Ireedui, UB	
64	Mrs.Tumur	Director of School # 2 of Complex Ireedui, UB	
65	Mrs. Saranchimeg	Director of School #1 of Complex Ireedui, UB	
66	Mrs. Dolgor	Director of High School #1 of Complex Ireedui, UB	
67	Mrs. Munkhbayar	Director of Primary School #3 of Complex Ireedui, UB	
68	Mr. Batsukh	Director of Primary School # 2 of Complex Ireedui, UB	
69	Mrs. Baigal	Director of KG # 104, UB	
70	Mrs. Gankhuyag	Director of KG # 107, UB	
71	Mrs. Enkh-Ariun	Director of KG # 110, UB	
72	Mrs. Sarantuya	Director of KG # 156, UB	
73	Mrs. Oyuntulkhuur	Organizer of KG # 158, UB	
74	Mrs. Adyasuren	Director of KG # 158, UB	
75	Mrs. Oyuntuya	Director of School “Erdmiin Orgil”, UB, Nalaikh	
76	Mr.Batzaya	Director of KG # 66, UB	
77	Mrs. Marta	Director of Primary School in Terelj, UB	
78	Mrs.Tserendolgor	Director of School # 109, UB, Nalaikh	
79	Mrs. Khulan	Organizer of KG # 176, UB	
80	Mr. Sevjid	Director of Khantaishir school of Gobi-Altai	99489948
81	Mrs. Khishigjargal	Manager of Khantaishir school of Gobi-Altai	
82	Mrs.Tserenlkham	Director of school, Bogd Soum, Uvurkhangai	
83	Mrs. Otgon	Director of KG #6, Kherlen Soum of Dornod Aimag	
84	Mrs. Altantsetseg	Manager of School in Baruunburen Soum of Selenge	
85	Mrs. Enkhsuvd	Director of KG in Teshig Soum of Bulgan Aimag	99460008
86	Mrs. Uranbaigal	Organizer of KG in Teshig Soum of Bulgan Aimag	
87	Mrs. Dulamsuren	Manager of school in Bogd Soum, Uvurkhangai	

PHOTOGRAPHS OF CONSULTATIONS

Consultation meeting in Bogd Soum of Uvurkhangai Aimag

Consultation meeting in Erdenet city of Orkhon Aimag

Consultation meeting in Teshig Soum of Bulgan Aimag

Consultation meeting in Kherlen Soum of Dornod Aimag

Consultation meeting in Ulaanbaatar's school

SIGNED ATTENDANCE SHEETS OF PARTICIPANTS

ОРОЛЦСОН ХҮМҮҮСИЙН НЭРСИЙН ЖАГСААЛТ

Сургууль\Цэцэрлэгийн төрөл ба дугаар: 100 дугаар цэцэрлэг

Холбоо барих хүн:Ц.Дэлгэрмаа /Эрхлэгч 99161001/

Уулзалт хийсэн он, сар, өдөр, цаг: 2017-01-30 08:00-09:00

Уулзалт зохион байгуулсан, хөтөлсөн хүний нэр:

№	Оролцогчдын нэр	Хүйс	Эрхлэдэг ажил	Холбоо барих утас	Гарын үсэг
1	А.Отгонсүрэн	Эм	Хувираа	99093993-86200500	
2	Ж.Батчимэг	Эм	СӨХ- лифтчин	99665934	
3	Анун	Эм	-	88788827	
4	Лхагвадулам	Эм	ШШГЕГазарт	88087150	
5	Адъяасүрэн	Эм	Мөнгөн эдлэлийн дархан	89704849-99311936	
6	С.Баярцэцэг	Эм	Скай Хайпермаркет кассчин	96961117	
7	Уранчимэг	Эм	Үйлчилгээний ажилтан	-	
8	Даваажаргал	Эм	Үйлчилгээний ажилтан	99710993	
9	Батмөнх	Эр	Жолооч	94091901	
10	Чимэддолгор	Эм	Хувираа	96560799	
11	Б.Ганчимэг	Эм	ЗХ-ний 017 ангид ахлагч	96610543	
12	Батбаатар	Эр	Хувираа	99779785	
13	Мөнхжаргал	Эм	Хувираа	99883044	
14	Одонхүү	Эр		91196633	
15	Болор	Эм	Менежер	99134127	
16	Оюунтуяа	Эм	Хувираа	88972323	
17	Жавхлан	Эр	Green international-ХХК менежер	99067767	
18	Б.Мөнхтуяа	Эм	Рояал Пирамид ХХК ХАБЭА-н инженер	89919241	
19	И.Чимэдцэрэн	Эм	Дулаан-Анд ХХк нягтлан бодогч	96014323	
20	Дэлгэрцогт	Эр		91667012	
21	Н.Нямсүрэн	Эм	СӨХ- захирал	99739915	
22	Шинэхүү				

23	Нэргүй	Эр	Уран ган ХХК-д барилгын туслах	89992112-99902112	
24	Базаррагчаа	Эр	Гагнуурчин	88683504	
25	Батжаргал	Эм	Хувираа	90369700	
26	М.Заяацэцэг	Эм	Барилгын компанид	99031248	
27	Байгаль	Эм	Буян ХХК	86670568	
28	О.Бадамханд	Эр	Нийслэлийн цагдаа	96882244	
29	Санжаа	Эр	Хувираа	95099236	
30	Г.Урнаа	Эм	Хувираа	89111369	
31	Нэргүй	Эм	Тэтгэвэрт	99899874	
32	У.Нарангэрэл	Эм	Сүүн шүдхэн хүүхдийн шүдний эмнэлэг	993112687	
33	Д.Оюунтуяа	Эм	Хувираа	99995092	
34	М.Солонго	Эм	Багш	94831122	
35	Сарантуяа	Эм	Тогооч	80531216	
36	Б.Дөлгөөнтамир	Эр	МҮОНРТ найруулагч	86078944	
37	Цэвээнчимэг	Эм	Засалчин	99873375	
38	Жамъяан	Эр	Цахилгаанчин	99059264	
39	Н.Отгонгэрэл	Эм	ХУД-ийн ХХҮХэлтэс	95992888	
40	Т.Оюунчулуун	Эр	Шонхав зоогийн газарт угаагч	88813367-98893376	
41	И.Нэргүй	Эр	Байцаагч	96000423	
42	О.Бат-Эрдэнэ	Эр	Эрх Мон ХХК-д	88870322	
43	А.Чулуунбат	Эр		80806533	
44	Тугтогтох	Эр	Хувираа	99804054	
45	Цогтбаяр	Эр	Оператор	89146904	
46	Уранбаатар	Эр	Хувираа	96028689	
47	Сосорбарам	Эм	Хувираа	91116979	
48	Дэлгэрцэцэг	Эм			
49	Урангоо	Эм	Хувираа	91999002	
50	Отгонцэцэг	Эм	Хувираа	99278988	

51	Бямбаа	Эм	Хүүхдийн эмч	99082065	
52	Туул	Эм	Оюутан	99607878	
53	Баянтүмэн	Эр	Газрын алба	99818976	
54	Дэлгэрмөрөн	Эм	Чанар шалгагч	93228622	
55	Пүрэвдорж	Эр	ҮСХ-ны ОНХХ-ийн дарга	99199234	
56	Баасансүрэн	Эм	Үсчин	88990491	
57	Халиун	Эм	Хувираа	88032444	

Баасан "Б."

Оролцсон хүмүүсийн нэрсийн жагсаалт

Сургууль\Цэцэрлэгийн төрөл ба дугаар: 104-р цэцэрлэг. Сэдээ [illegible]

Холбоо барих утас: 86180046. Арилжаа [illegible]

Уулзалт хийсэн он,сар, өдөр, цаг: 2017. 02. 16.

Уулзалт зохион байгуулсан, хөтөлсөн хүний нэр: Т. Батсоож

№	Оролцогдчын нэр	Хүйс	Эрхэлдэг ажил	Холбоо барих утас	Гарын үсэг
1	Одсирэн	эр.	Хувьхараа	97032420	Одс[illegible]
2	Нямсүрэн	эм	ажилчин	95004723.	[illegible]
3	Ганбаатар	эр.	Багш.	99718879	[illegible]
4	Оюунгэрэл	эм	Эмч	99818743	Оюунаа.
5	Баярмаа	эм	оёдолчин	88646458	[illegible]
6	Оюунцэцэг	эм	бизнесмэн	88013956	[illegible]
8	Лханаажав	эр.	жолооч	89712080	[illegible]
9	Сэнгэр-Од	эм	эмч	86181685	Сэнгэр[illegible]
10	Д.Алтанбаатар	эр	Нягтлан.	9971 5473	[illegible]
11	Отгонсүх	эм	Ажилчин.	96166817	[illegible]
12	Агванцэрэн	эм	хувиараа	88015224	[illegible]
13	Н.Энхтуяа	эм	Цагдаа	86126005	[illegible]
14	Ганхуяг	эр.	Инженер	99176466	[illegible]
15	Б.Батсоож	эм	Ахлах [illegible]	88062532	[illegible]
16	Н.Солонго	эм	Хувиараа	91905252	[illegible]
17	Дулмаа	эм	Бүртгэл	88490622	[illegible]
18	Зулаан	эр.	Мужаан	9455349	[illegible]
19	Баасандорж	эр.	Нягтлан.	86062344	Баасан.
20	Хатанбаатар	эр.	Жолооч	89010971	Хатан[illegible]
21	Мөнхзул	эм	Тогооч	84005497	[illegible]
22	Даваадорж	эр.	Засварчин	91112494	[illegible]
23	Отгонцэцэг	эм	Нярав	99231059	[illegible]
24	Хоролсүрэн	эм	Нягтлан	99704234.	[illegible]

Зохион "Б"

Оролцсон хүмүүсийн нэрсийн жагсаалт

Сургууль\Цэцэрлэгийн төрөл ба дугаар: 104-р цэцэрлэг

Холбоо барих утас: 99709009

Уулзалт хийсэн он,сар, өдөр, цаг: 2017.02.16

Уулзалт зохион байгуулсан, хөтөлсөн хүний нэр: Н. Отгонзаяа

№	Оролцогдчын нэр	Хүйс	Эрхэлдэг ажил	Холбоо барих утас	Гарын үсэг
1	Л. Мягмарсүрэн	эм	НХҮХ БЗД мэргэжилтэн	94262170	[illegible]
2	Ц. Адваажав	эр	хувиараа	95194414	[illegible]
3	Д. Ганзориг	эр	Дну элсэх ажилтан	99117844	Ганзориг
4	Б. Бумантогтох	эр	26-р хороонд оршин суух	88847362	Б. Бу
5	Л. Заяаа	эм	[illegible]	86030609	Л. Заяаа
6	М. Цэрэнхишиг	эм	тэтгэвэрт	99267414	М. Цэрэн
8	Г. Пүрэвсүрэн	эр	Анагаах	88844667	Г. Пүрэв
9	Б. Батцэнгэл	эр	[illegible] групп	89110137	Б. Батцэ
10	Г. Ханджаа	эм	ажилгүй	95849864	[illegible]
11	Цогбат	эрэгтэй	хувиараа	84444421	[illegible]
12	Н. Ануудар	эм	Эрүүл ахуйн үндэсний төв	95511160	Н. Ану
13	Б. Энхзаяа	эм	Ажилгүй	99013866	Б. Энх
14	Д. Мөнхмандах	эр	хувиараа	99887418	Д. Мөнх
15	Б. Бүрэнжаргал	эм	ажилгүй	99672597	Бүрэн
16	Л. Урангуа	эм	MCDS XXK	88696988	[illegible]
17	М. Хасбилэг	эр	хувиараа	96662598	[illegible]
18	Давааcүрэн	эм	хувиараа	88010519	[illegible]
19	Б. Цэрэнбатаа	эр	Монгол шуудан үйлдвэр	99093887	[illegible]
20	Ч. Мөнхцэцэг	эм	Хэрэг хүргэлт	80202006	Мөнхцэцэг
21	Г. Тэлмэн	эр	Төгөөг	99704766	Тэлмэн
22	Б. Эрдэнэсүх	эр	ХУИС-ийн	99669769	Эрдэнэсүх
23	Б. Унзарма	эм	Банк салбар	98022040	[illegible]
24	Г. Энх-очир	эр	Тал тэнхим	89696404	[illegible]
25.	Дэнзэ	эм	багш	89811557	Дэнзэ