

Myanmar Than Taw Myat Company Limited



**DOUBLE RHINOS
CEMENT**

**Cement Grinding Plant in
Dagon Myothit (East) Township,
Yangon Region**

EIA Report

December 2022



Sustainable Environment Myanmar Co., Ltd

**Environmental Impact
Assessment for Cement Grinding
Plant in Dagon Myothit (East)
Township, Yangon Region,
Myanmar.**




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EIA Report



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<p>Summary This document presents the Environmental Impact Assessment Report as required for Myanmar Than Taw Myat's Cement Grinding Plant.</p>		<p>Approved by;</p>  <p>Nyomie Razak Director</p>

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LIST OF ACRONYMS AND ABBREVIATIONS

AOI	-	Area of Interest
ASEAN	-	Association of Southeast Asian Nations
ANZEC	-	Australian and New Zealand Environment Council
AIDS	-	Acquired Immune Deficiency Syndrome
ADB	-	Asian Development Bank
AHPS	-	ASEAN Heritage Parks
BOD	-	Biochemical Oxygen Demand
BS	-	Black Smoke
COD	-	Chemical Oxygen Demand
CBOs	-	Community Based Organizations
CDM	-	Clean Development Mechanism
CSR	-	Corporate Social Responsibility
CO	-	Carbon Monoxide
DO	-	Dissolved Oxygen
ECD	-	Environmental Conservation Department
ECC	-	Environmental Compliance Certificate
EC	-	Electrical Conductivity
ECR	-	Environmental Conservation Rule
ESIA	-	Environmental and Social Impact Assessment
EHS	-	Environmental Health & Safety
ECL	-	Environmental Conservation Law
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
ESP	-	Electrostatic Precipitator
EPA	-	Environmental Protection Agency

EPAS	-	Environmental Perimeter Air Station
GAD	-	General Administrative Department
HIV	-	The Human Immunodeficiency Virus
IFC	-	International Finance Corporation
IFC PS	-	International Finance Corporation Performance Standard
IEE	-	Initial Environmental Examination
ISO	-	International Organization for Standardization
IUCN	-	International Union for Conservation of Nature
MONREC	-	Ministry of Natural Resources and Environmental Conservation
MOECAF	-	Ministry of Environmental Conservation and Forestry
MOM	-	Ministry of Mines
MESC	-	Mandalay Electricity Supply Corporation
MIC	-	Myanmar Investment Commission
MD	-	Managing Director
NEQG	-	National Environmental Quality (Emission) Guideline
NAAQS	-	National Ambient Air Quality Standards
NECC	-	National Environmental Conservation Committee
NCEA	-	National Commission for Environmental Affairs
NECCCC	-	National Environmental Conservation and Climate Change Committee
NGO	-	Non-Governmental Organizations
INGO	-	International Non-Governmental Organizations
ISO	-	International Organization for Standardization
NO	-	Nitrogen Oxide
NO2	-	Nitrogen Dioxide
OHSA	-	Occupational Health and Safety Administration
OHS	-	Occupational Health and Safety
O3	-	Ozone
PM	-	Particulate Matter

pH	-	Potential of Hydrogen
PPE	-	Personal Protective Equipment
PAPs	-	Project Affected Persons
PSHA	-	probabilistic seismic hazards assessment
RH	-	Relative Humidity
REM	-	Resource and Environment Myanmar Co., LTD
SEM	-	Sustainable Environment Myanmar Co., LTD
SIA	-	Social Impact Assessment
SO ₂	-	Sulphur Dioxide
SEMP	-	Socio-Economic Master Plan
TOR	-	Term of Reference
TSP	-	Total Suspended Particles
UNFCCC	-	United Nations Framework Convention on Climate Change
USEPA	-	United State Environmental Protection Agency
WHO	-	World Health Organization
(ug/m ³)	-	Micrograms per cubic meter
dBA	-	A-weighted decibels
TPD	-	Tons per day
t/d	-	Ton per day
t/h	-	Ton per hour
tph	-	Ton per hour
m	-	Meter
mm	-	Millimeter
m ³ /h	-	Cubic meter
g/m ³	-	Gram Per Cubic Meter
mg/Nm ³	-	Milligram per cubic nanometer

nm ³ /min	-	normal cubic meter per min minute
%	-	Percentage
°C	-	Degree Celsius
ppm	-	Parts per million
MPa	-	Megapascal Pressure Unit

1. EXECUTIVE SUMMARY

1. Introduction

Although Yangon is not the capital of Myanmar, it still remains as an economic hub because of potentials of international investments. Due to numerous developments projects like Industrial Projects, Housing Projects and Infrastructure development projects have been implementing, the raw material (cement) is more required for construction. Myanmar Than Taw Myat Co., Ltd. which is the cement production group that occupies big portion of the market, endeavors to fulfil the market demand quickly without time constraint. Hence, Myanmar Than Taw Myat Co., Ltd. applied investment permission to Myanmar Investment Commission for the development of Cement Grinding Plant in Yangon. Myanmar Than Taw Myat Company has received an investment permit on 8th August 2019 (Appendix 1) issued by Myanmar Investment Commission (MIC).

Myanmar Than Taw Myat Company Limited has currently produced 5,000 metric tons of cement per day, 24 hours (1.5 million tons of cement per year) including the process such as grinding and packing in Kyaukse Industrial Zone. A joint venture between Than Taw Myat Co., Ltd. and China's Yunnan Jiansheng Investment Co., Ltd., the company was first set up to establish 5,000 metric tons of cement grinding plant as the new name of Myanmar Than Taw Myat Co., Ltd. with the share ratio of (30:70) for the cement production. The type of investment is Joint Venture and the total amount of capital is equivalent in kyat of US\$ 72.4 Million with 24-month construction period and 24 month extension of construction period. It shall provide more than 709 job opportunities for local people during operation. It will increase tax revenue for the country and promote the development of local transportation, automobile maintenance and catering. The raw materials for the plant are clinker and gypsum imported from Myanmar Than Taw Myat Cement Plant (Kyaukse Township) Mandalay in Myanmar by waterway and carried to the cement grinding plant by trucks from Dagon port.

1.1 Project Location and Area

Myanmar Than Taw Myat cement grinding plant is located in the northwest of the Dagon Myothit (East) Township and the project area extent is approximately 49.4 acres.

1.2 Project Period

Myanmar Than Taw Myat Company has received a permit to produce cement production on 8th August 2019 (Appendix 1) issued by the Myanmar Investment Commission.

Project Phase	Permit
Construction Phase	2 years
Construction Phase (Extension)	1year + 1 year
Operation Phase	30 years
Decomposition Phase	2 years

Project Proponent



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Following Table shows relevant organization of project implementation and implementation organizations of EIA.

<i>Project proponent</i>	Myanmar Than Taw Myat Co., Ltd
<i>Implementation organizations of EIA</i>	Sustainable Environment Myanmar Co., Ltd. & Resource & Environment Myanmar Co., Ltd.

2. Policy, Legal and Institutional Framework

EIA Report shall include an EMP. The primary objective of the environmental management and monitoring is to record environmental impacts resulting from the project activities and to ensure implementation of the “mitigation measures” identified earlier in order to reduce adverse impacts and enhance positive impacts from specific project activities. The company shall undertake the following policy and legislation.

EIA Policy

- To minimize the environmental impacts
- To control noise pollution and air pollution
- To dispose solid waste systematically
- To maintain oil, fuel, and lubricant systematically
- To organize monitoring committee
- To allocate budget for EIA operating system, according to EIA procedure

SIA Policy

- To avoid agricultural land during operation
- To maintain and improve local transportation
- To avoid historical and cultural buildings of rural area
- To implement CSR programs

HIA Policy

- To control air pollution in the surrounding area
- To minimize noise pollution in and around the project area
- To operate health insurance for local people

EMP Policy

- To follow up the environmental impacts assessment
- To prepare management plan
- To operate mitigation activities that describe in EMP

2.1 Other Related Environmental Regulations and Policies

Other laws and policies on environmental management and protection in Myanmar that are applicable to the limestone production for own cement are presented in the following.

No	Law, Regulation or Guidelines
1	National Environmental Policy (2019)
2	Environmental Conservation Law, 2012 (Section 7 (o), 14, 15,16)
3	Environmental Conservation Rules, 2014 (Rule 69(a) and (b))
4	EIA Procedures, 2015 (Article 102 – 110, 113, 115, 117)
5	National Land Use Policy (2016)
Guideline	
6	National Environmental Quality (Emission) Guidelines (2015)
7	National Ambient Water Quality Guidelines (in preparation)
Forestry/Biodiversity	
8	Forest Policy 1995
9	Forest Law (2018) (Section 12 and 16)
10	The Protection of Wildlife and Protected Areas Rule 2002
11	The protection of Biodiversity and Protected Area Law, 2018 (Section 39, 40 and 41)
12	The Conservation of Water Resources and Rivers Law 2006 and Amending Law 2017
13	The Conservation of Water Resources and Rivers Rules 2013 and Amending 2015 Rule 8 (c, d, e)

14	Underground Water Act (1930)
15	Myanmar Climate Change Strategy and Master Plan 2018-2030
<i>Protection of Ethnic Nationalities and Cultural Property</i>	
16	The Protection and Preservation of Antique Objects Law, 2015. (Section – 12)
<i>Public Health and Safety</i>	
17	The Public Health Law (1972) (Section- 2 and 5)
18	The Prevention and Control of Communicable Diseases Law, 1995 (Section 3 (a) (b), 4, 9, 11)
19	Traffic Safety and Motor Vehicle Management Law, 2020
20	Traffic Safety and Motor Vehicle Management Rules, 2022
<i>Pollution Prevention</i>	
21	Prevention of Hazard from Chemicals and Related Substances Law (2013)
<i>Investment Laws</i>	
22	The Myanmar Investment Law, 2016 Section 50, 51, 72, 75
23	Myanmar Investment Rules, 2017 Rule 202, 203, 206, 212
24	The Myanmar Insurance Law, 1993 Section 15, 16.
<i>Labor Law</i>	
25	Minimum Wages Law (2013) Art 12(a), Art. 14(e), Art 14 (f) and Art 14(h).
26	The Payment of wages Law, 2016 (Section 3, 4, 5)
27	The Labor Organization Law, 2011 Section 17 to 22
28	The Settlement of Labor Dispute Law, 2012 (Amending Law 2014) Section 38, 39, 40, 51
29	Employment and Skill Development Law, 2013 Section 14, 15, 30

30	Social Security Law (2012)/ Came into force 1 April 2014 Section 11(a), 15 (a), 18 (b), 48, 49, 75.
31	Workmen’s Compensation Act, 1923
32	The Leave and Holiday Act, 1951; Amendment in 2014 (Section 3, 4, 5, 7 (a))
33	Rights of Persons with Disabilities Law (2015). Rules currently under internal discussion between Ministry of Social Welfare and PWD groups (2017)
Occupational Health and Safety	
34	The Fire Force Law (2015) (Section-25 a and b)
35	Occupational Health and Safety Law 2019 Section 12, 14 ,26 (a) to (R), 27 to 29, 31, 33, 34, 49 (a) to (e) & 50.
Land Law and Land Tenures	
36	Farmland Law, 2012
37	Farmland Rules,2012
Criminal Matters	
38	Penal Code (1861) and Amending Law 2016

2.2 International Conventions, Treaties and Agreements

Myanmar is a signatory to several international conventions, treaties and agreements. Those potentially relevant to the project should be presented and the main elements relevant to the project’s preparation and implementation should be summarized. A list of the relevant conventions, treaties and agreements that concerned with the present project is presented below:

Regional	
1	ASEAN Agreement on Transboundary Haze Pollution
International	
1	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)
2	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985
3	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987
4	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990
5	Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, D.C., 1973; and this convention as amended in Bonn, Germany,1979 (CITES)
6	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997

2.3 Environmental Quality Standards

Ambient quality guidelines

Parameter	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate matter PM10a	1-year	20
	24-hour	50
Particulate matter PM2.5b	1-year	10
	24-hour	25
Sulfur dioxide	24-hour	20
	10-minute	500

Source: National Environmental Quality (Emission) Guidelines, 2015

Wastewater, storm water runoff, effluent and sanitary discharges (General Application)³

Parameter	Unit	Guideline Value
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10

Parameter	Unit	Guideline Value
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH	S.U.a	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3b
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

Source: National Environmental Quality (Emission) Guidelines, 2015

Target Noise Level

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Source: National Environmental Quality (Emission) Guidelines, 2015

3. Project Description and Alternative

Myanmar Than Taw Myat cement grinding plant is located in the Dagon Myothit (East) Township, Yangon Region and it is also situated about 2km north-west of the Le Daunt Kan Railway Station. The proposed project will involve the installation and commissioning of cement Grinding Plant producing an average of 5000 tons per day (TPD) cement.

The proposed development entails utilizing clinker and other raw materials (e.g. gypsum, and additives). This material would be milled and mixed in certain combinations to form different grades of cement for the construction industry.

3.1 Project Activities

The present project is manufacturing of cement and the followings are the main process including raw materials that will be used.

Production Technology	: cement grinding plant by using tube-mill (instead of vertical mill)
Production Process	: clinker to cement
Raw Materials	: clinker and gypsum
Raw Materials source	: transport from MTTM Cement Plant (Kyaukse) to MTTM (Yangon) Cement Grinding Plant

3.2 Project Period

Myanmar Than Taw Myat Company has received a permit to produce cement production at 8th August 2019 issued by the Myanmar Investment Commission.

Work Site	permit	Issue Date	Expire Date
Construction Phase	2 years	8.8.2019	7.8.2021
	1 years	8.8.2021	7.8.2022
	1 years	8.8.2022	7.8.2023
Operation Phase	30 years	8.8.2023	7.8.2053
Decomposition Phase	2 years	8.8.2053	7.8.2055

3.3 Pre-construction Activities

The initial phase in pre-construction and project preparation is the conduct of environmental impact assessment to determine needed environmental management measures and estimate necessary costs to be included in the project feasibility study.

3.4 Construction Activities

Site clearance activities include clearing the land of vegetation, fencing the project boundary and site leveling. Internal site roads will be constructed as the site leveling will require a number of heavy trucks to bring infill to the site and remove unnecessary material.

3.5 Operation Phase Activities

The clinkers will be stored at a clinker covered store and then are stored in silo to recombine with the gypsum in the correct proportion and then the cement is produced. Finally, the powder cement is bagged and distributed to market.

Grinding Process

There are two processes involved in cement grinding i.e. the dry process and the wet process. In the case of this proposal, the dry process technology will be used. From the covered clinker storage, the clinker will be transferred to the mill feed bins via an intake hopper and dropped into a conveyer belt. To mitigate the loss of clinker as dust into the environment and potential for air quality pollution the hopper is also installed with a bag filter system.

Bagging and Packing Plant

The finished product is stored in the main storage silos. Thereafter the cement is transported to the packing and palletizing plant. In the packing plant, a packer accepts cement feed and puts it into bags.

4. Description of the Surrounding Environment and Environmental Baseline Study

The following section briefly describes the surrounding environments such as physical environment, biological environment and socioeconomic profile that characterize the potential area of influence of the present project.

4.1 Physical Components

<i>Climate and Meteorology</i>	<p>Yangon has a tropical monsoon climate under Koppen climate classification system. The city receives rainy season from May to October where considerable amount of rainfall occurs. Dry season starts from November to April. Yangon Region is situated in the tropical monsoon climate of Myanmar.</p> <p>The annual rainfall of the Yangon city is about 2,889 mm and mean relative humidity is about 77 percent. The mean maximum temperature is about 33.5 °C and mean minimum temperature is about 21.6 °C.</p>
<i>Topography</i>	<p>Yangon is situated on the eastern margin of the Ayeyarwady delta, between the Hlaing and Bago rivers. The present project area is located in the east of Ngamoyeik Creek. Ngamoyeik Creek flows from north to south. The general elevation of the present project area is about 5-to-10-meter mean sea level and the physiographic feature is flat and smooth.</p>
<i>Geology</i>	<p>The present project area is also located in the southern part of Bago Yoma and lying about 35 km west of Sagaing Fault. The sediments in the recent condition belong to the molasse facies. These are composed mainly of sandstones and clays which are fossiliferous.</p>
<i>Natural Hazard</i>	<p>According to the records of the previous considerably high magnitude earthquakes in Myanmar, Yangon has experienced low to medium seismicity. The seismicity of the area and some soils in Yangon City are highly susceptible to liquefaction, it is very important to have at least a general idea as to where liquefaction might occur. According to probabilistic seismic hazard map of Yangon City, the city is generally located in the zone</p>

	of peak ground acceleration, PGA 0.29 - 0.5 g. The project site is located in the eastern part of Yangon city, which is near to the western part of the Sagaing Fault. The right-lateral strike-slip Sagaing Fault is located 40km from eastern Yangon and threatens to create biggest earthquake.
Hydrology Situation	The project area lies at the confluence of the Bago River and the Hlaing River. The two rivers downstream of the confluence is called as the Yangon River, which is connected to the Gulf of Mottama. The Pan Hlaing River and Twantay Canal, which converge and flow downstream the Yangon River, as well as the Kokkowa River which connects with the Hlaing River, all obtain its water from the Ayeyarwady River. The rivers mentioned are all tidal rivers. During dry season when the river flow is low, salt water intrusion occurs.
Soil	The different varieties of the individual soil characteristics are found vicinity of the project area, such as Meadow and Meadow Alluvial Soil, Gley and Gley swampy soils, Swampy soils, Lateritic soils, yellow brown forest soils, Dune Forest & Beach sand, Mangrove Forest soils and Saline swampy meadow gley soils.

Summary of Physical Environmental Survey

Air Quality & Meteorology	Number of samples	Two points
	Parameter	SO ₂ , Ozone, NO ₂ , PM 2.5, PM 10, Relative Humidity, Temperature, Wind speed and Wind direction
	Period	For 24 hours duration at one time
	The average values of ambient gaseous levels of all air quality monitoring for 24 hours are shown in Section 5, Table 5.8. According to the survey results, the average 24-hour period for PM2.5, PM10 and SO2 concentrations are within the National Environmental Quality (emission) Guideline. The daily 8-hour maximum ozone level is within the 100 ug/m ³ standard. Hourly NO2 levels are below the specified emission guideline.	
Noise Level	Number of samples	Two points
	Parameter	L _{Aeq} (A-weighted loudness equivalent)
	Period	For 24 hours duration at one time
	The results are compared with “Residential, institutional, educational” environment of Myanmar National Environmental Quality (Emission) Guideline. By means of the calculated results, daytime and nighttime noise level result of N-1, and N-2 are lower than the applied standard within the survey period.	
Vibration	Number of samples	Two Points

	Parameter	Lvmax
	Period	For 24 hours duration at one time
	According to the calculated results, all vibration level (Lvmax) V1, and V2 are lower than the applied standard.	
Surface Water Quality	Number of samples	Two points
	Parameter	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus, pH, DO, EC, TDS, water temperature, Turbidity
	Period	One time
	Water quality results were compared by effluent level of general guideline in NEQG. Most of the water results are lower than the applicable NEQG guideline. However, the total coliform bacteria are higher than the specified standard in SW-1 and SW-2.	
Ground Water Quality	Number of samples	One points
	Parameter	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus, pH, DO, EC, TDS, water temperature, Turbidity
	Period	One time
	The in - situ and laboratory results of the groundwater is well within the guideline.	
Soil Quality	Number of samples	Two points
	Parameter	pH, Cadmium, Copper, Zinc, Manganese, Lead, Arsenic, Iron, Chromium, Mercury, Nickel
	Period	One time
	Chemical properties for soil was analyzed in the laboratory of Land Use Department of Yangon Region. The results of soil quality survey are lower than the applicable guideline.	

4.2 Environment Biological Component

Flora	Within the Area of cement grinding plant project, there are four major habitat types observed namely (1) agricultural land and (2) Mixed grass and Shrub Land (3) Bare Land and (4) Some extent of tree in plantation. The list of 47 plant species recorded from study area, and their surrounding area were presented in the Section 5, Table (5.38). Flora Species were classified species of least concern. (18) Species of Not Yet Assessed and one species of data deficient on the IUCN Red List. There was no endemic species in this area.
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<i>Fauna</i>	During the survey period, 4 Species of Mammal, 9 Species of Herpetofauna, 9 Butterfly species, 4 Dragonfly species, 19 species of fish and 43 species of Bird in the survey area. Based on the Globally Threatened species IUCN Red List (2022), there were no threatened species in this area.
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4.3 Socio Economic Components

<i>Administrative Organization and Limits</i>	The proposed project is located area in Dagon Myothit (East) Township situated in the east of Yangon. The project located township, Dagon Myothit (East) Township has an area of 35.15 square mile. It is stretching 3.7 miles east to west and 9.5 miles north to south and it has elongated shape. It shares borders with Hlegu township in the east, Dagon Myothit (North) Township in the west, and North Okkalapa Township in the north and South Dagon Township in the south.
Social Profile	
There are three villages in the project AOI for social study namely Kyu Chaung Village, Kyar Ni Kan Village and Lay Daunt Kan Village. Social profile of these villages can be seen as below.	
<i>Demography</i>	The total population of the studied area is 6,224 and it is the 4 percent of total population of the Dagon Myothit Township. Among them, Lay Daunt Kan Village/ Ward is the most populated. The total male population is 3,069 and the female is 3,155. The total population of studied area represents 1.9 percent of the total population of Dagon Myothit Township.
<i>Gender</i>	Within the studied area, there are more female with 50.69 % than male with 49.30 % and there are slightly more females than males with 97 males per 100 females in studied area. It is observed that gender is almost equally distributed.
<i>Religion</i>	Buddhism is dominant in the studied area. As per survey result, 99.2 per cent of the respondents are Buddhists.
<i>Education</i>	According to the baseline survey results, the literacy rate of the studied area is 95.9 per cent. 4.1 per cent of the total population within the studied area have never been to school. In contrast, the highest percentage of respondents are at the primary level education and 49.6 percent has completed primary school. Second largest education level in the studied area is middle school followed by high school.
<i>Communities</i>	Among them the proportion of employed persons working as casual labor is the highest with 16.5 per cent. The second largest is private staff at 14 per cent and the third largest is traders at 9.1 per cent.
<i>Vulnerable groups</i>	According to the field data, 4.5 per cent of the total household in the studied area are found as vulnerable. Among these groups, the one which is the female household head with juvenile child is mostly observed with 1.3 % of the total households and is followed by the one which is

	physically disabled with 0.9% and the one which is chronic or critical diseases with 0.8 %.
<i>Ethnic minorities</i>	According to the Township Profile, majority of the people in the Dagon Myothit (East) township is Burmese. Also in the studied area, the majority is Burmese, and all the respondents are Burmese.
<i>Political and social organizations</i>	Within the studied villages, there is not any political organization. Within the studied area, there are two social organizations such as Myittar Yang Zin in Kyu Chaung Village and Phyusin Myittar in Lay Daunt Kan Village/Ward.
Economic Profile	
Within the studied villages, working as casual labor is the main economic activity and there are some who are working as private staff. As per the survey result of the field study, the income of the studied area is mainly dependent on the existence of the industrial zones.	
<i>Employment</i>	In the studied area, local people work as government staff, skilled workers, construction workers, casual labors and private staff. Among them, causal labor is the highest proportion with 16.5 % of the respondents and is followed by private staff with 14%. Since Dagon Myothit (East) is surrounded by many industrial zones, most of the people work at the surrounding industrial zones as industrial workers.
<i>Household income</i>	Based on the data of socio-economic survey, the percentage of the household earned the income between 100,000 and 300,000 are the highest. Within the studied area, minimum average income is between 10,000-100,000 while the maximum is above 1,000,000.
<i>Cost of living</i>	As per the socio-economic survey data, the expenditure of 74 per cent of household is between 100,000 and 300,000 and it is the highest. Minimum average income is between 10,000-100,000 while the maximum is between 900,000-1,000,000. According to the survey result, 83 per cent of household do not have debt and the income and expenditure are in the balance.
<i>Local businesses</i>	According to the survey result, local people work as casual labors, private staff, and business traders in the studied area. In addition, some of the people operate small businesses like mini stores, maintenance workshops, teashops, and restaurants for their living. Only a few people engage in agricultural and livestock farming.
<i>Agriculture</i>	According to the data collected at the field survey, only a few people engaged in agricultural activities and paddy and green bean are also cultivated as cash crops.
<i>Livestock (Fishery and aquaculture)</i>	However, only 8.3 % of the total respondents engage the animal husbandry within the studied area. They keep chicken, cattle, pig, duck, and goat are bred for household consumption and business purposes. About 15 Acre of fish farming activities operating together with chicken poultry are existed within the studied area. Moreover, there are 2

	respondents who engage in fishing activities for household consumption and business.
Industry	Within the studied area, there is a garment factory.
Tourism	There is neither tourist site nor tourist attraction in the studied area.
Health Profile	
The common diseases of the community, health care facilities of the surrounding area and health behaviors are presented in this section.	
Community Health	Within the studied area, diseases like hypertension, seasonal flu and heart attack are mostly observed according to the survey data. When people get sick, they normally go to the nearest clinic and rural health centers. According to survey, smoking, chewing betel and drinking alcohol are found to the respondents. Chewing betel is the most common behavior.
Morbidity and Mortality	Within the studied area, diseases like seasonal flu, hypertension, heart attack are mostly observed according to the survey data.
Access to Health Services	Whin the studied area, there is a Sub- Rural Health Care Center called Kyu Chaung Sub- Rural Health Care Center. Mostly, people from the studied area usually go to clinic in Lay Daunt Kan when they are sick. There is a Sub- Rural Health Care Center called Lay Daunt Kan Sub- Rural Health Care Center located on No. (2) Main Road.
Communicable diseases	According to the survey result, sexually transmitted disease like herpes is observed although its percentage is very low in comparison with other diseases. In addition, HIV occurrence of 3 households in Lay Daunt Kan Village is observed according to the in-depth interview with village heads.
Land use	
The agriculture mainly paddy, scattered small trees, swampy area, water body and buildup area are the main land use of the area. The cement plant and associated facilities will require total of 49.9 acres land area. For the proposed cement grinding plant, the required land has been purchased from the company which transferred farmland to other use.	
Infrastructure Facilities	
Water Use and Water Supply	Within the studied area, most of the resident use tube wells, pond and rainwater for the water use. There is no reservoir piped water/ tapped water for the studied area. For the drinking water, people must rely on the purified drinking water and tube well by using water treatment methods like boiling and using filters.
School	In the studied area, there is a post-primary school in Kyu Chaung Village. For the secondary education, most of the students go basic education high school in Lay Daunt Kan (South Dagon Township) located on the other side of No (2) Main Road. There are 2 monastic

	schools in the Kyar Ni Kan and Kyu Chaung Village and one charity monastic school named Mahar New which gives free tuition services for the different levels of students.
Transportation	Within the studied area, people use motorbike to go within the township and use bicycle to go within and around the villages. People use car, motorbike, or shuttle buses to go to downtown or other townships. Based on the survey results, 87.6 % of respondents use motorbike for transportation. The other 9.9 % of respondents use car for transportation.
Electricity	There is national grid for the access of electricity in rural area. At the studied area, 93.4 per cent of households use electricity for lighting and it is higher than township level proportion. The percentage of households that use candle for lighting is 3.3 per cent and it is the same percentage of household use solar for lighting. On the other hand, 88.4 per cent of respondents use electricity for cooking.
Energy sources	According to the survey result of the studied area, electricity is the main source for both lighting and cooking. Candle and solar are also used for lighting and the secondary source for cooking is firewood.
Cultural Components	
Archaeology	According to the GAD data, there is no archaeological site within the township. Similarly, there is no information about archeological site within the studied area.
Temples, Monuments	There are 3 monasteries named Katharyama Monastery, Damma Saytana Wipathana Monastery and Naung Kaung Monastery and 1 orphan charity monastery named Maha Nwer are located near the project area and existed along the access road to the project site.
Visual Components	
Aesthetic	Natural environment and man-made environment are existed together in Dagon Myothit (East) Township. There is no significant places with aesthetic value within the studied area. There is no impact on aesthetic of the existing environment since factories are already existed.
Landscape	Major visual components of Dagon Myothit (East) Township mainly consist of plain and agricultural land, creek and some natural vegetation. There is no significant landmark near the project site.
Cultural Landmarks	Within and around the studied area there is no significant cultural landmarks.

5. Impact & Risk Assessment and Mitigation Measures

5.1 Summary of Environmental Impacts and Mitigation Measures, and Residual Impact

Environmental Components	Potential Impacts	Mitigation Measures	Residual Impact Significance
<i>Construction Phase</i>			
Air Quality	- Vehicle emissions and fugitive dust	<ul style="list-style-type: none"> ▪ Restricting the speed of trucks and other vehicles accessing the project site to 40km/hr. ▪ Water spraying on construction site. ▪ Provision and enforcement of appropriate PPE to workers. ▪ Develop and implement an air quality monitoring plan to ensure compliance with the limits set under NEQG. 	Insignificant
Noise and Vibration	- Noise and vibration from construction activities	<ul style="list-style-type: none"> ▪ To minimize machinery and equipment unused conditions with engines in action; ▪ To maintain machinery and equipment in good conditions; ▪ To restrict the construction activities that will generate disturbing sounds to normal working hours. ▪ To post warning signs within the vicinity of the impact and all personnel shall be provided with personal protective equipment. 	Insignificant
Water Quality	- Water Quality degradation	<ul style="list-style-type: none"> ▪ Water consumption must be reduced as much as possible, especially it is a natural resource. ▪ Wastewater generated from offices, canteens, and worker accommodation is treated by septic sewage system. ▪ Temporary drainage system will be provided for collecting drain water from construction activity and rain to sediment pond and reuse inside construction area. 	Insignificant
Solid Waste	- Solid waste from construction activities -	<ul style="list-style-type: none"> ▪ All types of waste generated during the construction phase should be inventoried and scheduled; ▪ Disposal of waste and hazardous materials will be coordinated with township development committee; ▪ Incineration of combustible waste and construction debris is prohibited; and ▪ Construction site will be periodically cleaned. 	Insignificant

Vegetation	<ul style="list-style-type: none"> - Disturbance of natural habitats in the construction site areas 	<ul style="list-style-type: none"> ▪ Avoid unnecessary clearing of land and cutting of vegetation. The construction should be progressive, that is implemented as soon as a portion of the site is ready for construction. ▪ Prohibit hunting or trapping of wild animals, even small ones including rodents and birds. ▪ Non constructed area will be rehabilitated and vegetated as soon as land clearing and land preparation has been completed. ▪ Local species should be prioritized in rehabilitation and vegetation program. ▪ Worker's training on wildlife through induction, posters. ▪ Apply no hunting and no poaching policy inside the project area. 	Insignificant
Socioeconomic	<ul style="list-style-type: none"> - Employment - Local Economy - Transportation 	<ul style="list-style-type: none"> ▪ To have clear stipulation of using local labor in accordance with the needs of the project ▪ To identify the range of skill required for the labor force and conduct a gap analysis against skills availability ▪ To ensure that the project site responsible liaison officer closely coordinate with local village leaders and local government authorities to agree on appropriate procedures for recruitment and hiring ▪ To track and monitor concerns associated with project employment or workforce recruitment ▪ Careful management to be practiced about the expectation of local people in regard to the employment to avoid any disputes ▪ All required services for the plant should be sourced by the local supplier of business services within local area, providing a wide range of business and employment opportunities. This is referred to as indirect employment. 	
Operation Phase			
Air Quality	<ul style="list-style-type: none"> - Air pollution (Particulate matter) will be generated from cement grinding plant - Vehicle emissions and fugitive dust 	<ul style="list-style-type: none"> ▪ Use of enclosed storage structures to minimize fugitive dust emissions. ▪ Install of dust collectors ▪ Use of enclosed conveyors with well designed, extraction and filtration equipment on conveyor transfer points to prevent the emission of PM. 	Insignificant

		<ul style="list-style-type: none"> ▪ Provision and enforcement of appropriate PPE to workers 	
Noise and Vibration	- Noise and vibration from cement grinding plant operations	<ul style="list-style-type: none"> ▪ Use of silencers for fans, ▪ Room enclosures for grinding mill operators, ▪ Installation of noise barriers around noise-emitting equipment, ▪ Conduct ambient noise monitoring at appropriate locations periodically during the operational phase to ensure compliance with applicable NEQG standards. ▪ If noise cannot be reduced to acceptable levels, personal hearing protection 	Insignificant
Water Quality	- Water quality degradation	<ul style="list-style-type: none"> ▪ Water consumption must be reduced as much as possible, especially it is a natural resource. ▪ Minimize amount of water used during cleaning (for example, by using high-pressure, low-flow nozzles) ▪ Wastewater from offices, canteens, and staff accommodation must be discharged by constructing a water retention tank and utilizing a sedimentation system. ▪ Sewage must be collected by pit system and then disposed of by municipal sewage trucks. 	Insignificant
Solid Waste	- domestic waste	<ul style="list-style-type: none"> ▪ Suitable temporary disposal sites shall be identified with capacities for disposal for general and hazardous waste prior to the operation phase. ▪ Waste shall be separated on site and waste storage areas shall be roofed and bounded to prevent potential cross-contamination. ▪ All waste from temporary dump site shall be transported with the management of township development committee. 	Insignificant
Biodiversity	- Impacts on local flora and fauna	<ul style="list-style-type: none"> ▪ Specific Trap chosen to avoid capture of non-target species. ▪ Pollution prevention measure to ensure protection of the local water environment. ▪ Robust cleaning of works vehicles at sources in order to prevent spread of non-native plant species. ▪ Avoid sensitive plant species during access roads, and structure sitting to minimize impacts to individual plants and or / population. ▪ No disturbance to vegetation outside marked area. 	Insignificant

		<ul style="list-style-type: none"> ▪ Commitment will be made to raise awareness of values of natural habitat areas and arrangement will be made for restriction of poaching and forest product collections. ▪ Hunting wild animal will be strictly prohibited to apply for all staff. 	
Socioeconomic	<ul style="list-style-type: none"> - Employment - Household Income - local Business - Traffic 	<ul style="list-style-type: none"> ▪ To identify the range of skill required for the labor force and conduct a gap analysis against skills availability ▪ To develop and implement effective local hiring action plan and policy coordinating with the local authorities. ▪ Careful management to be practiced about the expectation of local people regarding the employment to avoid any disputes ▪ To initiate training and job skill development programs ▪ To ensure that all contractors understand the company's expectation of favor local content in hiring employees in considering the establishment of a contractual agreement with contractors 	
Health and Safety	<ul style="list-style-type: none"> - Communicable diseases 	<ul style="list-style-type: none"> ▪ To recruit the workers with medical recommendation letters including medical history record ▪ To have effective occupational health and safety policies ▪ To have a health and safety officer ▪ To ensure that the workers at the project site follow each instruction mentioned in health and safety guidelines ▪ To have security guards in the site ▪ To cooperate with public police force and local community-based security. 	Insignificant

6. Cumulative Impact Assessment

Data used in the cumulative impact assessment was solely from secondary sources, compiled from the existing environmental impact assessments for proposed cement grinding plant project.

Valued Environmental Component (VEC)	Significance of Cumulative Impacts	Management/Mitigation Actions for Cumulative Impacts
<i>Air Quality</i>	Cumulative impacts on air quality resulting from construction and operations of the proposed project is estimated to be insignificance. The contribution of the other existing projects to cumulative effects on air quality cannot adequately be assessed from existing information.	Stakeholder consultation and strictly follow to EMP. Monitoring of air quality around the proposed project during operation activities.
<i>Noise</i>	Cumulative impacts on noise and vibration resulting from operations of the proposed project is estimated to be insignificance.	Stakeholder consultation and strictly follow to EMP. Avoid repeat action with other noise generation activities and working at nighttime in the construction period.
<i>Water Quality</i>	Cumulative impacts on water quality expected from the proposed cement grinding plant project is insignificance. Conclusions cannot be made on the cumulative effects of water quality from the other existing projects.	Ensure that EMP measures for preventing water quality impacts during operation.
<i>Biodiversity</i>	No cumulative impacts on biodiversity component are expected from the proposed cement grinding plant project.	Stakeholder consultation and implementation of proper restoration and rehabilitation.

7. Environmental and Social Management Plan

Myanmar Than Taw Myat Co., Ltd has committed to fully protection of the environment in the proposed project area with developing and implementation of environmental management plan which will act as an adequate tool to mitigate the potential adverse impact and enhance the beneficial impacts associated with the project during the operation phase.

7.1 Summary of Environmental and Social Management Plan

Component	Management Plan	Implementation Schedule
<p><i>Air Quality</i></p>	<ul style="list-style-type: none"> ▪ Advance machines, equipment and methods are utilized to minimize air pollutions, such as covering machines, watering accessible road and installing dust collecting system i.e., dust collector, pulse bag dust collector and filter bag dust collector. ▪ Tree plantations are provided along the boundary of Cement Plant. This green belt can minimize dust dispersion generated from on-site transportation. ▪ Water spraying the road used for transportation activities. <p><u>Conveyor Line</u> Conveyor line will be covered to reduce fugitive dust emissions during transport. Pulse bag dust collector 5 number are installed on conveyor line to regulate particulate matter emissions.</p> <p><u>Clinker Silo</u> In order to reduce particulate emissions, 35 number of filter bag dust collector has been installed in the clinker silo.</p> <p><u>Cement Grinding Mill</u> Filter Bag Dust Collector 9 number is equipped the cement grinding mill to reduce particulate emissions.</p> <p><u>Packing Silo</u> Dust collector 6 number is installed in the packing silo to reduce emissions of particulates.</p>	<p>During construction, operation, and closure phase</p>
<p><i>Noise and Vibration</i></p>	<ul style="list-style-type: none"> ▪ The machinery generating high level of noise is installed in the enclosed building to avoid disturbance in adjacent areas. ▪ Machinery and equipment are periodically inspected and maintained in good operational conditions. ▪ Over 80 dB(A) of noise intensity in a specific area is identified and warning signs are posted there. ▪ Noise-generating machinery and equipment must be undertaken regular maintenance to improve efficiency. ▪ Workers exposed to prolonged noise shall be suitably provided with personal protective equipment such as earmuffs or earplugs. ▪ Ambient noise level monitoring will be conducted at suitable location at periodic intervals during the operation phase to meet the relevant NEQG standards. 	<p>During construction, operation, and closure phase</p>
<p><i>Water Quality</i></p>	<p>The cement grinding plant will use drying technology, the water demand is only for domestic use. Therefore, the production does not cause water pollution.</p> <p><u>Water Consumption</u></p> <ul style="list-style-type: none"> ▪ Water demand must be as reduced as possible because water is a natural resource. 	<p>During construction, operation, and closure phase</p>

	<ul style="list-style-type: none"> ▪ When cleaning, as little water as possible must be used (for example, by using high-pressure, low-flow nozzles) <p><u>Wastewater Treatment</u></p> <ul style="list-style-type: none"> ▪ Wastewater generated from offices, canteens, and staff accommodation must be treated by sedimentation system. ▪ After using the sedimentation system, the water that will be employed by the staff must be discharged. ▪ A sedimentation pond (30 feet x 30 feet x 10 feet) must be constructed within the project area. <p><u>Sewage Treatment</u></p> <ul style="list-style-type: none"> ▪ Sewage must be collected by pit system. ▪ Sewage will be disposed of by municipal sewage trucks. 	
<i>Solid Waste</i>	<p><u>Domestic Waste</u></p> <ul style="list-style-type: none"> ▪ Recyclable waste e.g., plastic, wood scrap, metal scrap, paper etc. should reused/recycled as much as possible. ▪ Placing containers for collection of solid wastes and garbage at office and residence. ▪ Maintaining hygienic conditions in canteens and toilets. <p>Non-recyclable wastes will be transported to a Township Development Committee approved landfill site.</p>	During construction, operation, and closure phase
<i>Biodiversity</i>	<ul style="list-style-type: none"> ▪ Construction and domestic waste will be appropriately stored and disposed of the avoid attracting native and alien species to the construction area. ▪ Prohibit hunting or trapping of wild animals, even small ones including rodents and birds. ▪ Preservation of excavated topsoil for future site restoration procedure particularly in highly disturbed area. ▪ Minimize vegetation clearance and habitat disturbance by demarcating the clearing boundaries in the project site. ▪ Works areas in temporarily affected areas shall be reinstated with tree/ shrub / grass upon completion of the works. ▪ Environmental awareness training to be given to all workers for the preservation of local species. 	During Cement Grinding Plant construction and operation phase
<i>Community Engagement and Development</i>	<ul style="list-style-type: none"> ▪ Grievance Mechanism ▪ Employment ▪ Local Economic Development ▪ Corporate Social Responsibility (CSR) Program 	During operation phase
<i>Occupational Health and Safety</i>	<p>Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) organized the Health and Safety Committee to be implemented the Occupational Health and Safety measures.</p> <ol style="list-style-type: none"> a) Personal Protective Equipment b) Health Care Facilities c) First Aid Provision / Medical Facilities d) Environmental Training 	During construction, operation, and closure phase

Community Health and Safety	If occupational disease is found in the workers or there are outbreaks of infectious disease, public health department, Dagon Myothit (East) Township, Yangon Region will be notified, and the project will cooperate in accordance with the instructions.	During construction, operation, and closure phase
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7.2 Monitoring Plan of Cement Grinding Plant

Potential Impact	Parameter to be Monitored	Location of Data Collection	Frequency	Responsibility
Inspection of mitigation compliance	Monitoring EMP implementation	Project Area	Weekly	HSE Section of Myanmar Than Taw Myat cement grinding plant
Air quality	NO ₂ , O ₃ , PM _{2.5} , PM ₁₀ , SO ₂	2 point (Location describe in Section 8 Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Noise	Sound level (dBA)	2 point (Location describe in Section 8 Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Vibration	Vibration level (dB)	2 point (Location describe in Section 8 Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Surface Water Quality	Laboratory analysis parameters BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus In situ parameters pH, DO, EC, TDS, water temperature, flow rate, Turbidity	Project Area (1 point) At Thon Gwa Chaung, 1.62km from project area (1 point)	2 times (dry & wet Season)	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Ground Water Quality	Laboratory analysis parameters BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus	Project Area (1 point)	2 times (dry & wet Season)	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant

	<i>In situ parameters</i> pH, DO, EC, TDS, water temperature, flow rate, Turbidity			
Soil	pH, Cadmium, Copper, Zinc, Manganese, Lead, Arsenic, Iron, Chromium, Mercury, Nickel	Around the project area (2 Points, Location describe in Section 8 Figure 8.2)	Yearly	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Terrestrial Biodiversity	General Condition of the floral cover	Greenspace Area	Yearly	HSE Section of Myanmar Than Taw Myat cement grinding plant
Health and Safety	Proper use of PPE, presence of safety sign, first aid kits and fire-fighting devices	Project Area	Continuously	HSE Section of Myanmar Than Taw Myat cement grinding plant
Socio - Economic	Complaint Logs	Communities	Monthly	HSE Section of Myanmar Than Taw Myat cement grinding plant
	Employment Record	Project Office	Continuously	HSE Section of Myanmar Than Taw Myat cement grinding plant

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will submit the monitoring report to Ministry of Natural Resources and Environmental Conservation (MONREC).

7.3 EMP and Monitoring Cost

If estimated cost is not sufficient in the implementation of Environmental Management and Monitoring Plans, budget will be set up again.

Estimated Environmental Management Plan and Monitoring Cost (Annual)

Item	Cost (MMK)
Mitigation Cost for Air Quality	6,000,000
Mitigation Cost for Noise & Vibration	6,000,000
Mitigation Cost for Water Quality	9,000,000
Mitigation Cost for Soil	3,000,000

Mitigation Cost for Flora and Fauna	4,800,000
Mitigation Cost for Community Engagement and Management	2,400,000
Mitigation Cost for Occupational Health and Safety	7,200,000
Mitigation Cost for Community Health and Safety	2,400,000
Total	40,800,000

8. Public Consultation and Disclosure

Involving the public in the EIA preparation is fundamental to increasing the understanding on how the project may affect or improve their living conditions and acceptance of the project. It is also a way to identify and act upon impacts and issues that are not immediately obvious to the EIA preparation team.

The proposed project is located in Dagon Myothit (East) Township and three villages namely Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village are identified in project AOI. Kyar Ni Kan Village situated 0.7 km far from project site, Kyu Chaung Village existed in 0.8 km far from project site and Lay Daunt Kan Ward situated 1.8 km far from project site are identified as the key project affected area and local people in Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village which are mainly affected by the project activities and project and are considered as project affected people (PAP).

8.1 Public Consultation

a) Public Consultation during Scoping Stage

Myanmar Than Taw Myat Company Limited carried out consultation meeting for Cement Grinding plant 5000 t/d in Dagon Myothit (East) Township. Government sectors like Dagon Myothit (East) Township General Administrative Department, Township Development Committee, Township Electric Power Corporation (EPC), Environmental Conservation Department (ECD), Township Police Station, Township Road Management Department and Township Fire force were separately consulted and got their opinions for the proposed project from December 2019 to January 2020.

Village Level meeting was held in village administrative office of Kyar Ni Kan (Ma Lit Village Tract) on 24th January 2020. Local people in Kya Ni Gan Village, Kyu Chaung Village and Lay Daunt Kan Village attended the consultation meeting. Village heads in respected villages, 100 household leaders, representatives of the villages and elder persons participated the consultation meeting as local public. There were 20 participants in total: 14 participants from local community and 6 participants from companies.

Results of Consultation during Project Scoping

According to the consultation meeting held on 24th, January 2020, some issues and suggestions were raised during discussions at the meeting and the responses of project developer are presented in the following Table.

Summary for issues and suggestion of the stakeholders and response of the project developer at scoping stage

Issues and Suggestion	Response
❖ Possibility of accidents due to high traffic volume of project site vehicles	❖ Project Developer will strictly follow the speed of the vehicles described in the Environmental Management Plan.
❖ Health impact on local people because of particles and gaseous emission from the plant,	❖ Project Developer will strictly follow the National Environmental Quality (Emission) Guideline in order to reduce the health impact on the nearest receptors.
❖ Disturbance on receptors like elder people and monk due to noise emission from construction of the road and operating of generator	❖ Project Developer will maintain the vehicle and machine used in road construction and will avoid operating the generator at night in order to reduce the noise pollution.
❖ Potential noise emission from the operation of plant	❖ The noise control measures will be used in cement grinding plant to mitigate the noise impact during operation.
❖ Lack of transparency	❖ Project Developer will manage to give the project information sufficiently and timely.
❖ Impacts on animal farming due to discharge of waste water from project site, and animal reproduction due to vibration of machines from the project site	❖ Water treatment system will be included in the plant to order to avoid the direct discharge of waste water to the surrounding environment. The Project developer will follow the Environmental Management Plan for vibration.
❖ Possibility of air pollution due to emission of plant to residential area and social problem of workers	❖ The Project developer will follow the National Environmental Quality (Emission) Guideline and Environmental Management Plan to manage air pollution and will also follow Health and Safety Plan included in ESIA report to avoid the social problem of workers.

b) Public Consultation during EIA Investigation Stage

At the EIA stage, Myanmar Than Taw Myat Company Limited undertook consultation meeting for Cement Grinding plant 5000 t/d in Dagon Myothit (East) Township. Government sectors like Dagon Myothit (East) Township General Administrative Department and Environmental Conservation Department (ECD) were separately consulted and got their opinions for the proposed project in July 2022.

Village Level meeting was held in village administrative office of Kyar Ni Kan (Ma Lit Village Tract) on 26th July 2022. Local people in Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village attended the consultation meeting. Village heads in respected villages, 100 household leaders,

representatives of the villages and elder persons participated the consultation meeting as local community. There were 38 participants in total: 32 participants from local community and 6 participants from companies.

Results of Consultation during EIA Stage

The public consultation meeting was conducted as per the advice of Township General Administration Department. Date, time and venue were decided through the discussions with village leaders and Administrative Officer mentioned above, considering the convenience for the villagers.

According to the consultation meeting held on 26th, July 2022, some issues and suggestions were raised during discussions at the meeting and the responses of project developer are presented in the following table.

Summary for issues and suggestion of the stakeholders and response of the project developer at EIA stage

Issues and Suggestion	Response
❖ Job Opportunities and business opportunities for local community	❖ MTTM will prepare local labor hiring plan for the local community.
❖ Wastewater discharge	❖ The project site will discharge wastewater from offices, canteens, and staff accommodation by constructing a water retention tank and utilizing a sedimentation system.
❖ Influx of labor and security of local community	❖ The project proponent will prepare the effective occupational health and safety policies.
❖ Having fire suppression pond for villages	❖ The project proponent will support to have fire suppression pond for fire safety of the village.
❖ Poor communication	❖ The project will have liaison officer to receive and solve the complaints of the local people on the project activities and to follow up the complaints.
❖ Establishment of general committee organized with company and local community for job offering for local security	❖ The project proponent will ensure that the project site responsible liaise officer closely coordinate with local village leaders and local government authorities to agree on appropriate procedures for recruitment and hiring

8.2 Project Disclosure

Disclosure is a formal-sounding term for making information accessible to interested and affected parties.

The project disclosure will be conducted 3 times;

1. During Scoping Report Preparation

The disclosure was complied with Article 50, EIA Procedure, 2015. Myanmar Than Taw Myat disclosed information about the proposed Project to the public and civil society through Public Consultation meeting on 24th, January 2020 and distributing project summary.

2. During ESIA Report Preparation

The disclosure was complied with Article 50, EIA Procedure, 2015. Myanmar Than Taw Myat disclosed all relevant information about the proposed Project and its likely adverse impacts to the public and civil society by Public Consultation on 26th July 2022, FGD and KII with local community and distributing project summary at the respective villages' administrative office on 25th November 2022.

3. After submission of ESIA Report to ECD

The disclosure will be complied with Article 65, EIA Procedure, 2015.

9. Conclusion and Recommendation

An EIA report for Cement Grinding Plant has been prepared for the Project in accordance with Myanmar EIA Procedures 2015. The EIA identified potential impacts through a systematic scoping process whereby the activities associated with the Project have been considered with respect to their potential to interact with environmental and social resources or receptors.

It is concluded in the EIA that with proper implementation of the recommended mitigation measure and social impacts causing by the operation of the Project would be no larger than low significance.

၁။ စီမံကိန်းအကျဉ်းချုပ်

၁။ စီမံကိန်းမိတ်ဆက်

ရန်ကုန်မြို့သည် မြန်မာနိုင်ငံ၏ မြို့တော်မဟုတ်သော်လည်း နိုင်ငံတကာ ရင်းနှီးမြုပ်နှံမှု အလားအလာများ ကြောင့် စီးပွားရေးအချက်အချာကျသည့် နေရာအဖြစ် ဆက်လက် တည်ရှိလျက်ရှိပါသည်။ စက်မှုစီမံကိန်းများ၊ အိမ်ရာ စီမံကိန်းများနှင့် အခြေခံအဆောက်အအုံ ဖွံ့ဖြိုးတိုးတက်ရေး စီမံကိန်းများကဲ့သို့သော ဖွံ့ဖြိုးတိုးတက်ရေး စီမံကိန်းများကြောင့် ဆောက်လုပ်ရေးအတွက် ကုန်ကြမ်း (ဘီလပ်မြေ) ပိုမိုလိုအပ်လာပါသည်။ မြန်မာသံတော်မြတ် ကုမ္ပဏီ လီမိတက်သည် ဘီလပ်မြေ ထုတ်လုပ်ဖြန့်ချိသည့် ကုမ္ပဏီအဖွဲ့တစ်ခုဖြစ်ပြီး ဈေးကွက်အမြောက် အများတွင် နေရာယူထားပြီး ဈေးကွက်တွင် လိုအပ်ချက် ရှိလာပါက အချိန်ကန့်သတ်ချက်မရှိဘဲ အလျင်အမြန်ဖြည့်ဆည်းရန် ကြိုးပမ်းလျက်ရှိပါသည်။ ထို့ကြောင့် မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်သည် ရန်ကုန်မြို့တွင် ဘီလပ်မြေ ကြိုတင်ခွဲစက်ရုံတည်ဆောက်ရေး အတွက် မြန်မာနိုင်ငံ ရင်းနှီးမြုပ်နှံမှု ကော်မရှင်ထံ ရင်းနှီးမြုပ်နှံမှု ခွင့်ပြုချက် လျှောက်ထားခဲ့ပြီး ရင်းနှီးမြုပ်နှံမှုခွင့်ပြုချက် (နောက်ဆက်တွဲ ၁) ကို ၂၀၁၉ ခုနှစ် ဩဂုတ်လ ၈ ရက်နေ့တွင် လက်ခံရရှိခဲ့ ပါသည်။

မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်သည် လက်ရှိတွင် ကြိုတင်ခွဲခြင်းနှင့် ထုပ်ပိုးခြင်းလုပ်ငန်းစဉ်များအပါအဝင် တစ်နေ့လျှင် ဘီလပ်မြေတန်ချိန် ၅,၀၀၀ (တစ်နှစ်လျှင် ဘီလပ်မြေတန်ချိန် ၁ ဒသမ ၅ သန်း) ကို ကျောက်ဆည် စက်မှုဇုန်တွင် ထုတ်လုပ်လျက်ရှိသည်။ Than Taw Myat Co., Ltd. နှင့် China's Yunnan Jiansheng Investment Co., Ltd. တို့ ပူးပေါင်း၍ Myanmar Than Taw Myat Co., Ltd. အမည်သစ်ဖြင့် ဘီလပ်မြေ မက်ထရစ်တန် ၅၀၀၀ တန် ဘီလပ်မြေကြိုတင်ခွဲစက်ရုံကို ပထမဆုံး တည်ထောင်ခဲ့ပြီး ဘီလပ်မြေထုတ်လုပ်မှုအတွက် ရယ်ယာအချိုးမှာ (၃၀:၇၀) ဖြစ်ပါသည်။ ရင်းနှီးမြုပ်နှံမှု အမျိုးအစားမှာ ဖက်စပ်လုပ်ငန်းဖြစ်ပြီး စုစုပေါင်း မတည်ရင်းနှီးငွေမှာ အမေရိကန်ဒေါ်လာ ၇၂ ဒသမ ၄ သန်းနှင့် ညီမျှပါသည်။ ဆောက်လုပ်ရေးကာလမှာ ၂၄ လ ဖြစ်ပြီး ထပ်တိုးဆောက်လုပ်ရေးကာလကို ၂၄ လထိ တိုးပေးထားပါသည်။ လုပ်ငန်းလည်ပတ်နေစဉ် ကာလအတွင်း ဒေသနေပြည်သူများအတွက် အလုပ်အကိုင် အခွင့်အလမ်းပေါင်း ၇၀၉ ခုကျော်ကို ပေးအပ်နိုင်မည်ဖြစ်သည်။ နိုင်ငံတော်အတွက် အခွန်ငွေများလည်း တိုးမြှင့် လာမည်ဖြစ်ပြီး ဒေသ ဆိုင်ရာ လမ်းပန်းဆက်သွယ်ရေး၊ မော်တော်ယာဉ် ပြုပြင်ထိန်းသိမ်းရေးနှင့် အစားအသောက်များ တာဝန်ယူ ဆောင်ရွက်ခြင်းများကိုလည်း မြှင့်တင်ပေးသွားမည် ဖြစ်ပါသည်။ စက်ရုံအတွက် ကုန်ကြမ်းများဖြစ်သည့် မီးသင်းကျောက်နှင့် ဂျစ်ပဆစ် များကို ရေကြောင်းဖြင့် မြန်မာနိုင်ငံရှိ သံတော်မြတ်ဘီလပ်မြေစက်ရုံ (ကျောက်ဆည်) မန္တလေးမှ တင်သွင်းသွားမည်ဖြစ်ပြီး ဒဂုံဆိပ်ကမ်းမှ ကုန်တင်ယာဉ်များဖြင့် ဘီလပ်မြေ ကြိုတင်ခွဲစက်ရုံသို့ တင်သွင်း သွားမည် ဖြစ်သည်။

၁.၁။ စီမံကိန်းတည်နေရာနှင့် အကျယ်အဝန်း

မြန်မာသံတော်မြတ် ဘီလပ်မြေကြိုတင်ခွဲစက်ရုံသည် ဒဂုံမြို့သစ်(အရှေ့ပိုင်း)မြို့နယ်၏ အနောက်မြောက်ဘက် တွင် တည်ရှိပြီး စီမံကိန်းဧရိယာမှာ ၄၉ ဒသမ ၄ ဧကခန့်ရှိသည်။

၁.၂။ စီမံကိန်းကာလ

မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်သည် မြန်မာနိုင်ငံ ရင်းနှီးမြုပ်နှံမှု ကော်မရှင်မှ ဘီလပ်မြေ ထုတ်လုပ်ရန် ခွင့်ပြုမိန့် (နောက်ဆက်တွဲ ၁) ကို ၂၀၁၉ ခုနှစ် ဩဂုတ်လ ၈ ရက်နေ့တွင် လက်ခံရရှိခဲ့ပါသည်။

စီမံကိန်းကာလ	ခွင့်ပြုချက်
တည်ဆောက်ရေးကာလ	၂ နှစ်
တည်ဆောက်ရေးကာလ (ထပ်တိုး)	၁ နှစ် + ၁ နှစ်
လည်ပတ်ရေးကာလ	နှစ် ၃၀
ပိတ်သိမ်းရေးကာလ	၂ နှစ်

Project Proponent



မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်

လိပ်စာ၊	အမှတ်-၃၁၀၊ ၇ လွှာ၊ အနော်ရထာလမ်း၊ (၁) ရပ်ကွက်၊ လမ်းမတော်၊ ရန်ကုန်
ဖုန်းနံပါတ်၊	+၉၅၉ ၄၄၄၇၄၅၅၅၇
အီးလ်မေးလ်၊	thantawmyat@gmail.com
ဆက်သွယ်ရမည့် ပုဂ္ဂိုလ်၊	ဦးအောင်ကိုဆက်
ရာထူး၊	လက်ထောက်ဒါရိုက်တာ

အောက်ပါဇယားတွင် သက်ဆိုင်ရာ စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်ရေး အဖွဲ့အစည်းနှင့် ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းကို အကောင်အထည်ဖော်ဆောင်ရွက်နေသည့် အဖွဲ့အစည်းများကို ဖော်ပြထားပါသည်။

စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်သူ	မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်
ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း အကောင်အထည်ဖော်ဆောင်ရွက်သူ	Sustainable Environment Myanmar Co., Ltd. & Resource & Environment Myanmar Co., Ltd.

၂။ မူဝါဒ၊ ဥပဒေရေးရာနှင့် ဖွဲ့စည်းမှုမူဘောင်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ပါဝင်ပါသည်။ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုခြင်းနှင့် စောင့်ကြပ်ကြည့်ရှုခြင်း၏ ကနဦး ရည်ရွယ်ချက်မှာ စီမံကိန်းမှ ဖြစ်ပေါ်လာသည့် ပတ်ဝန်းကျင် သက်ရောက်မှုများအား မှတ်တမ်းတင်ရန်နှင့် စီမံကိန်းလုပ်ငန်းများမှ ကောင်းသော သက်ရောက်မှုများအား တိုးမြှင့်ရန်နှင့် ဆိုးကျိုးသက်ရောက်မှုများအား လျော့ချရန်အတွက် အစောပိုင်း သတ်မှတ်ထားသည့် သက်ရောက်မှု လျော့ချသည့်

နည်းလမ်းများအား အကောင်အထည်ဖော်ဆောင်ရွက်မှုကို သေချာစေရန်ဖြစ်ပါသည်။ ကုမ္ပဏီသည်အောက်ဖော်ပြပါ မူဝါဒနှင့် ဥပဒေများအား ဆောင်ရွက်မည်ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ဆိုင်ရာမူဝါဒ

- ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများအား အနည်းဆုံး လျော့ချရန်
- ဆူညံသံနှင့် လေထုညစ်ညမ်းမှုအား ထိန်းချုပ်ရန်
- အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများအား စနစ်တကျ စွန့်ပစ်ရန်
- ဆီ၊ လောင်စာဆီနှင့် ချောဆီများအား စနစ်တကျ ထိန်းသိမ်းထားရှိရန်
- စောင့်ကြပ်ကြည့်ရှုရေး ကော်မတီအား ဖွဲ့စည်းရန်
- ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ငန်းစဉ်အရ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း ဆောင်ရွက်သည့် စနစ် အတွက် ရံပုံငွေလျာထားရန်

လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒ

- လုပ်ငန်းလည်ပတ်နေစဉ်အတွင်း စိုက်ပျိုးမြေများအား ရှောင်ရှားဆောင်ရွက်ရန်
- ဒေသတွင်းလမ်းပန်းဆက်သွယ်ရေးအား ပြုပြင်ထိန်းသိမ်းရန်နှင့် အဆင့်မြှင့်တင်ရန်
- ကျေးလက်ဒေသ၏ သမိုင်းဝင်နှင့် ယဉ်ကျေးမှုဆိုင်ရာ အဆောက်အအုံများအား ရှောင်ရှားဆောင်ရွက်ရန်
- CSR အစီအစဉ်များအား အကောင်အထည်ဖော်ဆောင်ရွက်ရန်

ကျန်းမာရေးဆိုင်ရာမူဝါဒ

- စီမံကိန်းအနီးဝန်းကျင်တွင် လေထုညစ်ညမ်းခြင်းအား ထိန်းချုပ်ရန်
- စီမံကိန်းအတွင်းနှင့် အနီးဝန်းကျင်တွင် ဆူညံသံအား အနိမ့်ဆုံးလျော့ချရန်
- ဒေသတွင်းနေပြည်သူများအတွက် ကျန်းမာရေးအာမခံ ဆောင်ရွက်ရန်

ပတ်ဝန်းကျင်စီမံခန့်ခွဲခြင်းမူဝါဒ

- ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းအားဆက်လက်ဆောင်ရွက်ရန်
- စီမံခန့်ခွဲမှုအစီအစဉ်အား ပြင်ဆင်ရန်
- ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်တွင် ဖော်ပြထားသော သက်ရောက်မှုလျော့ချရေး လုပ်ငန်းများအား ဆောင်ရွက်ရန်

၂.၁။ သက်ဆိုင်ရာ ပတ်ဝန်းကျင်ရေးရာ စည်းမျဉ်းနှင့် မူဝါဒများ

ကိုယ်ပိုင်ဘိလပ်မြေစက်ရုံအတွက် ထုံးကျောက် တူးဖော်ထုတ်လုပ်ခြင်း လုပ်ငန်းတွင် လိုက်နာမည့် မြန်မာနိုင်ငံ၏ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲခြင်း နှင့် ကာကွယ်ခြင်းဆိုင်ရာ ဥပဒေနှင့် မူဝါဒများအား အောက်တွင် ဖော်ပြထားပါသည်။

စဉ်	ဥပဒေ၊ နည်းဥပဒေ (သို့) လမ်းညွှန်ချက်များ
၁	ပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒ (၂၀၁၉)
၂	ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂) (ပုဒ်မ ၇ (က)၊ ၁၄၊ ၁၅၊ ၁၆)
၃	ပတ်ဝန်းကျင်ဆိုင်ရာ နည်းဥပဒေများ (၂၀၁၄) ၊ (နည်းဥပဒေ ၆၉ (က)၊ (ခ))
၄	ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း(၂၀၁၅)၊ (အပိုဒ် ၁၀၂-၁၁၀၊ ၁၁၂၊ ၁၁၅၊ ၁၁၇)

၅	အမျိုးသားမြေ အသုံးပြုမှု မူဝါဒ (၂၀၁၆)
လမ်းညွှန်ချက်များ	
၆	အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
၇	အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ရေအရည်အသွေး လမ်းညွှန်ချက်များ (ပြင်ဆင်ဆဲ)
သစ်တော/ ဇီဝမျိုးစုံမျိုးကွဲများ	
၈	သစ်တော မူဝါဒ (၁၉၉၅)
၉	သစ်တော ဥပဒေ (၂၀၁၈) (ပုဒ်မ ၁၂ နှင့် ၁၆)
၁၀	တောရိုင်းတိရစ္ဆာန်နှင့် ကာကွယ်ပေးထားသော နယ်မြေများ ကာကွယ်ခြင်း နည်းဥပဒေ (၂၀၀၂)
၁၁	ဇီဝမျိုးစုံကွဲနှင့် သဘာဝထိန်းသိမ်းရေး နယ်မြေများ ကာကွယ်စောင့်ရှောက်ခြင်းဆိုင်ရာ ဥပဒေ (၂၀၁၈) (အပိုဒ် ၃၉၊ ၄၀ နှင့် ၄၁)
၁၂	ရေအရင်းအမြစ်နှင့် မြစ်ချောင်းများ ထိန်းသိမ်းရေး ဥပဒေ (၂၀၀၆) နှင့် ပြင်ဆင်သည့် ဥပဒေ (၂၀၁၇)
၁၃	ရေအရင်းအမြစ်နှင့် မြစ်ချောင်းများ ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၃) နှင့် ပြင်ဆင်သည့် နည်းဥပဒေ (၂၀၁၅) ၈ ((ဂ)၊ (ဃ)၊ (င))
၁၄	မြေအောက်ရေ အက်ဥပဒေ (၁၉၃၀)
၁၅	မြန်မာနိုင်ငံ ရာသီဥတုပြောင်းလဲမှုဆိုင်ရာ ပင်မလုပ်ငန်းအစီအစဉ်၂၀၁၈-၂၀၃၀
တိုင်းရင်းသားများနှင့် ယဉ်ကျေးမှု အမွေအနှစ်များ ကာကွယ်စောင့်ရှောက်ရေး	
၁၆	ရှေးဟောင်းဝတ္ထုပစ္စည်းများ ကာကွယ်စောင့်ရှောက်ခြင်း ဥပဒေ (၂၀၁၅) (အပိုဒ် ၁၂)
ပြည်သူ့ကျန်းမာရေးနှင့် လုံခြုံရေး	
၁၇	ပြည်သူ့ကျန်းမာရေးဆိုင်ရာ ဥပဒေ (၁၉၇၂) (အပိုဒ် ၂၊ ၅)
၁၈	ကူးစက်ရောဂါများ ကာကွယ်နှိမ်နင်းရေး ဥပဒေ (၁၉၉၅) (အပိုဒ် ၃ (က) (ခ)၊ ၄၊ ၉၊ ၁၁)
၁၉	ယာဉ်အန္တရာယ်ကင်းရှင်းရေးနှင့် မော်တော်ယာဉ် စီမံခန့်ခွဲမှု ဥပဒေ (၂၀၂၀)
၂၀	ယာဉ်အန္တရာယ်ကင်းရှင်းရေးနှင့် မော်တော်ယာဉ် စီမံခန့်ခွဲမှု နည်းဥပဒေ (၂၀၂၂)
ညစ်ညမ်းမှု ကာကွယ်ခြင်း	

၂၁	ဓာတုပစ္စည်း နှင့် ဆက်စပ်ပစ္စည်း အန္တရာယ်မှ တားဆီးကာကွယ်ရေး ဥပဒေ (၂၀၁၃)
ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ	
၂၂	မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ (၂၀၁၆)၊ အပိုဒ် (၅၀၊ ၅၁၊ ၇၂၊ ၇၅)
၂၃	မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု နည်းဥပဒေများ (၂၀၁၇)၊ ဥပဒေ (၂၀၂၊ ၂၀၃၊ ၂၀၆၊ ၂၁၂)
၂၄	မြန်မာ့ အာမခံ ဥပဒေ (၁၉၉၃) ၊ အပိုဒ် (၁၅၊ ၁၆)
အလုပ်သမားဥပဒေ	
၂၅	အနည်းဆုံး အခကြေးငွေ ဥပဒေ (၂၀၁၃)၊ ပုဒ်မ ၁၂ (က)၊ ပုဒ်မ ၁၄ (င)၊ ၁၄(စ) နှင့် ၁၄(ဇ)
၂၆	အခကြေးငွေပေးချေရေး ဥပဒေ (၂၀၁၆) (အပိုဒ် ၃၊ ၄၊ ၅)
၂၇	အလုပ်သမား အဖွဲ့အစည်း ဥပဒေ (၂၀၁၁) (အပိုဒ် ၁၇ မှ ၂၂)
၂၈	အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေး ဥပဒေ (၂၀၁၂) ၊ ပြင်ဆင်သည့် ဥပဒေ (၂၀၁၄)၊ အပိုဒ် ၃၈၊ ၃၉၊ ၄၀၊ ၅၁)
၂၉	အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှု ဖွံ့ဖြိုးတိုးတက်ရေး ဥပဒေ (၂၀၁၃)၊ အပိုဒ် (၁၄၊ ၁၅၊ ၃၀)
၃၀	လူမှုဖူလုံရေး ဥပဒေ (၂၀၁၂)/၂၀၁၄ ခုနှစ် ဧပြီလ ၁ ရက်နေ့တွင် စတင်အကောင်အထည်ဖော်ဆောင်ခဲ့သည်။ အပိုဒ် ၁၁ (က)၊ ၁၅ (က)၊ ၁၈ (ခ)၊ ၄၈၊ ၄၉၊ ၇၅
၃၁	အလုပ်သမား လျော်ကြေးအက်ဥပဒေ (၁၉၂၃)
၃၂	ခွင့်နှင့်အားလပ်ရက်အက်ဥပဒေ၊ ၁၉၅၁ ၊ ပြင်ဆင်သည့် ဥပဒေ ၂၀၁၄ (အပိုဒ် (၃၊ ၄၊ ၅၊ ၇ (က))
၃၃	မသန်စွမ်းသူများ၏ အခွင့်အရေး ဥပဒေ (၂၀၁၅) ၊ လူမှုဝန်ထမ်းဝန်ကြီးဌာနနှင့် မသန်စွမ်းသူများ အဖွဲ့ကြား လက်ရှိဆွေးနွေးနေသော စည်းမျဉ်းများ (၂၀၁၇)
လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် လုံခြုံရေး	
၃၄	မီးသတ် ဥပဒေ (၂၀၁၅) (အပိုဒ် ၂၅ က နှင့် ခ)
၃၅	လုပ်ငန်းခွင် ဘေးအန္တရာယ် ကင်းရှင်းရေးနှင့် ကျန်းမာရေးဆိုင်ရာ ဥပဒေ (၂၀၁၉) အပိုဒ် ၁၂၊ ၄၊ ၂၆ (က) မှ (ခ) ထိ၊ အပိုဒ် ၂၇မှ ၂၉ ထိ၊ ၃၁၊ ၃၃၊ ၃၄၊ ၄၉ (က) မှ (င) ထိ နှင့် အပိုဒ် ၅၀
မြေယာဥပဒေနှင့် မြေယာပိုင်ဆိုင်မှု	
၃၆	လယ်ယာမြေဥပဒေ (၂၀၁၂)

၃၇	လယ်ယာမြေစည်းမျဉ်းများ (၂၀၁၂)
ပြစ်မှုဆိုင်ရာ ကိစ္စရပ်များ	
၃၈	ပြစ်မှုဆိုင်ရာ ကျင့်ထုံး ဥပဒေ (၁၈၆၁) ၊ ပြင်ဆင်သည့် ဥပဒေ (၂၀၁၆)

၂.၂။ အပြည်ပြည်ဆိုင်ရာ ညီလာခံများ၊ စာချုပ်များ၊ သဘောတူညီချက်များ

မြန်မာနိုင်ငံသည် အပြည်ပြည်ဆိုင်ရာ အစည်းအဝေးများ၊ ညီလာခံများ၊ စာချုပ်များနှင့် သဘောတူ စာချုပ်များကို လက်မှတ်ရေးထိုးထားသော နိုင်ငံဖြစ်ပါသည်။ စီမံကိန်းနှင့် ဆက်စပ်နိုင်ခြေရှိသော အလား အလာများကို တင်ပြသင့်ပြီး စီမံကိန်း၏ ပြင်ဆင်မှု၊ အကောင်အထည်ဖော်မှုနှင့် သက်ဆိုင်သည့် အဓိက အချက်များအား အကျဉ်းချုပ်ဖော်ပြသင့်ပါသည်။ လက်ရှိစီမံကိန်းနှင့် ဆက်စပ်နေသော သက်ဆိုင်ရာအစည်း အဝေးကြီးများ၊ စာချုပ်များနှင့် သဘောတူညီချက်များ စာရင်းကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

Regional	
1	ASEAN Agreement on Transboundary Haze Pollution
International	
1	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)
2	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985
3	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987
4	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990
5	Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, D.C., 1973; and this convention as amended in Bonn, Germany, 1979 (CITES)
6	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997

၂.၃။ ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး သတ်မှတ်ချက်များ

ထိတွေ့ဝန်းကျင်ရှိထုတ်လုပ်အနီးအငွေ့ လမ်းညွှန်သတ်မှတ်ချက်များ

Parameter	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100
Particulate matter PM10a	1-year	20
	24-hour	50

Particulate matter PM2.5b	1-year	10
	24-hour	25
Sulfur dioxide	24-hour	20
	10-minute	500

Source: National Environmental Quality (Emission) Guidelines, 2015

စွန့်ပစ်ရေ၊ စီးဆင်းရေ၊ ထုတ်လွှတ်အရည်နှင့် မိလ္လာရေစွန့်ထုတ်မှု (အထွေထွေလမ်းညွှန်ချက်များ)

Parameter	Unit	Guideline Value
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH	S.U.a	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5

Parameter	Unit	Guideline Value
Sulphide	mg/l	1
Temperature increase	°C	<3b
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

Source: National Environmental Quality (Emission) Guidelines, 2015

ဆူညံသံအဆင့် လမ်းညွှန်သတ်မှတ်ချက်များ

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Source: National Environmental Quality (Emission) Guidelines, 2015

၃။ စီမံကိန်းအကြောင်းအရာဖော်ပြချက်နှင့် အခြားနည်းလမ်းရွေးချယ်ခြင်း

မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံသည် ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ်(အရှေ့ပိုင်း)မြို့နယ် တွင်တည်ရှိပြီး လေးထောင့်ကန်မီးရထားဘူတာ၏ အနောက်မြောက်ဘက် ၂ ကီလိုမီတာခန့်အကွာတွင် ရှိပါသည်။ အဆိုပြုစီမံကိန်းတွင် တစ်ရက်လျှင် ပျမ်းမျှ တန်ချိန် ၅၀၀၀ (TPD) ဘိလပ်မြေထုတ်လုပ်သည့် ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံ တည်ဆောက်ခြင်းနှင့် လုပ်ငန်းလည်ပတ်ခြင်းတို့ ပါဝင်မည်ဖြစ်ပါသည်။

အဆိုပြုထားသော လုပ်ငန်းဆောင်ရွက်ရာတွင် မီးသင်းကျောက် နှင့် အခြားကုန်ကြမ်းပစ္စည်းများ (ဥပမာ ဂျစ်ပဆမ်၊ နှင့် ပေါင်းထည့်ပစ္စည်းများ) ကို အသုံးပြုခြင်းများ ပါဝင်သည်။ ဆောက်လုပ် ရေးလုပ်ငန်းအတွက် ဘိလပ်မြေအမျိုးအစား အမျိုးမျိုးအလိုက် ပေါင်းစပ်မှုများလုပ်ဆောင်၍ အဆိုပါပစ္စည်းများကို ကြိုတ်ခွဲပြီး ရောစပ်သွားမည် ဖြစ်သည်။

၃.၁။ စီမံကိန်းဆောင်ရွက်ချက်များ

လက်ရှိစီမံကိန်းသည် ဘိလပ်မြေထုတ်လုပ်ခြင်းဖြစ်ပြီး အောက်ပါတို့မှာ အသုံးပြုသွားမည့် ကုန်ကြမ်းပစ္စည်းများ ပါဝင်သည့် အဓိကလုပ်ငန်းစဉ် ဖြစ်ပါသည်။

- ထုတ်လုပ်သည့်နည်းပညာ Tube-mill (vertical mill အစား) အသုံးပြုလည်ပတ်သည့် ဘိလပ်မြေ ကြိုတ်ခွဲစက်ရုံ
- ထုတ်လုပ်သည့်လုပ်ငန်းစဉ် မီးသင်းကျောက်မှ ဘိလပ်မြေ
- ကုန်ကြမ်းပစ္စည်းများ မီးသင်းကျောက် နှင့် ဂျစ်ပဆမ်



ကုန်ကြမ်းပစ္စည်းရယူခြင်း မြန်မာသံတော်မြတ် ဘိလပ်မြေစက်ရုံ (ကျောက်ဆည်) မှ မြန်မာသံတော်မြတ် (ရန်ကုန်) ဘိလပ်မြေကြိတ်ခွဲစက်ရုံသို့ ပို့ဆောင်သွားမည် ဖြစ်ပါ သည်။

၃.၂။ စီမံကိန်းကာလ

မြန်မာသံတော်မြတ်ကုမ္ပဏီသည် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်မှ ဘိလပ်မြေ ထုတ်လုပ်ရန် ခွင့်ပြုမိန့် ကို ၂၀၁၉ ခုနှစ် ဩဂုတ်လ ၈ ရက်နေ့တွင် လက်ခံရရှိခဲ့ပါသည်။

လုပ်ငန်းခွင်	ခွင့်ပြုကာလ	စတင်သည့်ရက်စွဲ	ကုန်ဆုံးမည့်ရက်စွဲ
တည်ဆောက်ရေးကာလ	၂ နှစ်	၈၊ ၈၊ ၂၀၁၉	၇၊ ၈၊ ၂၀၂၁
	၁ နှစ်	၈၊ ၈၊ ၂၀၂၁	၇၊ ၈၊ ၂၀၂၂
	၁ နှစ်	၈၊ ၈၊ ၂၀၂၂	၇၊ ၈၊ ၂၀၂၃
လည်ပတ်ရေးကာလ	နှစ် ၃၀	၈၊ ၈၊ ၂၀၂၃	၇၊ ၈၊ ၂၀၅၃
ပိတ်သိမ်းမည့်ကာလ	၂ နှစ်	၈၊ ၈၊ ၂၀၅၃	၇၊ ၈၊ ၂၀၅၅

၃.၃။ အကြိုတည်ဆောက်ရေးလုပ်ငန်းဆောင်ရွက်ချက်များ

အကြိုတည်ဆောက်လုပ်ရေးနှင့်စီမံကိန်းပြင်ဆင်ခြင်း၏ ကနဦးအဆင့်သည် လိုအပ်သော ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနည်းလမ်းများကိုသတ်မှတ်ရန် ပတ်ဝန်းကျင်ဆိုင်ရာကော်မရှင်မှ ဆန်းစစ်ချက်ကို ဆောင်ရွက်ခြင်း နှင့် စီမံကိန်း ဖြစ်နိုင်ခြေ လေ့လာမှုတွင် ထည့်သွင်းရမည့် လိုအပ်သောကုန်ကျစရိတ်များကို ခန့်မှန်းခြင်း ဖြစ်ပါ သည်။

၃.၄။ တည်ဆောက်ရေးဆောက်ရွက်ချက်များ

စီမံကိန်းနေရာ ရှင်းလင်းရေး လုပ်ငန်းများတွင် အပင်များရှင်းလင်းခြင်း၊ စီမံကိန်း နယ်နိမိတ်ကိုကာရံခြင်းနှင့် စီမံကိန်း မြေနေရာ ညှိခြင်းတို့ပါဝင်သည်။ စီမံကိန်းမြေနေရာညှိခြင်းတွင်စီမံကိန်းနေရာမြေဖို့ရန်နှင့် မလိုအပ်သည့် အရာများကို ဖယ်ရှားရန် အတွက်အကြီးစား ထရပ်ကားအများအပြား လိုအပ်လာမည် ဖြစ်သောကြောင့် အတွင်း ပိုင်းလမ်းများကို ဖောက်လုပ်သွားမည် ဖြစ်ပါသည်။

၃.၄။ လည်ပတ်ရေးဆောက်ရွက်ချက်များ

မီးသင်းကျောက်များကို အကာအကွယ်ရှိသည့်နေရာတွင် သိမ်းဆည်းပြီး မှန်ကန်သောအချိုးအစားဖြင့် ဂျစ်ပဆမ် နှင့် ပြန်လည် ပေါင်းစပ်ရန် အလုံပိတ်သိုလှောင်ရုံတွင် သိမ်းဆည်းသွားမည်ဖြစ်ပြီး ဘိလပ်မြေ ထုတ်လုပ်သွားမည် ဖြစ်ပါသည်။

ကြိတ်ခွဲခြင်းလုပ်ငန်းစဉ်

ဘိလပ်မြေ ကြိတ်ခွဲခြင်းတွင် ခြောက်သွေ့သော လုပ်ငန်းစဉ် နှင့် အစိုလုပ်ငန်းစဉ် ဟူ၍ လုပ်ငန်းစဉ်နှစ်မျိုး ရှိပါသည်။ ယခု အဆိုပြုချက်တွင် ခြောက်သွေ့လုပ်ငန်းစဉ်သုံးနည်းပညာကို အသုံးပြုသွားမည် ဖြစ်ပါသည်။ ဖုံးအုပ်ထားသော မီးသင်းကျောက် သိုလှောင်ရာမှ မီးသင်းကျောက်များကို hopper မှတစ်ဆင့် ကြိတ်ဆုံထဲသို့ လွှဲပြောင်းပေးပြီး ရွေ့လျားစက်ဖြင့် အတင်အချလုပ်သွားမည်ဖြစ်ပါသည်။ ပတ်ဝန်းကျင်ထဲသို့ အမှုန်အမွှားအနေဖြင့် လွှင့်စင်၍ အလေအလွင့် ဖြစ်သွားမည့် မီးသင်းကျောက်ကို လျှော့ချရန် နှင့် လေထုညစ်ညမ်းမှုဖြစ်နိုင်ခြေ လျှော့ချရန် hopper တွင် bag filter များ တပ်ဆင်သွားမည် ဖြစ်ပါသည်။

အိတ်သွပ်ခြင်းနှင့် ထုပ်ပိုးခြင်းဆောင်ရွက်မည့် စက်ရုံ

အပြီးသတ်ရလာသောကုန်များကို ပင်မသိုလှောင်ရုံတွင် သိမ်းဆည်းထားမည် ဖြစ်ပါသည်။ ထို့နောက် ဘိလပ်မြေကို ထုပ်ပိုး စက်ရုံသို့ ပို့ဆောင်သွားမည်ဖြစ်သည်။ ထုပ်ပိုးသည့်စက်ရုံတွင် ထုပ်ပိုးသူတစ်ဦးမှ ဘိလပ်မြေ များကို လက်ခံပြီး အိတ်ထဲသို့ ထည့်သွားမည် ဖြစ်ပါသည်။

၄။ စီမံကိန်းဝန်းကျင်ရှိ ပတ်ဝန်းကျင်အခြေအနေနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အခြေခံအချက် အလက်များ လေ့လာခြင်းကို ဖော်ပြခြင်း

အောက်ဖော်ပြပါကဏ္ဍတွင် လက်ရှိစီမံကိန်း၏ သက်ရောက်နိုင်ခြေရှိသောဧရိယာကို ကိုယ်စားပြုသည့် ရူပဝန်းကျင်၊ ဇီဝဝန်းကျင်နှင့် လူမှုစီးပွားအခြေအနေများကဲ့သို့ စီမံကိန်းဝန်းကျင်ရှိ ပတ်ဝန်းကျင်အခြေအနေ များကို အတိုချုပ် ဖော်ပြ ထားပါသည်။

၄.၁။ ရူပဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်းများ

<p>ရာသီဥတုနှင့် မိုးလေဝသ</p>	<p>ရန်ကုန်မြို့သည် Koppen ရာသီဥတုအမျိုးအစားခွဲခြားစနစ်အတွင်းတည်ရှိပြီး အပူပိုင်းမှတ်သုံးရာသီဥတုအမျိုးအစားရှိပါသည်။မြို့တော်သည်မေလမှ အောက်တိုဘာလအထိ မိုးရွာသွန်းမှုများပြားပါသည်။ခြောက်သွေ့ရာသီသည်နိုဝင်ဘာလမှ ဧပြီလအထိဖြစ်သည်။ရန်ကုန်တိုင်းဒေသကြီးသည်မြန်မာနိုင်ငံ၏အပူပိုင်းမှတ်သုံးရာသီဥတုတွင် တည်ရှိပါသည်။</p> <p>ရန်ကုန်မြို့၏ နှစ်စဉ်မိုးရေချိန်မှာ ၂၈၈၉ မီလီမီတာခန့်ရှိပြီး ပျမ်းမျှနှိုင်းရစိုထိုင်းဆမှာ ၇၇ ရာခိုင်နှုန်းခန့်ဖြစ်သည်။ ပျမ်းမျှအမြင့်ဆုံးအပူချိန်မှာ 33.5 °C ခန့်ဖြစ်ပြီး ပျမ်းမျှအနိမ့်ဆုံးအပူချိန်မှာ 21.6 °C ခန့်ဖြစ်သည်။</p>
<p>မြေမျက်နှာသွင်ပြင်</p>	<p>ရန်ကုန်မြို့သည် လှိုင်မြစ်နှင့် ပဲခူးမြစ်ကြား ဧရာဝတီမြစ်ဝကျွန်းပေါ်၏ အရှေ့ဘက်စွန်းတွင် တည်ရှိပါသည်။ လက်ရှိစီမံကိန်းဧရိယာသည် ငမိုးရိပ်ချောင်း အရှေ့ဘက်တွင် တည်ရှိပြီး ငမိုးရိပ်ချောင်းသည် မြောက်မှတောင်သို့ စီးဆင်းလျက် ရှိသည်။ လက်ရှိစီမံကိန်းဧရိယာ၏ ယေဘုယျ အမြင့်သည် ပျမ်းမျှပင်လယ်ရေ မျက်နှာပြင် ၅ မီတာ မှ ၁၀ မီတာခန့်ရှိပြီး ရုပ်ပိုင်းဆိုင်ရာ အသွင်အပြင်သည် ညီညာချောမွေ့ပါသည်။</p>
<p>ဘူမိဗေဒ</p>	<p>လက်ရှိစီမံကိန်းဧရိယာသည် ပဲခူးရိုးမတောင်ဘက်တွင်ရှိပြီး စစ်ကိုင်းပြတ်ရွှေအနောက်ဘက် ၃၅ ကီလိုမီတာအကွာတွင် တည်ရှိပါသည်။ လတ်တလော အခြေအနေရှိ အနည်အနှစ်များမှာ molasse facies အမျိုးအစားဖြစ်ပါသည်။ ၎င်းတို့သည် ကျောက်ဖြစ်ရုပ်ကြွင်းများဖြစ်သည့် သဲကျောက်များ၊ မြေစေးများဖြင့် အဓိကဖွဲ့စည်းထား သည်။</p>
<p>သဘာဝဘေးအန္တရာယ်</p>	<p>မြန်မာနိုင်ငံတွင် ယခင်က ပြင်းအားမြင့်သော ငလျင်မှတ်တမ်းများ အရ ရန်ကုန်သည် ငလျင်လှုပ်ခတ်မှု အနည်း နှင့် အလည်အလတ် အထိ ကြုံတွေ့ဖူးပါသည်။ ရန်ကုန်မြို့၏ ငလျင်လှုပ်ခတ်မှု ဧရိယာနှင့် အချို့သော မြေဆီလွှာများသည် အရည်ပျော်နိုင်ချေ မြင့်မားပါသည်။ အရည်ပျော်နိုင်သည့်နေရာနှင့် ပတ်သက်၍ ယေဘုယျအယူအဆရှိရန် အလွန်အရေးကြီးပါသည်။ ရန်ကုန်မြို့၏ ငလျင်ဘေးအန္တရာယ်ဖြစ်နိုင်ခြေမြေပုံအရ မြို့တော်သည် ယေဘုယျအားဖြင့် peak</p>

	<p>ground acceleration PGA 0.29 - 0.5 g ဧကန်တွင် ရှိပါသည်။ စီမံကိန်းနေရာသည် စစ်ကိုင်းပြတ်ရွှေ့ အနောက်ဘက်ခြမ်းနှင့် နီးသော ရန်ကုန်မြို့၏ အရှေ့ဘက်ခြမ်းတွင် တည်ရှိပါသည်။ Right-lateral strike-slip စစ်ကိုင်းပြတ်ရွှေ့သည် ရန်ကုန်အရှေ့ပိုင်းမှ ကီလိုမီတာ ၄၀ အကွာတွင် တည်ရှိပြီး အကြီးမားဆုံး ငလျင်လှုပ်ခတ်နိုင်သည့် လက္ခဏာရှိပါသည်။</p>
<p>လေပေအခြေအနေ</p>	<p>စီမံကိန်းဧရိယာသည် ပဲခူးမြစ်နှင့် လှိုင်မြစ်ဆုံသည့်နေရာတွင် တည်ရှိပါသည်။ မြစ်နှစ်စင်းဆုံသည့် မြစ်ဆုံအောက်ဘက်ကို ရန်ကုန်မြစ်ဟုခေါ်ပြီး မုတ္တမကွေ့နှင့် ဆက်လျက်ရှိပါသည်။ လှိုင်မြစ်နှင့် ဆက်သွယ်ထားသည့် ကိုးကိုမြစ်အပါအဝင် ရန်ကုန်မြစ်အောက်ဘက်သို့ စီးဆင်းသည့် ပန်းလှိုင်မြစ်နှင့် တံတေးတူးမြောင်းတို့သည် ဧရာဝတီမြစ်မှ ရေကို ရယူကြသည်။ ဖော်ပြပါမြစ်များအားလုံးသည် ဒီရေစီးကြောင်းများဖြစ်သည်။ ခြောက်သွေ့ရာသီ၌ မြစ်ရေနည်းချိန်တွင် ဆားငန်ရေဝင်ရောက်မှု ဖြစ်ပေါ်သည်။</p>
<p>မြေဆီလွှာ</p>	<p>ထူးခြားသောမြေဆီလွှာမျိုးကွဲများကို စီမံကိန်းဧရိယာအနီးတစ်ဝိုက်တွင် တွေ့ရှိရပြီး ထိုမြေများမှာမြက်ခင်းနှင့် မြက်ခင်းပြင် မြေဆီလွှာ၊ Gley နှင့် Gley ရွှံ့နွံမြေများ၊ ရွှံ့နွံမြေဆီလွှာ၊ မြေရိုင်းမြေများ၊ အဝါရောင်သစ်တောမြေများ၊ သဲတောနှင့် သဲသောင်ပြင်များ၊ ဒီရေတော မြေဆီလွှာနှင့် ဆားလင်းစိမ့်မြက်ခင်းပြင် မြေဆီလွှာများ ဖြစ်ကြပါသည်။</p>

ရှုပန်းကျင်ဆိုင်ရာ ကွင်းဆင်းလေ့လာခြင်း အကျဉ်းချုပ်

<p>လေထုအရည်အသွေး နှင့် မိုးလေဝသ</p>	<p>နမူနာအရေအတွက်</p>	<p>၂ နေရာ</p>
	<p>ကောက်ယူခဲ့သည့် အတိုင်းအတာများ</p>	<p>SO₂, Ozone, NO₂, PM 2.5, PM 10, Relative Humidity, Temperature, Wind speed and Wind direction</p>
	<p>ကာလ</p>	<p>တစ်ကြိမ်လျှင် ၂၄ နာရီ</p>
	<p>၂၄ နာရီအတွင်း လေထုအရည်အသွေးစောင့်ကြည့်မှုအားလုံး၏ ထိတွေ့ဝန်းကျင်ရှိ ထုတ်လွှတ်အဆင့်များ၏ ပျမ်းမျှတန်ဖိုးများကို အခန်း ၅၊ ဇယား ၅.၈ တွင် ဖော်ပြထားပါသည်။ ကွင်းဆင်းလေ့လာမှုရလဒ်များအရ ပျမ်းမျှ ၂၄ နာရီကြာကာလအတွင်း PM2.5၊ PM10 နှင့် SO₂ ပါဝင်မှုများသည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များအတွင်း ရှိပါသည်။ နေ့စဉ် 8 နာရီကြာတိုင်းတာသည့် အမြင့်ဆုံး အိုဇုန်းအဆင့်သည် 100 ug/m³ စံနှုန်းအတွင်းရှိပါသည်။ နာရီအလိုက် NO₂ အဆင့်များသည် သတ်မှတ်ထားသော ထုတ်လွှတ်မှုလမ်းညွှန်ချက်အောက်တွင် ရှိနေပါသည်။</p>	
<p>ဆူညံသံအဆင့်</p>	<p>နမူနာအရေအတွက်</p>	<p>၂ နေရာ</p>

	ကောက်ယူခဲ့သည့် အတိုင်းအတာ	LAeq (A-weighted loudness equivalent)
	ကာလ	တစ်ကြိမ်လျှင် ၂၄ နာရီ
	ရလဒ်များကို မြန်မာနိုင်ငံ အမျိုးသားပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန် ချက်၏ “လူနေအိမ်၊ အဖွဲ့အစည်း၊ ပညာရေး” ပတ်ဝန်းကျင်နှင့် နှိုင်းယှဉ်ထားပါသည်။ တွက်ချက်ထားသော ရလဒ်များအရ N-1 နှင့် N-2 တို့ ၏ နေ့အချိန်နှင့် ညအချိန် ဆူညံသံအဆင့် ရလဒ်များမှာ စစ်တမ်းကောက်ယူသည့် ကာလအတွင်း အသုံးပြုထားသောစံနှုန်းထက် နိမ့်ပါ သည်။	
တုန်ခါမှု	နမူနာအရေအတွက်	၂ နေရာ
	ကောက်ယူခဲ့သည့် အတိုင်းအတာ	Lvmax
	ကာလ	တစ်ကြိမ်လျှင် ၂၄ နာရီ
	တွက်ချက်ထားသောရလဒ်များအရ တုန်ခါမှုအဆင့် (Lvmax) V1 နှင့် V2 အားလုံးသည် အသုံးပြု စံနှုန်းထက် နိမ့်ပါသည်။	
မြေပေါ်ရေအရည်အသွေး	နမူနာအရေအတွက်	၂ နေရာ
	ကောက်ယူခဲ့သည့် အတိုင်းအတာ	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus, pH, DO, EC, TDS, water temperature, Turbidity
	အကြိမ်ရေ	တစ်ကြိမ်
	ရေအရည်အသွေးရလဒ်များကို NEQG ၏ အထွေထွေလမ်းညွှန်ချက်တွင် ပါဝင်သော ထုတ်လွှတ်ရည်အဆင့်သတ်မှတ်ချက်ဖြင့် နှိုင်းယှဉ်ထားပါသည်။ ရေရလဒ်အများစုသည် သက်ဆိုင်ရာ NEQG လမ်းညွှန်ချက်အတွင်းတွင် ရှိပါသည်။ သို့သော်လည်း စုစုပေါင်း coliform ဘက်တီးရီးယားများမှာ SW-1 နှင့် SW-2 တွင် သတ်မှတ်ထားသည့်စံနှုန်းထက် ပိုများလျက်ရှိပါသည်။	
မြေအောက်ရေ အရည်အသွေး	နမူနာအရေအတွက်	တစ်နေရာ
	ကောက်ယူခဲ့သည့် အတိုင်းအတာများ	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus, pH, DO, EC, TDS, water temperature, Turbidity
	အကြိမ်ရေ	တစ်ကြိမ်

	မြေအောက်ရေ၏ in - situ နှင့် ဓာတ်ခွဲရလဒ်များမှာ လမ်းညွှန်ချက်များအတွင်းရှိပါသည်။	
မြေဆီလွှာ အရည်အသွေး	နမူနာအရေအတွက်	၂ နေရာ
	ကော်ယူခဲ့သည့် အတိုင်းအတာများ	pH, Cadmium, Copper, Zinc, Manganese, Lead, Arsenic, Iron, Chromium, Mercury, Nickel
	အကြိမ်ရေ	တစ်ကြိမ်
	မြေဆီလွှာတွင်ရှိနေသော ဓာတုအမျိုးအစားများကို ရန်ကုန်တိုင်းဒေသကြီးရှိ မြေအသုံးချ ဦးစီးဌာန၏ ဓာတ်ခွဲခန်းတွင် စမ်းသပ်စစ်ဆေးထားပါသည်။ မြေဆီလွှာ အရည်အသွေး ကွင်းဆင်းလေ့လာမှုစစ်တမ်း၏ ရလဒ်များမှ သက်ဆိုင်ရာ လမ်းညွှန်ချက် အောက်တွင်သာ ရှိပါသည်။	

၄.၂။ ဇီဝဆိုင်ဝန်းကျင်ဆိုင်ရာ ကဏ္ဍများ

အပင်	ဘိလပ်မြေကြို တံခွဲစက်ရုံ စီမံကိန်းဧရိယာအတွင်းတွင် (၁) စိုက်ပျိုးမြေ (၂) မြက်ခင်းနှင့် ချုံနွယ်ရောနှောမြေ (၃) မြေလွတ် နှင့် (၄) စိုက်ခင်းများမှ တိုးချဲ့ပေါက်ရောက်လျက်ရှိသော သစ်ပင်အမျိုးအစား ဟူ၍ အဓိကအမျိုးအစား လေးမျိုးတွေ့ရှိရပါသည်။ လေ့လာမှုဧရိယာ အတွင်းမှ မှတ်တမ်းတင်ထားသော အပင်မျိုးစိတ် ၄၇ မျိုး စာရင်းနှင့် ၎င်းတို့၏ ပတ်ဝန်းကျင် ဧရိယာကို အခန်း ၅၊ ဇယား (၅.၃၈) တွင် ဖော်ပြထားပါသည်။ အပင်မျိုးစိတ်များကို စိုးရိမ်မှုအနည်းဆုံး (least concern) မျိုးစိတ်အဖြစ် ခွဲခြားသတ်မှတ် ထားသည်။ IUCN Red List အနေဖြင့် အကဲဖြတ်မရသေးသောမျိုးစိတ် (၁၈) မျိုးနှင့် data deficient မျိုးစိတ် တစ်ခု တွေ့ရှိရပါသည်။ လက်ရှိဧရိယာတွင် ဒေသရင်းမျိုးစိတ်များမရှိပါ။
သတ္တဝါ	ကွင်းဆင်းလေ့လာသည့်ကာလအတွင်း နို့တိုက်သတ္တဝါမျိုးစိတ် (၄) မျိုး၊ တွားသွားသတ္တဝါ မျိုးစိတ် (၉) မျိုး၊ လိပ်ပြာမျိုးစိတ် (၉) မျိုး၊ ပုစင်းမျိုးစိတ် (၄) မျိုး၊ ငါးမျိုးစိတ် (၁၉) မျိုးနှင့် ငှက်မျိုးစိတ် (၄၃) မျိုးတို့ကို စစ်တမ်း ကောက်ယူခဲ့ပါသည်။ ကမ္ဘာလုံးဆိုင်ရာ ခြိမ်းခြောက်ခံနေရသော IUCN Red List (2022) မျိုးစိတ်များကို အခြေပြုလေ့လာချက်အရ ယခုဧရိယာတွင် ခြိမ်းခြောက်နိုင် သော မျိုးစိတ်များ မရှိပါ။

၄.၃။ လူမှုစီးပွားဆိုင်ရာ ကဏ္ဍများ

စီမံအုပ်ချုပ်ရေး အဖွဲ့အစည်းများနှင့် ကန့်သတ်ချက်များ	အဆိုပြုထားသော စီမံကိန်းသည် ရန်ကုန်မြို့၏ အရှေ့ဘက်တွင် တည်ရှိသော ဒဂုံမြို့သစ်(အရှေ့ပိုင်း) မြို့နယ်တွင် တည်ရှိပါသည်။ ဒဂုံမြို့သစ်(အရှေ့ပိုင်း) မြို့နယ်တွင် တည်ရှိသည့် စီမံကိန်းသည် အကျယ်အဝန်း ၃၅.၁၅ စတုဂံမိုင် ရှိသည်။ အရှေ့မှ အနောက်သို့ ၃.၇ မိုင်နှင့် မြောက်မှတောင် ၉.၅ မိုင် ခန့်ရှိပြီး ရှည်လျားသော ပုံသဏ္ဍာန်ရှိပါသည်။ အရှေ့ဘက်တွင် လှည်းကူးမြို့နယ်၊
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	<p>အနောက်ဘက်တွင် ဒဂုံမြို့သစ်(မြောက်ပိုင်း)မြို့နယ်၊ မြောက်ဘက်တွင် မြောက်ဥက္ကလာပမြို့နယ်၊ တောင်ဘက်တွင် တောင်ဒဂုံမြို့နယ်တို့နှင့် နယ် နိမိတ်ချင်း ထိစပ်နေပါသည်။</p>
<p>လူမှုဝန်းကျင်ဖွဲ့စည်းမှု</p>	
<p>လူမှုရေးဆိုင်ရာလေ့လာမှုအတွက် စီမံကိန်းမှ သက်ရောက်နိုင်ခြေရှိသည့် ဧရိယာထဲတွင် ကြုံချောင်းကျေးရွာ၊ ကြာနီကန် ကျေးရွာနှင့် လေးထောင့်ကျေးရွာတို့ တည်ရှိပါသည်။ အဆိုပါကျေးရွာများ၏ လူမှုဝန်းကျင်ဆိုင်ရာ အခြေအနေများကို အောက်ပါအတိုင်း တွေ့ရှိနိုင်ပါသည်။</p>	
<p>လူဦးရေ</p>	<p>လေ့လာမှုဧရိယာ၏ စုစုပေါင်းလူဦးရေမှာ ၆၂၂၄ ဦးဖြစ်ပြီး ဒဂုံမြို့သစ်မြို့နယ် ၏ စုစုပေါင်းလူဦးရေ၏ ၄ ရာခိုင်နှုန်းဖြစ်သည်။ ၎င်းတို့အနက် လေးထောင့် ကန်ကျေးရွာ/ရပ်ကွက်သည် လူဦးရေ အများဆုံး ဖြစ်သည်။ စုစုပေါင်း အမျိုးသားဦးရေ ၃,၀၆၉ ရှိပြီး အမျိုးသမီးဦးရေမှာ ၃,၁၅၅ ရှိသည်။ လေ့လာမှု နယ်မြေ စုစုပေါင်း လူဦးရေသည် ဒဂုံမြို့သစ်မြို့နယ် စုစုပေါင်းလူဦးရေ၏ ၁.၉ ရာခိုင်နှုန်း ဖြစ်သည်။</p>
<p>ကျား၊မ အခြေအနေ</p>	<p>လေ့လာမှုဧရိယာအတွင်း အမျိုးသားရာခိုင်နှုန်း ၄၉.၃၀၊ အမျိုးသမီး ရာခိုင်နှုန်းမှာ ၅၀.၆၉ ရှိပြီး အမျိုးသားများထက် ပိုများပါသည်။ လေ့လာမှု ဧရိယာရှိ အမျိုးသမီး ၁၀၀ လျှင် အမျိုးသား ၉၇ ဦးရှိပြီး အမျိုးသား များထက် အနည်းငယ် ပိုများပါသည်။ ကျား၊မ အချိုး တူညီလှနီးပါး ရှိသည်ကို တွေ့ရှိ ပါသည်။</p>
<p>ဘာသာရေး</p>	<p>လေ့လာခဲ့သည့် ဧရိယာတွင် ဗုဒ္ဓဘာသာကို အများဆုံးကိုးကွယ်ကြသည်။ ကွင်းဆင်းလေ့လာမှုစစ်တမ်း ရလဒ်အရ ဖြေဆိုသူ ၉၉ ဒဿမ ၂ ရာခိုင်နှုန်းသည် ဗုဒ္ဓဘာသာဝင်များ ဖြစ်ကြပါသည်။</p>
<p>ပညာရေး</p>	<p>အခြေခံအချက်အလက် ကွင်းဆင်းလေ့လာမှုစစ်တမ်းရလဒ်များအရ လေ့လာ မှုဧရိယာ၏ စာတတ်မြောက်မှုနှုန်းမှာ ၉၅.၉ ရာခိုင်နှုန်း ဖြစ်သည်။ လေ့လာမှု ဧရိယာအတွင်း စုစုပေါင်းလူဦးရေ၏ 4.1 ရာခိုင်နှုန်း သည် ကျောင်းတက် ရောက်ခြင်း မရှိခဲ့သည်ကို တွေ့ရပါသည်။ တစ်နည်းအားဖြင့် ဖြေဆိုသူရာ ခိုင်နှုန်းအများဆုံးမှာ မူလတန်း ပညာရေး ရှိကြပြီး ၄၉.၆ ရာခိုင်နှုန်းသည် မူလတန်းပြီးမြောက်ကြပါသည်။ လေ့လာ မှုဧရိယာ၏ ဒုတိယအကြီးဆုံး ပညာရေးအဆင့်မှာ အလယ်တန်း ကျောင်းပြီးလျှင် အထက်တန်းကျောင်း ဖြစ်ပါသည်။</p>
<p>လူမှုအဖွဲ့အစည်းများ</p>	<p>အလုပ်လုပ်သော လူဦးရေအနက် လက်လုပ်လက်စား အဖြစ် လုပ်ကိုင်သည့် အလုပ်သမားမှာ အများဆုံးဖြစ်ပြီး ၁၆ ဒဿမ ၅ ရာခိုင်နှုန်း ရှိသည်။ ဒုတိယအများဆုံးမှာ ပုဂ္ဂလိကဝန်ထမ်းများဖြစ်ပြီး ၁၄ ရာခိုင်နှုန်း</p>

	<p>ရှိပါသည်။ တတိယအများဆုံးမှာ ကုန်သည်များဖြစ်ပြီး ၉ ဒသမ ၁ ရာခိုင်နှုန်း ရှိပါသည်။</p>
<p>ထိခိုက်လွယ်သည့်အုပ်စုများ</p>	<p>ကွင်းဆင်းလေ့လာခဲ့သည့် အချက်အလက်များအရ လေ့လာမှုဧရိယာရှိ အိမ်ထောင်စုစုပေါင်း၏ ၄ ဒသမ ၅ ရာခိုင်နှုန်းသည် ထိခိုက်လွယ်သည် ဟုတွေ့ရှိရသည်။ ယင်းအုပ်စုများထဲတွင် အရွယ်မရောက်သေးသော ကလေးရှိသော အမျိုးသမီး အိမ်ထောင်ဦးစီးဖြစ်သည့် အိမ်ထောင်စုမှာ စုစုပေါင်းအိမ်ထောင်စု၏ 1.3% ဖြစ်ပြီး ရုပ်ပိုင်းဆိုင်ရာ မသန်စွမ်းသူ 0.9% နှင့် နာတာရှည် သို့မဟုတ် ပြင်းထန်သော ရောဂါရှိသူများမှာ 0.8% တို့ဖြစ်သည်။ .</p>
<p>တိုင်းရင်းသားလူမျိုးစုများ</p>	<p>မြို့နယ်ဆိုင်ရာ အချက်အလက်များအရ ဒဂုံမြို့သစ်(အရှေ့)မြို့နယ်တွင် နေထိုင်သူ အများစုမှာ ဗမာလူမျိုးများဖြစ်သည်။ လေ့လာသည့် ဧရိယာတွင် လည်း အများစုမှာ ဗမာလူမျိုးများဖြစ်ပြီး ဖြေဆိုသူ အားလုံးမှာ ဗမာလူမျိုး များဖြစ်ကြပါသည်။</p>
<p>နိုင်ငံရေးနှင့် လူမှုအဖွဲ့အစည်းများ</p>	<p>လေ့လာခဲ့သည့်ရွာများတွင် မည်သည့်နိုင်ငံရေးအဖွဲ့အစည်းမှ မရှိပါ။ လူမှုရေး အဖွဲ့အစည်းအနေဖြင့် လေ့လာမှုဧရိယာအတွင်းတွင် ကြုံချောင်း ကျေးရွာရှိ မေတ္တာရောင်စင်နှင့် လေးထောင့်ကန် ကျေးရွာ/ရပ်ကွက်ရှိ ဖြူစင်မေတ္တာ စသည့် အဖွဲ့အစည်းတို့ကို တွေ့ရှိရ ပါသည်။</p>
<p>စီးပွားရေးဆိုင်ရာ အချက်အလက်များ</p>	
<p>လေ့လာခဲ့သောကျေးရွာများအတွင်းတွင် ကျပ်စားအလုပ်သမားအဖြစ် လုပ်ကိုင်ခြင်းကို အဓိကစီးပွားရေး လုပ်ငန်း အနေဖြင့်တွေ့ရှိရပြီး ပုဂ္ဂလိကဝန်ထမ်းများအဖြစ် လုပ်ကိုင်နေသူအချို့လည်းရှိပါသည်။ ကွင်းဆင်းလေ့လာမှု စစ်တမ်း ရလဒ် အရ လေ့လာမှုဧရိယာ၏ ဝင်ငွေသည် စက်မှုဇုန်များတည်ရှိမှုအပေါ် အဓိကမူတည်နေပါသည်။</p>	
<p>အလုပ်အကိုင်</p>	<p>လေ့လာသည့် ဧရိယာတွင် ဒေသနေပြည်သူများသည် အစိုးရ ဝန်ထမ်းများ၊ ကျွမ်းကျင်လုပ်သားများ၊ ဆောက်လုပ်ရေးလုပ်သားများ၊ လက်လုပ်လက်စားများနှင့် ပုဂ္ဂလိကဝန်ထမ်းများအဖြစ် လုပ်ကိုင် ကြသည်။ ၎င်းတို့အနက် လက်လုပ်လက်စား အဖြစ် လုပ်ကိုင်သည့် အလုပ်သမားမှာ အများဆုံးဖြစ်ပြီး ၁၆ ဒသမ ၅ ရာခိုင်နှုန်း ရှိပြီး ပုဂ္ဂလိက ဝန်ထမ်းများမှာ ၁၄ ရာခိုင်နှုန်း ရှိပါသည်။ ဒဂုံမြို့သစ်(အရှေ့ပိုင်း)သည် စက်မှုဇုန်များစွာဖြင့် ဝန်းရံထားသောကြောင့် လူအများစုသည် အနီး ပတ်ဝန်းကျင်ရှိ စက်မှုဇုန်များတွင် စက်မှုလုပ်သားများအဖြစ် လုပ်ကိုင် ကြသည်။</p>
<p>အိမ်ထောင်စုဝင်ငွေ</p>	<p>လူမှုစီးပွားစစ်တမ်းအချက်အလက်များအပေါ် အခြေခံရလျှင် ဝင်ငွေ ၁၀၀,၀၀၀ နှင့် ၃၀၀,၀၀၀ ကြားရှိသော အိမ်ထောင်စုရာခိုင်နှုန်းသည် အများဆုံးဖြစ်သည်။ လေ့လာမှုဧရိယာအတွင်း အနိမ့်ဆုံးပျမ်းမျှဝင်ငွေမှာ</p>

	၁၀,၀၀၀ နှင့် ၁၀၀,၀၀၀ ကြား ရရှိပြီး အမြင့်ဆုံးမှာပျမ်းမျှဝင်ငွေမှာ ၁,၀၀၀,၀၀၀ အထက်ဖြစ်သည်။
နေထိုင်မှုကုန်ကျစရိတ်	လူမှုစီးပွားစစ်တမ်း အချက်အလက်များအရ အိမ်ထောင်စု ၇၄ ရာခိုင်နှုန်း၏ အသုံးစရိတ်မှာ ၁၀၀,၀၀၀ မှ ၃၀၀,၀၀၀ ကြားရှိပြီး အမြင့်ဆုံးဖြစ်သည်။ အနိမ့်ဆုံးပျမ်းမျှဝင်ငွေမှာ ၁၀,၀၀၀ နှင့် ၁၀၀,၀၀၀ ကြားပြီး အမြင့်ဆုံးမှာ ၉၀၀,၀၀၀ မှ ၁,၀၀၀,၀၀၀ ကြားဖြစ်သည်။ စစ်တမ်းရလဒ်အရ အိမ်ထောင်စု၏ ၈၃ ရာခိုင်နှုန်းသည် အကြွေး မရှိကြဘဲ ဝင်ငွေနှင့် အသုံးစရိတ်များမှာ မျှတမှုရှိနေသည်ကိုတွေ့ရပါသည်။
ဒေသတွင်းစီးပွားရေးလုပ်ငန်းများ	ကွင်းဆင်းလေ့လာခဲ့သည့် စစ်တမ်းရလဒ်အရ ဒေသခံပြည်သူများသည် လက်လုပ်လက်စား၊ ပုဂ္ဂလိကဝန်ထမ်းများနှင့် စီးပွားရေး ကုန်သည်များ အဖြစ် လုပ်ကိုင်ကြသည်။ ထို့အပြင် အချို့သောသူများသည် အသေးစား စတိုးဆိုင်များ၊ ပြုပြင်ထိန်းသိမ်းရေးအလုပ်ရုံများ၊ လက်ဖက်ရည်ဆိုင်များ နှင့် စားသောက်ဆိုင်များကဲ့သို့ အသေးစားစီးပွားရေးလုပ်ငန်းကို လုပ်ကိုင်ကြသည်။ လူအနည်းငယ်သာ စိုက်ပျိုးရေးနှင့် မွေးမြူရေး လုပ်ငန်းကို လုပ်ကိုင်ကြသည်။
စိုက်ပျိုးရေး	ကွင်းဆင်းလေ့လာသည့် စစ်တမ်းတွင် ကောက်ယူရရှိသော အချက်အလက် များအရ စိုက်ပျိုးရေး လုပ်ငန်း လုပ်ကိုင်သူ အနည်းငယ်သာ ရှိပြီး စပါးနှင့် ပဲတီ စိမ်းကိုလည်း စီးပွားဖြစ် စိုက်ပျိုး ကြသည်။
မွေးမြူရေး	ဖြေဆိုသူစုစုပေါင်း၏ 8.3% ကသာ လေ့လာမှုဧရိယာအတွင်း တိရစ္ဆာန် မွေးမြူရေးလုပ်ငန်းကို လုပ်ကိုင်ကြသည်။ ကြက်၊ ကျွဲ၊ နွား၊ ဝက်၊ ဘဲ၊ ဆိတ်တို့ကို အိမ်တွင်စားသုံးရန်နှင့် စီးပွားဖြစ်မွေးမြူကြသည်။ လေ့လာခဲ့ သည့်ဧရိယာအတွင်းရှိ ၁၅ ဧကခန့်တွင် ကြက်မွေးမြူရေးနှင့် ငါးမွေးမြူရေး လုပ်ငန်းအား တွဲဖက်လုပ်ကိုင်လျက်ရှိသည်ကို တွေ့ရှိ ရသည်။ ထို့အပြင် အိမ်တွင်စားသုံးရန်နှင့် ရောင်းချရန် ငါးဖမ်းလုပ်ငန်း လုပ်ကိုင်သော ဖြေဆိုသူ ၂ ဦး တွေ့ရှိရပါသည်။
စက်မှုလုပ်ငန်း	လေ့လာသည့် ဧရိယာအတွင်းတွင် အထည်ချုပ်စက်ရုံတစ်ခု ရှိပါသည်။
ခရီးသွားလုပ်ငန်း	လေ့လာမှုဧရိယာအတွင်း ခရီးသွားနေရာနှင့် ခရီးသွားများကို ဆွဲဆောင် နိုင်သည့်နေရာများ မရှိပါ။
ကျန်းမာရေးဆိုင်ရာ အချက်အလက်များ	
ကျေးရွာနေပြည်သူများတွင် အဖြစ်များသော ရောဂါများ၊ ပတ်ဝန်းကျင်ရှိ ကျန်းမာရေး စောင့်ရှောက်မှု အဆောက်အဦများနှင့် ကျန်းမာရေးဆိုင်ရာ အမှုအကျင့်များကို ဤကဏ္ဍတွင် တင်ပြထားပါသည်။	

<p>ပြည်သူ့ကျန်းမာရေး</p>	<p>လေ့လာသည့် ဧရိယာအတွင်းတွင် ကွင်းဆင်းလေ့လာခဲ့သည့် အချက်အလက် များအရ သွေးတိုးရောဂါ၊ ရာသီတုပ်ကွေးနှင့် နှလုံးဖောက်ခြင်း ကဲ့သို့သော ရောဂါများကို အများစုမှာ တွေ့ရှိရပါသည်။ လူများဖျားနာသောအခါ အနီးဆုံးဆေးခန်းနှင့် ကျေးလက်ကျန်းမာရေး ဌာနများသို့ ပုံမှန်သွားလေ့ ရှိကြသည်။ ကွင်းဆင်းလေ့လာချက်အရ ဆေးလိပ်သောက်ခြင်း၊ ကွမ်းဝါးခြင်း နှင့် အရက်သောက်ခြင်းတို့ကို ဖြေဆိုသူများတွင် တွေ့ရှိရသည်။ ကွမ်းစားခြင်း သည် လုပ်လေ့လုပ်ထ အရှိဆုံး အပြုအမူဖြစ်သည်။</p>
<p>ရောဂါဖြစ်ပွားမှုနှင့် သေဆုံးမှု</p>	<p>ကွင်းဆင်းလေ့လာခဲ့သည့် အချက်အလက်အရ လေ့လာသည့်ဧရိယာ အတွင်း တွင် ရာသီတုပ်ကွေး၊ သွေးတိုး၊ နှလုံးဖောက်ပြန်စသည့် ရောဂါများကို အများဆုံး တွေ့ရှိရသည်။</p>
<p>ကျန်းမာရေးစောင့်ရှောက်နိုင်မှုအခြေအနေ</p>	<p>လေ့လာသည့်နေရာ၌ ကြုံချောင်းကျေးလက်ကျန်းမာရေးဌာန တစ်ခုရှိ ပါသည်။ လေ့လာသည့်နေရာရှိ လူအများစုမှာ နေမကောင်းဖြစ်လျှင် လေးထောင့်ကန်ရှိ ဆေးခန်းသို့ သွားလေ့ရှိသည်။ အမှတ် (၂) ပင်မလမ်းမ ကြီးပေါ်တွင် လေးထောင့်ကန်ကျေးလက် ကျန်းမာရေးဌာနခွဲတစ်ခု ရှိပါ သည်။</p>
<p>ကူးစက်နိုင်သောရောဂါများ</p>	<p>ကွင်းဆင်းလေ့လာသည့် စစ်တမ်းရလဒ်အရ ရေယူန်ကဲ့သို့ လိင်မှ ကူးစက်သော ရောဂါမျိုးတွေ့ရှိရပြီး အခြားရောဂါများနှင့် နှိုင်းယှဉ်ပါက ရာခိုင်နှုန်းအလွန်နည်းပါးသည်ကို တွေ့ရှိရသည်။ ထို့အပြင် ရွာသူကြီး များ နှင့် အနီးကပ်တွေ့ဆုံမေးမြန်းမှုအရ လေးထောင့်ကန်ကျေးရွာရှိ အိမ်ထောင်စု ၃ စုတွင် HIV ဖြစ်ပွားမှုကို တွေ့ရှိရသည်။</p>
<p>မြေအသုံးချမှု</p>	
<p>အဆိုပါဧရိယာ၏ အဓိကမြေအသုံးချမှုမှာ အဓိကအားဖြင့် စိုက်ပျိုးရေးမြေများဖြစ်ပြီး စပါးပင်များ၊ ပြန်ကျဲနေသော သစ်ပင်ငယ်များ၊ နွံရှိသောမြေများ၊ ရေကန်များနှင့် မြေဖို့ထားသည့် နေရာများကို တွေ့ရှိရသည်။ ဘီလပ်မြေစက်ရုံနှင့် ဆက်စပ်အဆောက်အဦများအတွက် စုစုပေါင်းမြေဧရိယာ ၄၉ ဒဿမ ၉ ဧက လိုအပ်မည်ဖြစ်သည်။ အဆိုပြုထားသည့် ဘီလပ်မြေကြိုတင်ခွဲစက်ရုံအတွက် လိုအပ်သောမြေများကို အခြားအသုံးပြုရန်အတွက် လယ်ယာမြေလွှဲပြောင်းပေးသည့် ကုမ္ပဏီထံမှ ဝယ်ယူခဲ့ခြင်းဖြစ်သည်။</p>	
<p>အခြေခံအဆောက်အဦများ</p>	
<p>ရေအသုံးပြုမှုနှင့် ရေပေးဝေမှု</p>	<p>လေ့လာမှုဧရိယာအတွင်း နေထိုင်သူအများစုသည် ရေအသုံးပြုရန် အတွက် စက်ရေတွင်းများ၊ ကန်ရေနှင့် မိုးရေကို အသုံးပြုကြသည်။ လေ့လာမှု ဧရိယာတွင် ရေလှောင်တံမံမှ ပိုက်နှင့် ရေသွယ်ယူခြင်း/ တုံကင်ရေအသုံးပြုခြင်းမရှိပါ။ သောက်သုံးရေအတွက် ရေသန့်နှင့် စက်ရေတွင်းများကို အားထားရပြီး ရေကိုကြိုချက်ခြင်း၊ ရေစက်များဖြင့် စစ်ခြင်း စသည့် ရေသန့်စင်သည့် နည်းလမ်းများကို အသုံးပြုကြပါသည်။</p>

<p>ကျောင်း</p>	<p>လေ့လာမှုဧရိယာ၌ ကြုံချောင်းကျေးရွာတွင် မူလတန်းလွန်ကျောင်း ရှိသည်။ အလယ်တန်းပညာရေးအတွက် ကျောင်းသားအများစုသည် အမှတ် (၂) ပင်မလမ်းမကြီးတစ်ဖက်ခြမ်းရှိသော လေးထောင့်ကန် (တောင်ဒဂုံမြို့နယ်) ရှိ အခြေခံပညာ အထက်တန်းကျောင်းသို့ သွားကြသည်။ ကြာနီကန်နှင့် ကြုံချောင်းကျေးရွာရှိ ဘုန်းကြီးကျောင်း ၂ ကျောင်းနှင့် မဟာသစ်အမည်ရှိ ပရဟိတ ဘုန်းတော်ကြီးကျောင်း တစ်ကျောင်း ရှိပြီး ကျောင်းသားအမျိုးမျိုးအတွက် အတန်းအလိုက် အခမဲ့ကျူရှင်များ ဆောင်ရွက်ပေးလျက်ရှိသည်။</p>
<p>လမ်းပန်းဆက်သွယ်ရေး</p>	<p>လေ့လာသည့်ဧရိယာအတွင်း ပြည်သူများသည် မြို့နယ်အတွင်းတွင် မော်တော်ဆိုင်ကယ်ဖြင့် သွားလာကြပြီး ရွာအတွင်းတွင် စက်ဘီးဖြင့် သွားလာကြသည်။ လူများသည် မြို့တွင်း သို့မဟုတ် အခြားမြို့နယ် များသို့ သွားရန်အတွက် ကား၊ မော်တော်ဆိုင်ကယ် သို့မဟုတ် ပြေးဆွဲသည့် ဘတ်စ်ကားများကို အသုံးပြုကြသည်။ ကွင်းဆင်းလေ့လာခဲ့သည့် စစ်တမ်းရလဒ်များအရ ဖြေဆိုသူ ၈၇.၆ ရာခိုင်နှုန်းသည် သယ်ယူပို့ဆောင်ရေးအတွက် မော်တော်ဆိုင်ကယ်ကို အသုံးပြုကြသည်။ အခြားဖြေဆိုသူ ၉.၉ ရာခိုင်နှုန်းမှာ ကားကို အသုံးပြုကြသည်။</p>
<p>လျှပ်စစ်ဓါး</p>	<p>ကျေးလက်ဒေသအတွက် မဟာဓါတ်အားမှ လျှပ်စစ်ဓါးရရှိပါသည်။ လေ့လာသည့် ဧရိယာတွင် အိမ်ထောင်စု ၉၃.၄ ရာခိုင်နှုန်းသည် အလင်းရောင်အတွက် လျှပ်စစ်ဓါးအသုံးပြုပြီး ၎င်းရာခိုင်နှုန်းသည် မြို့နယ်အဆင့်ရာခိုင်နှုန်းထက် ပိုမိုမြင့်မားပါသည်။ အလင်းရောင်အတွက် ဖယောင်းတိုင်အသုံးပြုသော ရာခိုင်နှုန်းမှာ ၃.၃ ရာခိုင်နှုန်းပြီး ဆိုလာအသုံးပြုသော ရာခိုင်နှုန်းမှာလည်း ၃.၃ ရာခိုင်နှုန်းဖြစ်ပါသည်။ တစ်ဖက်တွင်လည်း ဖြေဆိုသူ ၈၈.၄ ရာခိုင်နှုန်းမှာ ချက်ပြုတ်ရန်အတွက် လျှပ်စစ်ဓါးအသုံးပြုကြပါသည်။</p>
<p>စွမ်းအင်အရင်းအမြစ်</p>	<p>လေ့လာသည့်ရလဒ်များအရ လျှပ်စစ်ဓါးသည့် အလင်းရောင်ရရှိရေးအတွက် သာမက ချက်ပြုတ်ရေးအတွက်ပါ ပင်မအရင်းအမြစ် ဖြစ်ပါသည်။ ဖယောင်းတိုင်နှင့် ဆိုလာအား အလင်းရောင်အတွက် အသုံးပြုပြီး ဟင်းချက်ရန်အတွက် အရံ စွမ်းအင်အရင်းအမြစ်မှာ ထင်း ဖြစ်ပါသည်။</p>
<p>ယဉ်ကျေးမှု</p>	
<p>ရှေးဟောင်းသုတေသန</p>	<p>မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးအချက်အလက်များအရ မြို့နယ်အတွင်း ရှေးဟောင်း နယ်မြေ မရှိပါ။ ထိုနည်းတူစွာ စီမံကိန်းနေရာအတွင်း မည်သည့် ရှေးဟောင်း နယ်မြေမျှ မရှိပါ။</p>
<p>စေတီနှင့် အထိမ်းအမှတ်များ</p>	<p>စီမံကိန်းနေရာအနီးနှင့် စီမံကိန်းသွား လမ်းတစ်လျှောက်တွင် ဘုန်းကြီးကျောင်းများ ဖြစ်သည့် ကေသရာမဘုန်းကြီးကျောင်း၊</p>



	<p>မေ့စေတနာ ဝိပဿနာ ဘုန်းကြီးကျောင်း၊ နောင်ကောင်း ဘုန်းကြီးကျောင်းနှင့် မဟာနွယ်ဟုခေါ်တွင်သော မိဘမဲ့ ဘုန်းကြီးကျောင်း တို့တည်ရှိပါသည်။</p>
<p>ရှုမြင်ကွင်းများ</p>	
<p>အမြင်ပဿာဒ</p>	<p>ဒဂုံမြို့သစ် အရှေ့ပိုင်းမြို့နယ်တွင် သဘာဝဝန်းကျင်နှင့် လူလုပ်ဝန်းကျင် တို့ အတူယှဉ်တွဲတည်ရှိနေကြပါသည်။ လေ့လာသည့် ဧရိယာအတွင်း အလှအပတန်ဖိုးရှိသည့် နေရာများ မတည်ရှိကြပါ။ စက်ရုံများ တည်ရှိပြီးဖြစ်သည့်အတွက် လက်ရှိပတ်ဝန်းကျင်၏ အလှအပအပေါ် မည်သည့်သက်ရောက်မှုမျှ မရှိပါ။</p>
<p>မြေယာရှုခင်း</p>	<p>ဒဂုံမြို့သစ် အရှေ့ပိုင်းမြို့နယ်၏ အဓိကအမြင်ပဿာဒ အစိတ်အပိုင်းများ တွင် လွင်ပြင်များ၊ စိုက်ပျိုးမြေများ၊ ချောင်းနှင့် အချို့သော သဘာဝ ပေါက်ပင်များ ပါဝင်ပါသည်။ စီမံကိန်းအနီးတဝိုက် မည်သည့် ထင်ရှားသည့် အထင်ကရ နေရာမျှ မတည်ရှိပါ။</p>
<p>ယဉ်ကျေးမှုဆိုင်ရာအထိမ်းအမှတ်များ</p>	<p>လေ့လာသည့် ဧရိယာအတွင်းနှင့်အနီးတဝိုက်တွင် မည်သည့် ထင်ရှားသည့် ယဉ်ကျေးမှုဆိုင်ရာအထိမ်းအမှတ်များမျှ မရှိပါ။</p>



၅။ ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများနှင့် သက်ရောက်မှုလျှော့ချရေး နည်းလမ်းများ

၅.၁။ ပတ်ဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများနှင့် သက်ရောက်မှုလျှော့ချရေးနှင့် ကြွင်းကျန်သက်ရောက်မှု

ပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	သက်ရောက်မှုလျှော့ချရေး နည်းလမ်းများ	ကြွင်းကျန် သက်ရောက်မှုများ
တည်ဆောက်ရေးလုပ်ငန်းအဆင့်			
လေထု အရည်အသွေး	- ယာဉ်များမှ ထွက်ရှိသော ဖုန်မှုန့်များနှင့် ပျံ့လွင့်နေသော ဖုန်မှုန့်များ	<ul style="list-style-type: none"> ▪ စီမံကိန်းမှ အသုံးပြုနေသော ကုန်တင်ယာဉ်များနှင့် အခြားသော ယာဉ်များ၏ အမြန်နှုန်းကို တစ်နာရီ ၄၀ ကီလိုမီတာနှုန်း သတ်မှတ်ခြင်း ▪ တူးဖော်ရေး လုပ်ငန်းများ ဆောင်ရွက်သည့် နေရာတွင် ရေဖြန်းခြင်း ▪ အလုပ်သမားများအား သင့်လျော်သော တစ်ကိုယ်ရည်ကာကွယ်ရေးပစ္စည်းများအသုံးပြုစေခြင်း ▪ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များတွင် သတ်မှတ်ထားသော ကန့်သတ်ချက်များနှင့် လိုက်လျောညီထွေ ရှိစေရန် လေထုအရည်အသွေး စောင့်ကြည့်ရေးအစီအစဉ်ကို ရေးဆွဲအကောင်အထည်ဖော်ခြင်း။ 	သိသာထင်ရှားမှု မရှိ
ဆူညံသံနှင့် တုန်ခါမှု	- စီမံကိန်း တည်ဆောက် ရေး လုပ်ငန်းများမှ ထွက်ပေါ်လာသော ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> ▪ အင်ဂျင်များနှိုးလျက် အနေအထားဖြင့် စက်ယန္တရားများနှင့် ကိရိယာများ အသုံးမပြုသော အခြေအနေများကို လျှော့ချရန်၊ ▪ စက်ယန္တရားများအား ကောင်းမွန်သည့်အနေအထား ရောက်စေရန် ပြင်ဆင်ပြုပြင်ရန် ▪ ပုံမှန်အလုပ်ချိန်များတွင် ဆူညံသံများ ထုတ်လွှတ်သော တည်ဆောက်ရေးလုပ်ငန်းများအား ကန့်သတ်ထားရန် 	သိသာထင်ရှားမှုမရှိ



		<ul style="list-style-type: none"> ထိခိုက်မှု၏အနီးတစ်ဝိုက်တွင် သတိပေးဆိုင်ဘုတ်များတင်ရန်နှင့် ဝန်ထမ်းများအားလုံးကို တစ်ကိုယ်ရည်ကာကွယ်ရေးပစ္စည်းကိရိယာများ တပ်ဆင်ပေးရမည်။ 	
ရေအရည်အသွေး	- ရေအရည်အသွေးကျဆင်းခြင်း	<ul style="list-style-type: none"> သဘာဝအရင်းအမြစ်ဖြစ်နေသည့်အတွက် ရေသုံးစွဲမှုအား တတ်နိုင်သမျှ လျော့ချရမည်ဖြစ်ပါသည်။ ရုံးခန်းများ၊ စားသောက်တန်းများနှင့် အလုပ်သမားအဆောင်များမှ စွန့်ပစ်ရေကို septic sewage system စနစ်ဖြင့် သန့်စင်မည်ဖြစ်ပါသည်။ ဆောက်လုပ်ရေးလုပ်ငန်းမှ ကျဆင်းမည့်ရေကို စုဆောင်းရန်အတွက် ယာယီ မြောင်းစနစ် ထားရှိမည်ဖြစ်ပြီး အနည်ထိုင်ကန်သို့ ကျဆင်းစေကာ တည်ဆောက်ရေးဧရိယာအတွင်း ပြန်လည်အသုံးပြုမည်ဖြစ်ပါသည်။ 	သိသာထင်ရှားမှုမရှိ
အစိုင်အခဲစွန့်ပစ်ပစ္စည်း	- ဆောက်လုပ်ရေးလုပ်ငန်းများမှ အစိုင်အခဲစွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> ဆောက်လုပ်ရေးကာလအတွင်း ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းအမျိုးအစားအားလုံးကို စာရင်းပြုစုပြီး စီစဉ်ထားသင့်ပါသည်။ စွန့်ပစ်ပစ္စည်းနှင့် အန္တရာယ်ရှိ ပစ္စည်းများ စွန့်ပစ်ခြင်းအား မြို့နယ်စည်ပင်သာယာရေး ကော်မတီနှင့် ပူးပေါင်းရမည်ဖြစ်ပါသည်။ မီးလောင်လွယ်သော အမှိုက်နှင့် ဆောက်လုပ်ရေး စွန့်ပစ်ပစ္စည်းများကို မီးရှို့ခြင်းကို တားမြစ်ထားသည်။ တည်ဆောက်ရေးနေရာကို ပုံမှန်သန့်ရှင်းပေးရမည် ဖြစ်ပါသည်။ 	သိသာထင်ရှားမှုမရှိ
အပင်ပေါက်ရောက်မှု	- ဆောက်လုပ်ရေး လုပ်ငန်းနေရာတွင် ရှိသော သဘာဝ အလျောက် ရှင်သန် ပေါက်ရောက် နေသည့်	<ul style="list-style-type: none"> မလိုအပ်သော မြေယာရှင်းလင်းမှုများနှင့် အပင်ပေါက်ရောက်မှုကို ခုတ်ထွင်ခြင်းကို ရှောင်ရှားခြင်း။ စီမံကိန်းနေရာ၏ အချို့အပိုင်းများ ဆောက်လုပ်ရေးလုပ်ငန်းအတွက် အဆင်သင့်ဖြစ်သည်နှင့် တစ်ပြိုင်နက် ဆောက်လုပ်ရေးလုပ်ငန်းကို စတင် အကောင်အထည် ဖော်ဆောင်သင့်ပါသည်။ 	သိသာထင်ရှားမှုမရှိ



	<p>အရာများအား အနှောက်အယှက် ဖြစ်စေခြင်း။</p>	<ul style="list-style-type: none"> ▪ အမဲလိုက်ခြင်းနှင့်/သို့ ကြွက်၊ ဌက်၊ တွားသွားသတ္တဝါများနှင့် ကုန်းနေရေနေ များအပါအဝင် တောရိုင်းသားကောင် အကြီးအသေးများကို ထောင်ချောက်ဆင် ဖမ်းခြင်းအား တားမြစ်ထားခြင်း။ ▪ မြေယာရှင်းလင်းခြင်းနှင့် ပြင်ဆင်ခြင်းလုပ်ငန်းများ ပြီးမြောက်သည်နှင့် တစ်ပြိုင်နက် ဆောက်လုပ်ရေးမဆောင်ရွက်သည့် ဧရိယာများတွင် ပြန်လည်ပြုပြင်ပြီး အပင်ပြန်လည်စိုက်ပျိုးမည်ဖြစ်ပါသည်။ ▪ ပြန်လည်ပြုပြင်ပြီး အပင်ပြန်လည်စိုက်ပျိုးမည့် အစီအစဉ်တွင် ဒေသမျိုးစိတ်များအား ဦးစားပေး စိုက်ပျိုးမည် ဖြစ်ပါသည်။ ▪ အလုပ်သမားများအပေါ် တောရိုင်းအပင်နှင့် အကောင်များအပေါ် သင်တန်းပေးခြင်း အား ပိုစတာများမှတစ်ဆင့် မိတ်ဆက်ခြင်း ▪ စီမံကိန်းဧရိယာအတွင်း အမဲလိုက်ခြင်းတားမြစ်သည့် မူဝါဒအား လိုက်နာမည် ဖြစ်ပါသည်။ 	
<p>လူမှုစီးပွား</p>	<ul style="list-style-type: none"> - လုပ်ခန့်အပ်မှု - ဒေသတွင်းစီးပွားရေး - ပို့ဆောင်ဆက်သွယ်ရေး 	<ul style="list-style-type: none"> ▪ စီမံကိန်းလိုအပ်ချက်နှင့်အညီ ဒေသတွင်းအလုပ်သမား အသုံးပြုခြင်းအတွက် ရှင်းလင်းတိကျသော ထုတ်ပြန်ချက်ထားရှိခြင်း။ ▪ အလုပ်သမားအင်အားစုအတွက် လိုအပ်သော ကျွမ်းကျင်မှုအမျိုးအမျိုးကို ခွဲခြားသတ်မှတ်ပြီး ရရှိနိုင်သော ကျွမ်းကျင်မှုပေါ်မူတည်၍ ကွာဟချက်ဆန်းစစ်မှုကို ဆောင်ရွက်ပြုခြင်း ▪ အလုပ်သမားစုဆောင်းခြင်းနှင့် ငှားရမ်းခြင်းအတွက် သင့်တော်သော လုပ်ထုံးလုပ်နည်းများအပေါ် သဘောတူညီမှုဆောင်ရွက်နိုင်စေရန် စီမံကိန်းတာဝန်ခံများသည် ကျေးရွာခေါင်းဆောင်များ၊ ဒေသတွင်းအစိုးရအဖွဲ့ များနှင့် ညှိနှိုင်းတာဝန်ယူဆောင်ရွက်မှုများ ရှိစေခြင်း။ ▪ အလုပ်သမားစုဆောင်းခြင်း (သို့) စီမံကိန်းအလုပ်ခန့်ထားမှုနှင့် စပ်လျဉ်း၍ စိုးရိမ်ပူပန်မှုများအား စောင့်ကြည့်ခြေရာခံခြင်း 	



		<ul style="list-style-type: none"> ▪ မည်သည့်အငြင်းပွားမှုမဆို ကာကွယ်ရန်အတွက် အလုပ်ခန့်အပ်မှုနှင့် ပတ်သတ်၍ ဒေသနေပြည်သူများ၏ မျှော်လင့်ချက်ကို သေချာသော စီမံဆောင်ရွက်မှု ဆောင်ရွက်ရန် ▪ စက်ရုံအတွက်လိုအပ်သော ဝန်ဆောင်မှုအားလုံးကို ဒေသအတွင်း စီးပွားရေး လုပ်ငန်းများ ထောက်ပံ့ပေးသူမှ အရင်းအမြစ်ထားသင့်ပြီး ဒေသတွင်းစီးပွားရေးနှင့် အလုပ်အကိုင်အခွင့်အလမ်း အမျိုးမျိုးကို ထောက်ပံ့ပေးမည် ဖြစ်ပါသည်။ 	
လုပ်ငန်းလည်ပတ်ရေးအဆင့်			
လေအရည်အသွေး	<ul style="list-style-type: none"> - ဘိလပ်မြေကြိတ်ခွဲစက်ရုံမှ လေထုညစ်ညမ်းမှု (အမှုန်အမွှား) ထွက်ရှိမည်ဖြစ်ပါသည် - ယာဉ်များမှ ထွက်ရှိသော ဖုန်မှုန့်များနှင့် ပျံ့လွင့်နေသော ဖုန်မှုန့်များ 	<ul style="list-style-type: none"> ▪ ပျံ့လွင့်နေသော ဖုန်မှုန့်များကို အနည်းဆုံးလျော့ချရန် အလုပ်ပိတ်သို့လှောင်ရုံပုံစံများ အသုံးပြုပေးရမည်ဖြစ်ပါသည်။ ▪ ဖုန်မှုန့်စုပ်စက်များတပ်ဆင်ခြင်း ▪ အလုပ်ပိတ်ရွေ့လျားစက်ခါးပတ်များ နှင့် အမှုန်အမွှားထွက်ရှိမှုကို ကာကွယ်ရန် အကူးအပြောင်းနေရာများတွင် စစ်ထုတ်ကိရိယာများ တပ်ဆင်အသုံးပြုခြင်း 	သိသာထင်ရှားမှုမရှိ
ဆူညံသံနှင့်တုန်ခါမှု	- ဘိလပ်မြေကြိတ်ခွဲစက်ရုံမှ ဆူညံသံနှင့် တုန်ခါမှု	<ul style="list-style-type: none"> ▪ ပန်ကာများအတွက် အသံတိတ်ကိရိယာများ အသုံးပြုခြင်း ▪ ကြိတ်ခွဲစက်များလည်ပတ်ခြင်းအတွက် အလုံခန်းအသုံးပြုခြင်း ▪ ဆူညံသံထွက်ရှိသော ကိရိယာများအနီး ဆူညံသံအကာအကွယ်များ တပ်ဆင်ခြင်း ▪ NEQG စံချိန်စံညွှန်းနှင့် ကိုက်ညီစေရန်အတွက် လုပ်ငန်းလည်ပတ်သည့် အဆင့်အတွင်း သင့်တော်သည့် နေရာများတွင် ထိတွေ့ဆူညံသံ ပုံမှန်စောင့်ကြည့် တိုင်းတာခြင်း ဆောင်ရွက်ခြင်း ▪ ဆူညံသံကို လက်ခံနိုင်သည့် အဆင့်အထိ မလျော့ချနိုင်ပါက တစ်ကိုယ်ရည်သုံး အကြားကာကွယ်သည့်ပစ္စည်းများ အသုံးပြုစေခြင်း 	သိသာထင်ရှားမှုမရှိ



<p>ရေအရည်အသွေး</p>	<p>- ရေအရည်အသွေးကျဆင်းခြင်း</p>	<ul style="list-style-type: none"> ▪ သဘာဝအရင်းအမြစ်ဖြစ်နေသည့်အတွက် ရေသုံးစွဲမှုအား တတ်နိုင်သမျှ လျော့ချရမည် ဖြစ်ပါသည်။ ▪ သန့်ရှင်းရေးဆောင်ရွက်နေစဉ် အနည်းဆုံးရေပမာဏကိုသာ သုံးစွဲစေမည် ဖြစ်ပါသည် (ဥပမာ- ဖိအားမြင့် ရေဆင်းနေသည့် ရေပိုက်ခေါင်းများအသုံးပြုခြင်း) ▪ ရုံးခန်းများ၊ စားသောက်တန်းများနှင့် အလုပ်သမားအဆောင်များမှ စွန့်ပစ်ရေကို septic sewage system စနစ်ဖြင့် သန့်စင်မည် ဖြစ်ပါသည်။ ▪ တွင်းစနစ်ကို အသုံးပြု၍ မိလ္လာအား စုဆောင်းသိမ်းဆည်းမည်ဖြစ်ပြီး စည်ပင်သာယာ မှ မိလ္လာသိမ်းကားများဖြင့် စွန့်ပစ်မည်ဖြစ်ပါသည်။ 	<p>သိသာထင်ရှားမှုမရှိ</p>
<p>စွန့်ပစ်အစိုင်အခဲ</p>	<p>- မီးဖိုချောင်သုံးစွန့်ပစ်ပစ္စည်း</p>	<ul style="list-style-type: none"> ▪ အထွေထွေနှင့် အန္တရာယ်ရှိ စွန့်ပစ်ပစ္စည်းများ စွန့်ပစ်ရန်အတွက် စီမံကိန်း လည်ပတ်သည့်အဆင့် မရောက်မှီကြိုတင်၍ သင့်တော်သော ဝန်ဆောင်မှုပေးသည့် ယာယီစွန့်ပစ်ရမည့်နေရာ သတ်မှတ်ရမည်ဖြစ်ပါသည်။ ▪ စွန့်ပစ်ပစ္စည်းများအား လုပ်ငန်းနေရာတွင် ခွဲခြားပြီး စွန့်ပစ်ပစ္စည်း သိုလှောင်မည့် နေရာအား အမိုးမိုးကာ ဖြတ်သန်းညစ်ညမ်းစေမှုဖြစ်နိုင်ခြေအား ကြိုတင် ကာကွယ်ရန် ကန့်သတ်ထားမည်ဖြစ်ပါသည်။ ▪ ယာယီအမှိုက်ပုံမှ အမှိုက်အားလုံးကို မြို့နယ်စည်ပင်သာယာရေးကော်မတီ၏ စီမံမှုဖြင့် ပို့ဆောင်မည်ဖြစ်ပါသည်။ 	<p>သိသာထင်ရှားမှုမရှိ</p>
<p>ဇီဝမျိုးစုံမျိုးကွဲ</p>	<p>- အပင်နှင့်သတ္တဝါများအပေါ် သက်ရောက်မှု</p>	<ul style="list-style-type: none"> ▪ ပစ်မှတ်မထားသည့် မျိုးစိတ်များ ဖမ်းယူခြင်းအား ရှောင်ရှားနိုင်ရန် သတ်မှတ်ကျော့ကွင်းများ ရွေးချယ်မည်ဖြစ်ပါသည်။ ▪ ဒေသတွင်း ဇီဝဝန်းကျင်အား ကာကွယ်ရန်အတွက် ညစ်ညမ်းမှု တားဆီးရေး နည်းလမ်းများအား အသုံးပြုမည်ဖြစ်ပါသည်။ ▪ ဒေသရင်းမျိုးစိတ်မဟုတ်သော အပင်မျိုးစိတ်များ မပြန့်ပွားစေရန်အတွက် အရင်းအမြစ်များတွင် မော်တော်ယာဉ်များကို သေချာစွာ သန့်ရှင်းရေးလုပ်မည် ဖြစ်ပါသည်။ 	<p>သိသာထင်ရှားမှုမရှိ</p>



		<ul style="list-style-type: none"> ▪ အပင်အမျိုးအစားတစ်ခုခြင်းနှင့် အရေအတွက်အများအကြားအတွက် သက်ရောက်မှုကို အနည်းဆုံးလျော့ချနိုင်ရန်အတွက် စီမံကန့်သွားလမ်းနှင့် အဆောက်အဦးနေရာချစဉ်အတွင်း အထိခိုက်မခံသည့် မျိုးစိတ်များအား ရှောင်ရှား ရပါမည်။ ▪ သတ်မှတ်ဧရိယာ ပြင်ပရှိ အပင်ပေါက်ရောက်မှုကို အနှောင့်အယှက် မဖြစ်စေရပါ။ ▪ ဝန်ထမ်းအားလုံးအတွက် လိုက်နာရန် သဘာဝသားကောင်များ ဖမ်းဆီးခြင်းကို တင်းကြပ်စွာ တားမြစ်မည်ဖြစ်ပါသည်။ 	
<p>လူမှုစီးပွား</p>	<ul style="list-style-type: none"> - အလုပ်ခန့်အပ်မှု - အိမ်ထောင်စုဝင်ငွေ - ဒေသစီးပွားရေး - ယာဉ်အသွားအလာ - 	<ul style="list-style-type: none"> ▪ အလုပ်သမားအင်အားစုအတွက် လိုအပ်သော ကျွမ်းကျင်မှုအမျိုးအမျိုးကို ခွဲခြားသတ်မှတ်ပြီး ရရှိနိုင်သော ကျွမ်းကျင်မှုပေါ်မူတည်၍ ကွာဟချက်ဆန်းစစ်မှုကို ဆောင်ရွက်ပြုခြင်း ▪ ကျေးရွာခေါင်းဆောင်များ၊ ဒေသတွင်းအစိုးရအဖွဲ့ များနှင့် ပူးပေါင်းဆောင်ရွက်ပြီး သက်ရောက်မှုရှိသည့် ဒေသတွင်း အလုပ်သမားစုဆောင်းခြင်း အစီအစဉ်နှင့် မူဝါဒအား ရေးဆွဲမည် ဖြစ်ပါသည်။ ▪ မည်သည့်အငြင်းပွားမှုမဆို ကာကွယ်ရန်အတွက် အလုပ်ခန့်အပ်မှုနှင့် ပတ်သတ်၍ ဒေသနေပြည်သူများ၏ မျှော်လင့်ချက်ကို သေချာသော စီမံဆောင်ရွက်မှု ဆောင်ရွက်ရန် ▪ သင်တန်းများနှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေး အစီအစဉ်များအား အစပြု ဆောင်ရွက်မည် ဖြစ်ပါသည်။ ▪ ကန်ထရိုက်တာအားလုံးသည် အလုပ်သမားဌာနရမ်းရာတွင် ဒေသနေပြည်သူများအား ဦးစားပေးဌာနရမ်းစေချင်သည့် ကုမ္ပဏီ၏ မျှော်လင့်ချက်အား အသေအချာ နားလည် သဘောပေါက်စေမည်ဖြစ်ပြီး ကန်ထရိုက်တာများနှင့် သဘောတူစာချုပ်ချုပ်ဆိုမည် ဖြစ်ပါသည်။ 	



<p>ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး</p>	<p>- ကူးစက်ရောဂါများ</p>	<ul style="list-style-type: none"> ▪ ဆေးမှတ်တမ်းအပါအဝင် ကျန်းမာရေးထောက်ခံစာဖြင့်သာ အလုပ်သမားများအား စုဆောင်းဌားရမ်းစေခြင်း ▪ ထိရောက်မှုရှိသော လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး လမ်းညွှန်ချက်များ ရှိစေခြင်း။ ▪ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး အရာရှိတစ်ဦး ခန့်အပ်ထားရှိစေခြင်း ▪ အလုပ်သမားများအား ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး လမ်းညွှန်ချက်များ တွင်ပါရှိသော စီမံကိန်းနေရာတွင် လိုက်နာရမည့် စည်းကမ်းချက်များကို လိုက်နာစေခြင်း။ ▪ လုပ်ငန်းနေရာတွင် လုံခြုံရေးအစောင့်များ ထားရှိစေခြင်း ▪ ဒေသတွင်း လူမှုအဖွဲ့အစည်းအခြေပြု လုံခြုံရေးများနှင့် ရဲတပ်ဖွဲ့များနှင့် ပူးပေါင်း ဆောင်ရွက်စေခြင်း။ 	<p>သိသာထင်ရှားမှုမရှိ</p>
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၆။ ဆက်စပ်သက်ရောက်မှု ဆန်းစစ်ခြင်းနှင့် စီမံခန့်ခွဲမှု

ရှိနှင့်ပြီးသား အချက်အလက်များနှင့် အဆိုပြု ဘိလပ်မြေကြိုတ်ခွဲ ထုတ်လုပ်သည့် စီမံကိန်း အတွက် လက်ရှိ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ချက်များမှ အချက်အလက်များကို စုစည်းကာ ဆက်စပ်သက်ရောက်မှု ဆန်းစစ်ခြင်းတွင် အသုံးပြု ထားပါသည်။

အဓိက ပတ်ဝန်းကျင်ဆိုင်ရာ အစိတ်အပိုင်း	ဆက်စပ်သက်ရောက်မှုများ၏ သိသာထင်ရှားမှု	ဆက်စပ်သက်ရောက်မှုများ အတွက် စီမံခန့်ခွဲမှု/လျော့ပါးရေး ဆောက်ရွက်ချက်များ
လေထုအရည်အသွေး	အဆိုပြု စီမံကိန်း၏ လုပ်ငန်းဆောင်ရွက်မှုကြောင့် လေထုအရည်အသွေးအပေါ် ဆက်စပ်သက်ရောက်မှုများသည် သိသာထင်ရှားမှု မရှိဟု ခန့်မှန်းရပါသည်။ အခြားရှိပြီးသား စီမံကိန်းများမှ လေထုအရည်အသွေးအပေါ် ဆက်စပ်သက်ရောက်မှုကို လက်ရှိ အချက်အလက်များဖြင့် လုံလောက်စွာ အကဲဖြတ်နိုင်ခြင်း မရှိပါ။	သက်ဆိုင်သူများနှင့် ညှိနှိုင်း ဆွေးနွေး၍ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အား တိကျစွာ လိုက်နာခြင်း။ စီမံကိန်း လည်ပတ်စဉ်ကာလ အတွင်း စီမံကိန်းဝန်းကျင်တွင် လေထု အရည်အသွေး တိုင်းတာ စောင့်ကြည့်ခြင်း။
ဆူညံသံ	အဆိုပြု စီမံကိန်း၏ လုပ်ငန်း ဆောင်ရွက်မှုကြောင့် ဆူညံသံ အရည်အသွေးအပေါ် ဆက်စပ် သက်ရောက်မှုများသည် သိသာထင်ရှားမှု မရှိဟု ခန့်မှန်းရပါသည်။	အခြားသော ဆူညံသံ ထွက်ရှိမှု လုပ်ငန်းများနှင့် အတူ တစ်ပြိုင်နက် ဆောင်ရွက်ခြင်းနှင့် ညအချိန် လုပ်ငန်းများ ဆောင်ရွက်ခြင်းကို ရှောင်ကြဉ်ခြင်း။
ရေအရည်အသွေး	အဆိုပြု ဘိလပ်မြေကြိုတ်ခွဲ ထုတ်လုပ်သည့် စီမံကိန်းမှ ရေအရည်အသွေးအပေါ် ဆက်စပ် သက်ရောက်မှုမှာ သိသာထင်ရှားမှု မရှိဟု ခန့်မှန်းရပါသည်။ အခြားသော လက်ရှိ စီမံကိန်းများမှ ရေအရည်အသွေး အပေါ် ဆက်စပ် သက်ရောက်မှုများကို ကောက်ချက် ချနိုင်ခြင်း မရှိပါ။	လုပ်ငန်း လည်ပတ်နေစဉ်အတွင်း ရေအရည်အသွေး အပေါ် ထိခိုက်မှု မရှိစေရန် အတွက် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အား တိကျစွာ လိုက်နာခြင်း။

<p>ဇီဝမျိုးစုံမျိုးကွဲ</p>	<p>အဆိုပြုထားသော စီမံကိန်းမှ ဇီဝမျိုးစုံမျိုးကွဲ အစိတ်အပိုင်းအပေါ် ဆက်စပ် သက်ရောက်မှုများကို မျှော်လင့်မထားပါ။</p>	<p>သက်ဆိုင်သူများ ညှိနှိုင်းဆွေးနွေး၍ သင့်လျော်သော ပြန်လည်ထူထောင်ရေး လုပ်ငန်းများကို အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်း။</p>
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၇။ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

မြန်မာသံတော်မြတ်ကုမ္ပဏီသည် အဆိုပြုထားသော စီမံကိန်းဧရိယာအတွင်း သဘာဝပတ်ဝန်းကျင်ကို အပြည့်အဝ ကာကွယ်ရန် ကတိကဝတ် ပြုထားပြီး လုပ်ငန်းဆောင်ရွက်မှု ကာလအတွင်း အလားအလာရှိသော ဆိုးကျိုးများကို လျော့ပါး သက်သာစေရန်နှင့် စီမံကိန်းနှင့် ဆက်စပ်သော အကျိုးရှိသောသက်ရောက်မှုများကို မြှင့်တင်ရန် သဘာဝ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှုအစီအစဉ်ကို ရေးဆွဲ အကောင်အထည်ဖော် ဆောင်ရွက်မည် ဖြစ်ပါသည်။

၇.၁။ ပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ် အကျဉ်းချုပ်

အကြောင်းအရာ	စီမံခန့်ခွဲမှုအစီအစဉ်	အကောင်အထည်ဖော် ဆောင်ရွက်မှု အချိန်ဇယား
<p>လေအရှည်အသွေး</p>	<ul style="list-style-type: none"> ▪ ဖုံးအုပ်သည့် စက်များ၊ စီမံကိန်းသွားလမ်းအား ရေဖြန်းခြင်းနှင့် (ဖုန်စုပ်စက်၊ pulse bag dust collector နှင့် filter bag dust collector) ဖုန်စုဆောင်းခြင်းစနစ် အပြင် အဆင့်မြင့် စက်ယန္တရားများ၊ ကိရိယာများနှင့် နည်းလမ်းများ အား လေထုညစ်ညမ်းမှုများ အနည်းဆုံး လျော့ချနိုင်ရန် အသုံးပြုမည်ဖြစ်ပါသည်။ ▪ ဘိလပ်မြေစက်ရုံ နယ်နိမိတ်တစ်လျှောက် အပင် စိုက်ပျိုးခြင်းအား ဆောင်ရွက်မည်ဖြစ်ပါသည်။ စိမ်းလန်း နယ်မြေသည် လုပ်ငန်းနေရာ သွားလာရေးမှ ဖြစ်ပေါ်လာသည့် ဖုန်လွင့်ပါးခြင်းကို သက်သာ လျော့နည်းစေမည် ဖြစ်ပါသည်။ ▪ သွားလာရေးလုပ်ငန်းများအတွက် အသုံးပြုသော လမ်းအား ရေဖြန်းခြင်းဆောင်ရွက်စေမည်ဖြစ်ပါသည်။ <p>ရွေ့လျားခါးပတ်လိုင်း ရွေ့လျားခါးပတ်လိုင်းသည် ပို့ဆောင်သွားလာနေစဉ် ပြန့်နှံ့အမှုန်အမွှားများ ထွက်ရှိခြင်းကို လျော့နည်း စေမည် ဖြစ်ပါသည်။ ဖုန်စုပ်စက် ၅ လုံးအား ရွေ့လျားခါးပတ်ပေါ်တွင် တပ်ဆင်ထားပြီး အမှုန်အမွှား ထွက်ရှိမှုကို ထိန်းချုပ်မည် ဖြစ်ပါသည်။</p>	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>

	<p>မီးသင့်ကျောက်သိုလှောင်ရုံ အမှုန်အမွှားများ ထွက်ရှိမှုကို လျော့ချရန်အတွက် ဖုန်စစ်ထုတ်သည့် ဖုန်စုပ်စက် ၃၅ ခုအား မီးသင့်ကျောက် သိုလှောင်ရုံတွင် တပ်ဆင်ထားရှိမည်ဖြစ်ပါသည်။</p> <p>ဘိလပ်မြေကြိတ်ခွဲစက် အမှုန်အမွှားများထွက်ရှိမှုကို လျော့ချရန်အတွက် ဖုန်စစ်ထုတ်သည့် ဖုန်စုပ်စက် ၉ ခုအား ဘိလပ်မြေ ကြိတ်ခွဲစက်တွင် တပ်ဆင်ထားရှိမည်ဖြစ်ပါသည်။</p> <p>အထုတ်ထုတ်ပိုးသည့် သိုလှောင်ရုံ အမှုန်အမွှားများထွက်ရှိမှုကို လျော့ချရန်အတွက် ဖုန်စစ်ထုတ်သည့် ဖုန်စုပ်စက် ၆ ခုအား အထုတ်ထုတ် ပိုးသည့် သိုလှောင်ရုံတွင် တပ်ဆင်ထားရှိမည် ဖြစ်ပါသည်။</p>	
<p>ဆူညံသံနှင့် တုန်ခါမှု</p>	<ul style="list-style-type: none"> ▪ ဆူညံသံမြင့်မားစွာ ထုတ်လွှတ်သော စက်များအား ဘေးပတ်ဝန်းကျင် ဧရိယာများ အနှောင့်အယှက် ဖြစ်မှုကို ရှောင်ရှားရန်အတွက် အလုံပိတ် အဆောက်အဦတွင် တပ်ဆင် ထားရှိမည် ဖြစ်ပါသည်။ ▪ စက်ယန္တရားနှင့် ကိရိယာများအား ပုံမှန် စစ်ဆေးပြီး ကောင်းမွန်သောအခြေအနေဖြစ်အောင် ထိန်းသိမ်းစောင့်ရှောက်သင့်ပါသည်။ ▪ ဆူညံသံ ပြင်းအား ၈၀ dB(A) ကျော်လွန်သော အချို့သော ဧရိယာအားသတ်မှတ်ပြီး သတိပေး ဆိုင်းဘုတ်များ ထားရှိမည်ဖြစ်ပါသည်။ ▪ ဆူညံသံ ထုတ်လွှတ်သော စက်ယန္တရားများနှင့် ကိရိယာများအား သက်ရောက်မှု တိုးတက် ကောင်းမွန်စေရန် ပုံမှန် ပြုပြင်ထိန်းသိမ်းမှု ဆောင်ရွက် ရမည် ဖြစ်ပါသည်။ ▪ ဆူညံသံကြာရှည်စွာ ထိတွေ့ဆောင်ရွက်နေရသော အလုပ်သမားများအား နားကြပ် (သို့) နားအဆို့များ ကဲ့သို့ တစ်ကိုယ်ရည်သုံး ကာကွယ်ရေး ကိရိယာများ ဖြင့် သင့်တင့် လျောက်ပတ်စွာ ထောက်ပံ့မည် ဖြစ်ပါသည်။ ▪ အမျိုးသား အရည်အသွေး ထုတ်လွှတ်မှု စံချိန်စံညွှန်းများ နှင့် ကိုက်ညီစေရန် လုပ်ငန်း လည်ပတ်သည့် ကာလအတွင်း ဆူညံသံအဆင့် စောင့်ကြည့် လေ့လာမှုအား သင့်တော်သည့် 	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>

	<p>နေရာများတွင် ပုံမှန် အချိန်အပိုင်းအခြားများ၌ ဆောင်ရွက်မည်ဖြစ်ပါသည်။</p>	
<p>ရေအရည်အသွေး</p>	<p>ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံသည် ခြောက်သွေ့နည်းစဉ်ကို အသုံးပြုမည် ဖြစ်ပြီး မီးဖိုချောင်သုံးအတွက်သာ ရေလိုအပ်ချက် ရှိမည်ဖြစ်ပါသည်။ ထို့ကြောင့် ထုတ်လုပ်မှု အပိုင်းသည် ရေညစ်ညမ်းမှုကို ဖြစ်စေမည် မဟုတ်ပါ။</p> <p>ရေအသုံးပြုခြင်း</p> <ul style="list-style-type: none"> ▪ သဘာဝအရင်းအမြစ်ဖြစ်နေသည့်အတွက် ရေသုံးစွဲမှုအား တတ်နိုင်သမျှ လျော့ချရမည် ဖြစ်ပါသည်။ ▪ သန့်ရှင်းရေးဆောင်ရွက်နေစဉ် အနည်းဆုံး ရေပမာဏကိုသာ သုံးစွဲစေမည်ဖြစ်ပါသည် (ဥပမာ - ဖိအားမြင့် ရေဆင်းနှေးသည့် ရေပိုက်ခေါင်းများ အသုံးပြုခြင်း) <p>စွန့်ပစ်ရေ ပြန်လည်သန့်စင်ခြင်း</p> <ul style="list-style-type: none"> ▪ ရုံးခန်းများ၊ စားသောက်တန်းများနှင့် အလုပ်သမား အဆောင်များမှ စွန့်ပစ်ရေကို အနည်ထိုင်စနစ်ဖြင့် သန့်စင်မည်ဖြစ်ပါသည်။ ▪ အနည်ထိုင်စနစ်အသုံးပြုပြီးနောက် ဝန်ထမ်းများ သုံးသောရေကို စွန့်ပစ်ရမည် ဖြစ်ပါသည်။ ▪ စီမံကိန်းဧရိယာ အတွင်း အနည်ထိုင်ကန် (၃၀ ပေ x ၃၀ပေ x ၃၀ပေ) ဆောက်လုပ် ထားရှိရမည်ဖြစ်ပါသည်။ <p>မိလ္လာရေ ပြန်လည်သန့်စင်ခြင်း</p> <ul style="list-style-type: none"> ▪ ရုံးခန်းများ၊ စားသောက်တန်းများနှင့် အလုပ်သမားအဆောင်များမှ စွန့်ပစ်ရေကို septic sewage system စနစ်ဖြင့် သန့်စင်မည်ဖြစ်ပါသည်။ ▪ အနည်ထိုင်စနစ်အသုံးပြုပြီးနောက် ဝန်ထမ်းများမှ အသုံးပြုသော ရေကို စွန့်ပစ်ရမည် ဖြစ်ပါသည်။ ▪ စီမံကိန်းဧရိယာအတွင်း အနည်ထိုင်ကန် (၃၀ ပေ x 10ပေ) ဆောက်လုပ်ထားရှိရမည် ဖြစ်ပါသည်။ 	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>

	<ul style="list-style-type: none"> ▪ မိလ္လာအား တွင်းစနစ်ဖြင့် စုဆောင်းထားမည် ဖြစ်ပါသည်။ ▪ မိလ္လာအား စည်ပင်မိလ္လာသိမ်း ကားများဖြင့် စွန့်ပစ်မည် ဖြစ်ပါသည်။ 	
<p>အစိုင်အခဲစွန့်ပစ်ပစ္စည်း</p>	<p>အိမ်သုံးစွန့်ပစ်ပစ္စည်း</p> <ul style="list-style-type: none"> ▪ ပြန်လည်အသုံးပြုနိုင်သော စွန့်ပစ်ပစ္စည်းများ ဥပမာ - ပလတ်စတစ်၊ သစ်သားအပိုင်းအစများ၊ သတ္တုအပိုင်းအစများ စသည်တို့အား တက်နိုင်သမျှ ပြန်လည်အသုံးပြု/ ပြန်လည်ပြုပြင်အသုံးပြု သင့်ပါသည်။ ▪ အစိုင်အခဲစွန့်ပစ်ပစ္စည်းများနှင့် ရုံးခန်းနှင့် လူနေအဆောင်များမှ အမှိုက်များအား သိမ်းဆည်းရန်အတွက် ပလတ်စတစ်ပုံးများ ထားရှိမည်ဖြစ်ပါသည်။ ▪ စားသောက်တန်းများနှင့် အိမ်သာများတွင် ကျန်းမာရေးနှင့်ညီညွတ် သန့်ရှင်းအောင် ထိန်းသိမ်းထားရှိရမည်ဖြစ်ပါသည်။ <p>ပြန်လည်ပြုပြင်သုံးစွဲမရနိုင်သော စွန့်ပစ်ပစ္စည်းများအား မြို့နယ်စည်ပင်သာယာရေးကော်မတီမှ ထောက်ခံ ထားသော မြေမြှုပ်နေရာများသို့ တင်ပို့ရမည် ဖြစ်ပါသည်။</p>	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>
<p>ဖိတ်မျိုးစုံမျိုးကွဲ</p>	<ul style="list-style-type: none"> ▪ ဆောက်လုပ်ရေးဧရိယာသို့ ဒေသမျိုးရင်းနှင့် ကျူးကျော်မျိုးစိတ်များ အား စွဲဆောင်ခြင်းမှ ရှောင်ရှားနိုင်ရန် ဆောက်လုပ်ရေးနှင့် မီးဖိုချောင်ထွက်ပစ္စည်းများအား သင့်တော်စွာ သိုလှောင်ပြီး စွန့်ပစ်မည်ဖြစ်ပါသည်။ ▪ ဌာနနှင့် ကိုက်ဖြတ်စားသောက် တတ်သော သတ္တဝါများ အပါအဝင် သေးငယ်သော မည်သည့် သတ္တဝါကိုမဆို အမဲလိုက်ခြင်း (သို့) ကျော့ကွင်း ထောင်ခြင်းကို တားမြစ်မည်ဖြစ်ပါသည်။ ▪ အထူးသဖြင့် အနှောင့်ယှက်အများဆုံး ဖြစ်ပေါ်စေသော နေရာများတွင် ပြန်လည် ထူထောင်ရေး လုပ်ငန်းစဉ်များ ဆောင်ရွက်ရန် အတွက် တူးဖော်ရရှိထားသော အပေါ်ယံမြေ ဆီလွှာကို ထိန်းသိမ်းထားခြင်း။ ▪ စီမံကိန်းနေရာအတွင်း နေရာရှင်းလင်းမည့် နယ်နိမိတ်မျဉ်းများ သတ်မှတ် ဆောင်ရွက်ခြင်းဖြင့် အပင်များ ခုတ်ထွင်ရှင်းလင်းခြင်းနှင့် 	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>

	<p>နေရင်းဒေသများ အပေါ် အနှောက်အယှက် ဖြစ်စေမှုကို လျော့ချခြင်း။</p> <ul style="list-style-type: none"> ▪ လုပ်ကွက်အတွင်းရှိ ယာယီ လုပ်ငန်းဆောင်ရွက် ထားသော နေရာများအား လုပ်ငန်းများ ဆောင်ရွက်ပြီးစီးပါက သစ်ပင်/ ချုံပုတ်/ မြက်ခင်းများဖြင့် ပြန်လည်ပြုစု ထိန်းသိမ်းခြင်း။ ▪ ဒေသမျိုးစိတ်များ ထိန်းသိမ်းခြင်းအတွက် အလုပ်သမားအားလုံးကို ပတ်ဝန်းကျင်ဆိုင်ရာ အသိပေးသင်တန်းများ ပေးအပ်မည်ဖြစ်ပါသည်။ 	
<p>ဒေသခံပြည်သူများ ချိတ်ဆက် ပါဝင်စေခြင်းနှင့် ဒေသဖွံ့ဖြိုးရေး</p>	<ul style="list-style-type: none"> ▪ နစ်နာမှုတိုင်ကြားသည့်စနစ် ▪ အလုပ်ခန့်အပ်မှု ▪ ဒေသတွင်းစီးပွားရေးဖွံ့ဖြိုးတိုးတက်မှု ▪ ဒေသဖွံ့ဖြိုးရေးစီမံချက်/CSR 	<p>လုပ်ငန်းလည်ပတ်သည့် ကာလ</p>
<p>လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး</p>	<p>Myanmar Than Taw Myat Co., Ltd သည် (ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံ) မှ လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအမံများကို အကောင်အထည်ဖော် ဆောင်ရွက်နိုင်ရန် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ကော်မတီကို ဖွဲ့စည်းခဲ့ပါသည်။</p> <p>က) တစ်ကိုယ်ရေ အကာအကွယ်ပစ္စည်း ခ) ကျန်းမာရေးစောင့်ရှောက်မှုအထောက်အကူပစ္စည်း ဂ) ရှေးဦးသူနာပြုနှင့် ဆေးဘက်ဆိုင်ရာပစ္စည်းများ ဃ) ပတ်ဝန်းကျင်ဆိုင်ရာသင်တန်း</p>	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>
<p>ဒေသခံ ပြည်သူများ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး</p>	<p>လုပ်ငန်းခွင်တွင် ရောဂါတွေ့ရှိပါက သို့မဟုတ် ကူးစက်ရောဂါ ဖြစ်ပွားပါက ရန်ကုန်တိုင်း ဒေသကြီး ဒဂုံမြို့သစ် (အရှေ့ပိုင်း)မြို့နယ် ပြည်သူ့ ကျန်းမာရေး ဦးစီးဌာနသို့ အကြောင်းကြားပြီး ညွှန်ကြားချက်များနှင့် အညီ ပူးပေါင်းဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။</p>	<p>ဆောက်လုပ်ရေး၊ လုပ်ငန်းလည်ပတ်ရေးနှင့် ပိတ်သိမ်းရေးကာလ</p>



၇.၂။ ပတ်ဝန်းကျင် အရည်အသွေး စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	ပတ်ဝန်းကျင်ဆိုင်ရာ အချက်များ	အချက်အလက် ကောက်ယူမည့် နေရာ	အကြိမ် အရေအတွက်	ဆောင်ရွက်မည့် အဖွဲ့အစည်း
သက်ရောက်မှုလျော့ချရေး အား လိုက်နာ ဆောင်ရွက်မှု စစ်ဆေးခြင်း	ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အကောင်အထည် ဖော်ဆောင်မှုအား စောင့်ကြပ်ကြည့်ရှုခြင်း	စီမံကိန်းနေရာ	အပတ်စဉ်	ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတံခွဲစက်ရုံ)
လေထုအရည်အသွေး	(NO ₂ , SO ₂ , CO, PM _{2.5} , PM ₁₀)	၂နေရာ	တစ်နှစ်လျှင် (၂) ကြိမ်	တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတံခွဲစက်ရုံ)
ဆူညံသံ	ဆူညံသံအဆင့် (dBA)	၂နေရာ	တစ်နှစ်လျှင် (၂) ကြိမ်	တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတံခွဲစက်ရုံ)
တုန်ခါမှု	တုန်ခါမှုအဆင့် (dBA)	၂နေရာ	တစ်နှစ်လျှင် (၂) ကြိမ်	တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတံခွဲစက်ရုံ)



<p>မြေပေါ်ရေ အရည်အသွေး</p>	<p>ခါတ်ခွဲခန်းတွင်စမ်းသပ်တိုင်းတာမည့် အမျိုးအစားများ BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus တိုက်ရိုက်တိုင်းတာမည့်အမျိုးအစားများ pH, DO, EC, TDS, water temperature, flow rate, Turbidity</p>	<p>စီမံကိန်းနေရာ (၁ နေရာ) စီမံကိန်းမှ ၁.၆ ကီလိုမီတာအကွာတွင်ရှိ သော သုံးခွချောင်းတွင် တစ်နေရာ)</p>	<p>၂ ကြိမ် (စိုစွတ်ရာသီနှင့် ခြောက်သွေ့ရာသီ)</p>	<p>တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံ)</p>
<p>မြေအောက်ရေ အရည်အသွေး</p>	<p>ခါတ်ခွဲခန်းတွင်စမ်းသပ်တိုင်းတာမည့်အမျိုးအစားများ BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus တိုက်ရိုက်တိုင်းတာမည့်အမျိုးအစားများ pH, DO, EC, TDS, water temperature, flow rate, Turbidity</p>	<p>စီမံကိန်းနေရာ (၁ နေရာ)</p>	<p>၂ ကြိမ် (စိုစွတ်ရာသီနှင့် ခြောက်သွေ့ရာသီ)</p>	<p>တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံ)</p>
<p>မြေအရည်အသွေး</p>	<p>pH, Cadmium, Copper, Zinc, Manganese, Lead, Arsenic, Iron, Chromium, Mercury, Nickel</p>	<p>စီမံကိန်းနေရာအနီး (၂) နေရာ</p>	<p>နှစ်စဉ်</p>	<p>တတိယ အဖွဲ့အစည်း နှင့် ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုတ်ခွဲစက်ရုံ)</p>
<p>ဇီဝမျိုးစုံမျိုးကွဲ</p>	<p>အပင်ဖုံးလွှမ်းမှုယေဘုယျအခြေအနေ</p>	<p>စိမ်းလန်းဧရိယာ</p>	<p>နှစ်စဉ်</p>	<p>ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန</p>



				(မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုက်ခွဲစက်ရုံ)
ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး	သင့်တော်သော တစ်ကိုယ်ရည်သုံးအကာအကွယ်ပစ္စည်းအသုံးပြုခြင်း၊ ဘေးကင်းရေးအချက်ပြများထားရှိခြင်း၊ ရှေးဦးသူနာပြုပစ္စည်းများနှင့် မီးသတ်ပစ္စည်းများ	စီမံကိန်းဧရိယာအတွင်း	စဉ်ဆက်မပြတ်	ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုက်ခွဲစက်ရုံ)
လူမှုစီးပွားရေး	နစ်နာမှုတိုင်ကြားချက် မှတ်တမ်း	ဒေသနေ ပြည်သူများ	လစဉ်	ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုက်ခွဲစက်ရုံ)
	အလုပ်သမားမှတ်တမ်း	စီမံကိန်းရုံးခန်း	စဉ်ဆက်မပြတ်	ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး ဌာန (မြန်မာ့သံတော်မြတ် ဘိလပ်မြေကြိုက်ခွဲစက်ရုံ)

မြန်မာ့သံတော်မြတ် ကုမ္ပဏီသည် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန (MONREC) သို့ စောင့်ကြပ်ကြည့်ရှုမှုဆိုင်ရာ အစီရင်ခံစာအား တင်သွင်းသွားမည် ဖြစ်ပါသည်။

၇.၃။ ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုရေးစီမံချက်များ အတွက် ကုန်ကျစရိတ်

ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုရေးစီမံချက်များ အကောင်အထည် ဖော်ရာတွင် ခန့်မှန်း ကုန်ကျစရိတ် မလုံလောက်ပါက ဘတ်ဂျက်ကို ထပ်မံပြင်ဆင်သွားမည် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြပ်ကြည့်ရှုရေးစီမံချက်များ အတွက် နှစ်စဉ် ကုန်ကျစရိတ်

အကြောင်းအရာ	ကုန်ကျစရိတ် (မြန်မာကျပ်ငွေ)
လေထုအရည်အသွေးအပေါ် သက်ရောက်မှု လျော့ပါးစေရေးဆိုင်ရာ ကုန်ကျစရိတ်	၆,၀၀၀,၀၀၀
ဆူညံသံနှင့် တုန်ခါမှုကြောင့် သက်ရောက်မှု လျော့ပါးစေရေးဆိုင်ရာ ကုန်ကျစရိတ်	၆,၀၀၀,၀၀၀
ရေအရည်အသွေးအပေါ် သက်ရောက်မှု လျော့ပါးစေရေးဆိုင်ရာ ကုန်ကျစရိတ်	၉,၀၀၀,၀၀၀
မြေအရည်အသွေးအပေါ် သက်ရောက်မှု လျော့ပါးစေရေးဆိုင်ရာ ကုန်ကျစရိတ်	၃,၀၀၀,၀၀၀
ဇီဝမျိုးစုံမျိုးကွဲများ အပေါ် သက်ရောက်မှု လျော့ပါးစေရေးဆိုင်ရာ ကုန်ကျစရိတ်	၄,၈၀၀,၀၀၀
ဒေသခံပြည်သူများ ချိတ်ဆက် ပါဝင်စေခြင်းနှင့် ဒေသဖွံ့ဖြိုးရေးဆိုင်ရာ ကုန်ကျစရိတ်	၂,၄၀၀,၀၀၀
လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာ ကုန်ကျစရိတ်	၇,၂၀၀,၀၀၀
အများပြည်သူ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေးဆိုင်ရာ ကုန်ကျစရိတ်	၂,၄၀၀,၀၀၀
စုစုပေါင်း	၄၀,၈၀၀,၀၀၀

၉။ လူထုတွေ့ဆုံဆွေးနွေးခြင်းနှင့် စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက် ဖြန့်ဝေခြင်း

ပတ်ဝန်းကျင် သက်ရောက်မှု လေ့လာဆန်းစစ်ခြင်းအား ပြင်ဆင်ရာတွင် အများပြည်သူကို ပါဝင်စေခြင်းမှာ စီမံကိန်းသည် ၎င်းတို့၏ နေထိုင်မှုအခြေအနေကို မည်သို့တိုးတက်စေ၊ သက်ရောက်မှုဖြစ်စေသည်များကို ပိုမိုနားလည်နိုင်ပြီး စီမံကိန်းကို လေ့လာသုံးသပ်နိုင်ရန် အတွက်ဖြစ်ပါသည်။ ထိုသို့လုပ်ဆောင်ခြင်းသည် ပတ်ဝန်းကျင် သက်ရောက်မှု လေ့လာဆန်းစစ်သည့် အဖွဲ့အနေဖြင့် သိသာထင်ရှားစွာ မြင်သာခြင်းမရှိသော သက်ရောက်မှုများ၊ ပြဿနာများကို ဖော်ထုတ်ရန် နည်းလမ်းတစ်ခုလည်း ဖြစ်ပါသည်။

အဆိုပြုစီမံကိန်းသည် ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်တွင်တည်ရှိပြီး ကြာနီကန်ကျေးရွာ၊ ကျူချောင်းကျေးရွာနှင့် လေးထောင့်ကန်ကျေးရွာဟု ခေါ်တွင်သည့် ကျေးရွာ ၃ ရွာအား တို့အား စီမံကိန်းသက်ရောက်နယ်မြေတွင်း သတ်မှတ်တွေ့ရှိရပါသည်။ စီမံကိန်းနေရာမှ ၀.၇ ကီလိုမီတာအကွာတွင် တည်ရှိသော ကြာနီကန်ကျေးရွာ၊ ၀.၈ ကီလိုမီတာအကွာတွင် တည်ရှိသော ကျူချောင်းကျေးရွာ၊ ၁.၈ ကီလိုမီတာအကွာတွင် တည်ရှိသော လေးထောင့်ကန်ကျေးရွာများအား စီမံကိန်းမှ အဓိက သက်ရောက်နယ်မြေအဖြစ် သတ်မှတ်ပြီး စီမံကိန်းလုပ်ငန်းများနှင့် စီမံကိန်းမှ အဓိက သက်ရောက်နိုင်သော ကြာနီကန်ကျေးရွာ၊ ကျူချောင်းကျေးရွာ၊ နှင့် လေးထောင့်ကန်ကျေးရွာတို့မှ ပြည်သူများအား စီမံကိန်းမှသက်ရောက်မှုများအဖြစ် စဉ်းစားသတ်မှတ်ထားပါသည်။

၉.၁။ လူထုတွေ့ဆုံဆွေးနွေးခြင်း

(က) နယ်ပယ်တိုင်းတာသတ်မှတ်သည့် အဆင့်တွင်း လူထုတွေ့ဆုံဆွေးနွေးခြင်းလုပ်ငန်းစဉ်

မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်သည် ဒဂုံမြို့သစ် (အရှေ့ပိုင်း)မြို့နယ်တွင် တည်ရှိသော တနေ့လျှင် တန် ၅,၀၀၀ ထုတ်လုပ်နိုင်သော ဘီလပ်မြေကြိုတံခွဲစက်ရုံအတွက် လူထုတွေ့ဆုံဆွေးနွေးပွဲကို ဆောင်ရွက်ခဲ့ပါသည်။ အစိုးရဌာနများ ဖြစ်သည့် မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဌာန၊ မြို့နယ်စည်ပင်သာယာရေးကော်မတီ၊ မြို့နယ်လျှပ်စစ် ဓါတ်အားပေးရေး ကော်ပိုရေးရှင်း၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ မြို့နယ်ရဲစခန်း၊ မြို့နယ်လမ်းဦးစီးဌာနနှင့် မြို့နယ် မီးသတ်ဌာနတို့နှင့် ၂၀၁၉ခုနှစ်၊ ဒီဇင်ဘာလမှ ၂၀၂၀ခုနှစ်၊ ဇန်နဝါရီလအထိ သီးခြားစီ တွေ့ဆုံဆွေးနွေးခဲ့ပြီး သဘောထား မှတ်ချက်များရယူခဲ့ပါသည်။

ကျေးရွာအဆင့် လူထုတွေ့ဆုံပွဲအား ကြာနီကန်ကျေးရွာအုပ်ချုပ်ရေးမှူးရုံး(မလစ်ကျေးရွာအုပ်စု)၌ ၂၀၂၀ခုနှစ်၊ ဇန်နဝါရီလ၊ ၂၄ ရက်တွင် ကျင်းပဆောင်ရွက်ခဲ့ပါသည်။ ကြာနီကန်ကျေးရွာ၊ ကျူချောင်းကျေးရွာ၊ နှင့်လေးထောင့်ကန် ကျေးရွာတို့မှ ကျေးရွာနေပြည်သူများသည် တိုင်ပင်ဆွေးနွေးပွဲအား တက်ရောက်ခဲ့ကြပါသည်။ ကျေးရွာလူကြီးများ၊ ရာအိမ်မှူးများနှင့် ကျေးရွာကိုယ်စားလှယ်များနှင့် ရပ်မိရပ်ဖများမှ တက်ရောက်ကြပါသည်။ တက်ရောက်သူစုစုပေါင်း ၂၀ ယောက်ရှိရာ ၁၄ ဦးမှာ ဒေသနေကျေးရွာများမှ ဖြစ်ပြီး ၆ ဦးမှာကုမ္ပဏီများမှ ဖြစ်ပါသည်။

နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအဆင့် လူထုတွေ့ဆုံပွဲရလဒ်များ

ဇန်နဝါရီလ၊ ၂၄ ရက်၊ ၂၀၂၀ ခုနှစ်တွင် ကျင်းပခဲ့သော လူထုတွေ့ဆုံပွဲအရ အစည်းအဝေးတွင်ဆွေးနွေးတိုင်ပင်ကြစဉ် ကိစ္စအချို့ ပေါ်ထွက်ခဲ့ပြီး စီမံကိန်းဖော်ဆောင်သူမှ ဆွေးနွေးချက်များအား ပြန်လည်တုန့်ပြန်ဖြေကြားချက်များအား အောက်ဖော်ပြပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ကိစ္စရပ်များနှင့် အကြံပြုချက်များ	တုန့်ပြန်ဖြေကြားခြင်း
❖ စီမံကိန်းလုပ်ငန်းသုံးယာဉ်များ ပိုမိုများပြားလာသည့်အတွက် ယာဉ်မတော်တဆမှုဖြစ်နိုင်ခြေ	❖ စီမံကိန်းပိုင်ရှင်သည် ပတ်ဝန်းကျင်စီမံမှု အစီအစဉ်တွင် ဖော်ပြထားသည့် ယာဉ်များ အရှိန်နှုန်းအတိုင်း တိကျစွာ လိုက်နာ မောင်းနှင်စေမည် ဖြစ်ပါသည်။
❖ စက်ရုံမှ အမှုန်အမွှားများနှင့် အန္တရာယ်ရှိ ဓာတ်ငွေ့များထုတ်လွှတ်မှုကြောင့် ဒေသနေပြည်သူများ၏ ကျန်းမာရေးအပေါ်သက်ရောက်မှု	❖ စီမံကိန်းပိုင်ရှင်သည် အနီးဆုံးနေထိုင်သူများအား ကျန်းမာရေး သက်ရောက်မှု လျော့ချရန်အတွက် အမျိုးသား ပတ်ဝန်းကျင်အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်အား တိကျစွာ လိုက်နာမည်ဖြစ်ပါသည်။
❖ လမ်းတည်ဆောက်ခြင်းနှင့် ဂျန်နရေတာများလည်ပတ်ခြင်းမှ ထွက်ရှိလာသည့် ဆူညံသံသည် သက်ကြီးရွယ်အိုများနှင့် ဘုန်းကြီးများကဲ့သို့ သက်ရောက်ခံများအား အနှောင့်အယှက်ဖြစ်မှု	❖ စီမံကိန်းပိုင်ရှင်သည် လမ်းတည်ဆောက်ရေးတွင် အသုံးပြုသော ယာဉ်နှင့် စက်များအား ကောင်းစွာ ပြုပြင်ထိန်းသိမ်းမည်ဖြစ်ပြီး ဆူညံသံထွက်ပေါ်မှု လျော့ချရန်အတွက် ညအချိန် အလုပ်လုပ်ကိုင်ခြင်းအား ရှောင်ရှားမည် ဖြစ်ပါသည်။



<p>❖ စက်ရုံလည်ပတ်ခြင်းမှ ဆူညံသံထွက်ပေါ်နိုင်ခြေ</p>	<p>❖ လုပ်ငန်းလည်ပတ်စဉ်အတွင်း ဆူညံသံသက်ရောက်မှုကို လျော့ချရန် ဆူညံသံ ထိန်းချုပ်သည့် နည်းလမ်းများအား ဘိလပ်မြေ ကြိုတင်ခွဲစက်ရုံတွင် အသုံးပြုသွားမည်ဖြစ်ပါသည်။</p>
<p>❖ ပွင့်လင်းမြင်သာမှုမရှိခြင်း၊</p>	<p>❖ စီမံကိန်းဖော်ဆောင်သူသည် စီမံကိန်း အကြောင်းအရာများကို လုံလောက်စွာ အချိန်နှင့်တပြေးညီ ဒေသနေပြည်သူများထံသို့ ပေးပို့နိုင်ရန် စီစဉ်မည်ဖြစ်ပါသည်။</p>
<p>❖ စီမံကိန်းလုပ်ငန်းမှ စွန့်ပစ်ရေ စွန့်ထုတ်ခြင်းကြောင့် တိရိစ္ဆာန်မွေးမြူရေးပေါ် အကျိုးသက်ရောက်မှု နှင့် စီမံကိန်းလုပ်ငန်းမှ စက်ယန္တရားများ၏ တုန်ခါခြင်းကြောင့် တိရိစ္ဆာန်များ မျိုးပွားမှုပေါ် အကျိုး သက်ရောက်မှု၊</p>	<p>❖ ဘေးအန္တရာယ်အန္တရာယ်ပတ်ဝန်းကျင်သို့ ရေဆိုးများ တိုက်ရိုက်စွန့်ပစ်ခြင်းကိုရှောင်ရှားရန်အတွက် ရေဆိုးသန့်စင်သည့် စနစ်အား ပါဝင်အသုံးပြုမည် ဖြစ်ပါသည်။ စီမံကိန်းဖော်ဆောင်သူသည် တုန်ခါမှု အတွက် ရေးဆွဲထားသည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အား လိုက်နာမည်ဖြစ်ပါသည်။</p>
<p>❖ စက်ရုံမှထုတ်လွှတ်မှုများကြောင့် လူနေဧရိယာများသို့ လေထုညစ်ညမ်း စေမည့်အကြောင်းနှင့် အလုပ်သမားများ၏ လူမှုရေး ပြဿနာများ</p>	<p>❖ စီမံကိန်းဖော်ဆောင်သူသည် လေထု ညစ်ညမ်းမှုအား စီမံခန့်ခွဲရန်အတွက် အမျိုးသား ပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်အား လိုက်နာမည်ဖြစ်ပါသည်။ အလုပ်သမားများ၏ လူမှုရေးပြဿနာများအား ရှောင်ရှားရန်အတွက် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ပါဝင်သည့် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်အား လိုက်နာသွားမည် ဖြစ်ပါသည်။</p>

(ခ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့်အတွင်း လူထုတွေ့ဆုံဆွေးနွေးခြင်းလုပ်ငန်းစဉ်

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အဆင့်တွင် မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်သည် ဒဂုံမြို့သစ် (အရှေ့ပိုင်း) မြို့နယ်တွင် တည်ရှိသော တနေ့လျှင် တန် ၅,၀၀၀ ထုတ်လုပ်နိုင်သော ဘိလပ်မြေကြိုတင်ခွဲစက်ရုံအတွက် လူထုတွေ့ဆုံ ဆွေးနွေးပွဲကို ဆောင်ရွက်ခဲ့ပါသည်။ အစိုးရဌာနများဖြစ်သည့် မြို့နယ်အထွေထွေအုပ်ချုပ်ရေးဌာန နှင့် ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာန တို့နှင့် ၂၀၂၂ခုနှစ်၊ ဇူလိုင်လအတွင်း သီးခြားစီ တွေ့ဆုံဆွေးနွေးခဲ့ပြီး သဘောထား မှတ်ချက်များရယူခဲ့ပါသည်။

ကျေးရွာအဆင့် လူထုတွေ့ဆုံပွဲအား ကြာနီကန်ကျေးရွာအုပ်ချုပ်ရေးမှူးရုံး(မလစ်ကျေးရွာအုပ်စု)၌ ၂၀၂၂ခုနှစ်၊ ဇူလိုင်လ၊ ၂၆ ရက်တွင် ကျင်းပဆောင်ရွက်ခဲ့ပါသည်။ ကြာနီကန်ကျေးရွာ၊ ကျူချောင်းကျေးရွာ၊ နှင့်လေးထောင့်ကန်ကျေးရွာတို့မှ ကျေးရွာနေပြည်သူများသည် တိုင်ပင်ဆွေးနွေးပွဲအား တက်ရောက်ခဲ့ကြပါသည်။ ကျေးရွာလူကြီးများ၊ ရာအိမ်မှူးများနှင့် ကျေးရွာကိုယ်စားလှယ်များနှင့် ရပ်မိရပ်ဖများမှ တက်ရောက်ကြပါသည်။ တက်ရောက်သူစုစုပေါင်း ၃၈ ယောက်ရှိရာ ၃၂ ဦးမှာ ဒေသနေကျေးရွာများမှ ဖြစ်ပြီး ၆ ဦးမှာကုမ္ပဏီများမှ ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့်အတွင်း လူထုတွေ့ဆုံဆွေးနွေးခြင်းလုပ်ငန်းစဉ် အကျဉ်းချုပ်

ဇူလိုင်လ၊ ၂၆ ရက်၊ ၂၀၂၂ ခုနှစ်တွင် ကျင်းပခဲ့သော လူထုတွေ့ဆုံပွဲအရ အစည်းအဝေးတွင်ဆွေးနွေးတိုင်ပင်ကြစဉ် ကိစ္စအချို့ ပေါ်ထွက်ခဲ့ပြီး စီမံကိန်းဖော်ဆောင်သူမှ ဆွေးနွေးချက်များအား ပြန်လည်တုံ့ပြန်ဖြေကြားချက်များအား အောက်ဖော်ပြပါ ဇယားတွင် ဖော်ပြထားပါသည်။

ကိစ္စရပ်များနှင့် အကြံပြုချက်များ	တုံ့ပြန်ဖြေကြားခြင်း
❖ ဒေသတွင်းပြည်သူများအတွက် အလုပ်အကိုင်နှင့် စီးပွားရေး အခွင့်အလမ်း	❖ မြန်မာသံတော်မြတ်သည် ဒေသတွင်း အလုပ်သမား ဌားရမ်းအသုံးပြုမည့် အစီအစဉ်အား ရေးဆွဲ ဆောင်ရွက်မည် ဖြစ်ပါသည်။
❖ ရေဆိုးစွန့်ပစ်ခြင်း	❖ စီမံကိန်းသည် ရုံးခန်းများ၊ စားသောက်တန်းများနှင့် အလုပ်သမားအဆောင်များမှ စွန့်ပစ်ရေအား ရေစုကန်တည်ဆောက်ပြီး အနည်ထိုင်စနစ် အသုံးပြုခြင်းဖြင့် စွန့်ပစ်သွားမည်ဖြစ်ပါသည်။
❖ အလုပ်သမားများရောက်ရှိနေထိုင်မှုနှင့် ဒေသနေပြည်သူများ၏လုံခြုံရေး	❖ စီမံကိန်းအဆိုပြုသူသည် သက်ရောက်မှုရှိသော လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေး မူဝါဒများကို ပြင်ဆင်မည်ဖြစ်ပါသည်။
❖ ကျေးရွာများ အတွက် မီးသတ်ရေကန်ထားရှိရေး	❖ စီမံကိန်းအဆိုပြုသူသည် ကျေးရွာ၏ မီးဘေး လုံခြုံရေးအတွက် မီးသတ်ရေကန်ထားရှိရန် ထောက်ပံ့ ဆောင်ရွက်ပေးမည်ဖြစ်ပါသည်။
❖ သတင်းပို့ဆက်သွယ်ရေးအားနည်းမှု	❖ စီမံကိန်းသည် ဒေသပြည်သူများ၏ နစ်နာမှု တိုင်ကြားခြင်းများကို လက်ခံဖြေရှင်းပေးရန်နှင့် ဆက်ဆံရေး အရာရှိတစ်ဦးထားရှိမည်ဖြစ်ပါသည်။
❖ ဒေသလုံခြုံရေးနှင့် အလုပ်အကိုင် ခန့်ထားရေး အတွက် ကုမ္ပဏီနှင့် ဒေသပြည်သူများဖြင့် ဖွဲ့စည်းထားသော အထွေထွေကော်မတီ တည်ထောင်ရန်	❖ စီမံကိန်းပိုင်ရှင်သည် စီမံကိန်းနေရာတွင် တာဝန်ယူ ဆောင်ရွက်မည့် ဆက်ဆံရေးအရာရှိသည် အလုပ်သမား စုဆောင်းရေးနှင့် အလုပ်ခန့်ထားရေး အတွက် သင့်တော်သည့် လုပ်ငန်းအစီအစဉ်များကို သဘောတူ ဆောင်ရွက်ရန် ကျေးရွာ ခေါင်းဆောင်များ နှင့် ဒေသတွင် အစိုးရ အာဏာရှိ သူများနှင့် နီးကပ်စွာ ပူးပေါင်းဆောင်ရွက်မည်ကို သေချာစေမည်ဖြစ်ပါသည်။



၈.၂။ စီမံကိန်းဆိုင်ရာသတင်းအချက်အလက်ဖြန့်ဝေခြင်း

စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက် ဖြန့်ဝေခြင်း သည် စိတ်ပါဝင်စားသူများနှင့် သက်ရောက်မှုရှိသော အဖွဲ့များထံ သတင်းအချက်အလက်များ လက်လှမ်းမီစေရန်အတွက် တရားဝင် နည်းလမ်းတစ်ခုဖြစ်ပါသည်။

စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက် ဖြန့်ဝေခြင်းကို ၃ ကြိမ် ပြုလုပ်မည်ဖြစ်သည်။

၁။ နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအစီရင်ခံစာ ပြင်ဆင်နေစဉ်အတွင်း စီမံကိန်းဆိုင်ရာ သတင်း အချက်အလက် ဖြန့်ဝေခြင်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း ၂၀၁၅ အပိုဒ် ၅၀ကို လိုက်နာဆောင်ရွက်မည် ဖြစ်ပါသည်။ မြန်မာသံတော်မြတ်သည် အဆိုပြုစီမံကိန်း၏ သတင်း အချက်အလက်များအား ပြည်သူနှင့် အရပ်ဘက်အဖွဲ့အစည်းများအား ၂၀၂၀ ခုနှစ် ဇန်နဝါရီလ ၂၄ ရက်နေ့တွင် ကျင်းပသော ပြည်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်းနှင့် ဒေသတွင်း သတင်းစာနှစ်ခုမှ တစ်ဆင့် ဖြန့်ဝေခဲ့သည့်အပြင် စီမံကိန်းအကျဉ်းချုပ်ကိုလည်း ဖြန့်ဝေခဲ့ပါသည်။

၂။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာ ပြင်ဆင်နေစဉ်အတွင်း စီမံကိန်းဆိုင်ရာ သတင်း အချက်အလက် ဖြန့်ဝေခြင်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း ၂၀၁၅ အပိုဒ် ၅၀ ကို လိုက်နာ ဆောင်ရွက်မည် ဖြစ်ပါသည်။ မြန်မာသံတော်မြတ်သည် အဆိုပြု စီမံကိန်း၏ သက်ဆိုင်ရာ သတင်းအချက်အလက်များနှင့် ၎င်း၏ ဖြစ်ပေါ်နိုင်သော ဆိုးကျိုး သက်ရောက်မှုများအား ပြည်သူနှင့် အရပ်ဖက် အဖွဲ့အစည်းများအား တွေ့ဆုံဆွေးနွေးပွဲများ၊ အုပ်စုဖွဲ့ ဆွေးနွေးပွဲများနှင့် အဓိကသတင်းရယူသည့် မေးမြန်းခြင်းများ မှတစ်ဆင့် ၂၀၂၂ ခုနှစ် ဇူလိုင်လ ၂၆ ရက်နေ့တွင် ထုတ်ဖော်ပြောကြားခဲ့ပြီး သက်ဆိုင်ရာ ကျေးရွာ အုပ်ချုပ်ရေးမှူးရုံးများတွင် စီမံကိန်းအကျဉ်းချုပ်ကို ၂၀၂၂ ခုနှစ် နိုဝင်ဘာလ ၂၅ ရက်နေ့တွင် ဖြန့်ဝေထားရှိ ခဲ့ပါသည်။

၃။ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာ ပြင်ဆင်နေစဉ်အတွင်း စီမံကိန်းဆိုင်ရာ သတင်းအချက်အလက် ဖြန့်ဝေခြင်းသည် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း ၂၀၁၅ အပိုဒ် ၆၅ ကို လိုက်နာ ဆောင်ရွက်မည် ဖြစ်ပါသည်။

၉။ နိဂုံးချုပ်နှင့် အကြံပြုချက်

ဘိလပ်မြေကြိုတ်ခွဲထုတ်လုပ်သည့်စီမံကိန်းအတွက် ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာကို မြန်မာနိုင်ငံတွင် ထုတ်ပြန်ထားသော ၂၀၁၅ ခုနှစ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့်အညီ ရေးသားပြုစု ထားပါသည်။ စီမံကိန်း လုပ်ဆောင်ချက်များကို စနစ်တကျ ခြုံငုံသုံးသပ်ခြင်းဖြင့် ဖြစ်နိုင်ချေရှိသော သက်ရောက်မှုများ သတ်မှတ်ဖော်ထုတ်ထားသော ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ချက်တွင် စီမံကိန်း လုပ်ဆောင်ချက်များ၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုဝန်းကျင်ဆိုင်ရာ အရင်းအမြစ်များ (သို့) သက်ရောက်ခံများနှင့် အပြန်အလှန် သက်ရောက်မှုများ ကိုပါ ထည့်သွင်း စဉ်းစားထားပါသည်။

စီမံကိန်း ဆောင်ရွက်ချိန်တွင် ဖြစ်ပေါ်နိုင်သော လူမှုဝန်းကျင်ဆိုင်ရာ သက်ရောက်မှုများမှာလည်း အနည်းငယ်သော သက်ရောက်မှုထက် မပိုနိုင်သည့်အပြင် အကြံပြုထားသော လျော့ပါးစေရေး နည်းလမ်းများကို ကောင်းမွန်စွာ အကောင်အထည်ဖော် ဆောင်ရွက်စေခြင်းဖြင့် ပတ်ဝန်းကျင်ထိခိုက် မှုဆန်းစစ်ခြင်း အစီရင်ခံစာကို အဆုံးသတ် ထားပါသည်။

2. INTRODUCTION

2.1 Project Overview

Although Yangon is not the capital of Myanmar, it still remains as an economic hub because of potentials of international investments. Due to numerous developments projects like Industrial Projects, Housing Projects and Infrastructure development projects have been implementing, the raw material (cement) is more required for construction. Myanmar Than Taw Myat Co., Ltd. which is the cement production group that occupies big portion of the market, endeavors to fulfil the market demand quickly without time constraint. Hence, Myanmar Than Taw Myat Co., Ltd. applied investment permission to Myanmar Investment Commission for the development of Cement Grinding Plant in Yangon. Myanmar Than Taw Myat Company has received an investment permit on 8th August 2019 (Appendix 1) issued by Myanmar Investment Commission (MIC).

Myanmar Than Taw Myat Company Limited has currently produced 5,000 metric tons of cement per day, 24 hours (1.5 million tons of cement per year) including the process such as grinding and packing in Kyaukse Industrial Zone. A joint venture between Than Taw Myat Co., Ltd. and China's Yunnan Jiansheng Investment Co., Ltd., the company was first set up to establish 5,000 metric tons of cement grinding plant as the new name of Myanmar Than Taw Myat Co., Ltd. with the share ratio of (30:70) for the cement production. The type of investment is Joint Venture and the total amount of capital is equivalent in kyat of US\$ 72.4 Million with 24-month construction period and 24-month extension of construction period. It shall provide more than 709 job opportunities for local people during operation. It will increase tax revenue for the country and promote the development of local transportation, automobile maintenance and catering. The raw materials for the plant are clinker and gypsum imported from Myanmar Than Taw Myat Cement Plant (Kyaukse Township) Mandalay in Myanmar by waterway and carried to the cement grinding plant by trucks from Dagon port.

According to Section 7 of the Environmental Conservation Law and Articles 52 and 53 of the Environmental Conservation Rules of the Republic of the Union of Myanmar, all Projects undertaken in Myanmar which have the potential to cause significant environmental and social impacts are required to undertake an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) and to obtain an Environmental Compliance Certificate (ECC) in accordance with the Environmental Impact Assessment (EIA) Procedure ("the Procedure"). Myanmar Than Taw Myat Co., Ltd., as the project proponent, has appointed Sustainable Environment Myanmar Co., Ltd. as the third-party Environmental Assessment Practitioner (EAP) to undertake the EIA for the proposed development and construction and installation of associated infrastructure.

2.1.1 Project Location and Area

Myanmar Than Taw Myat cement grinding plant is located in the northwest of the Dagon Myothit (East) Township and the project area extent is approximately 49.4 acres.

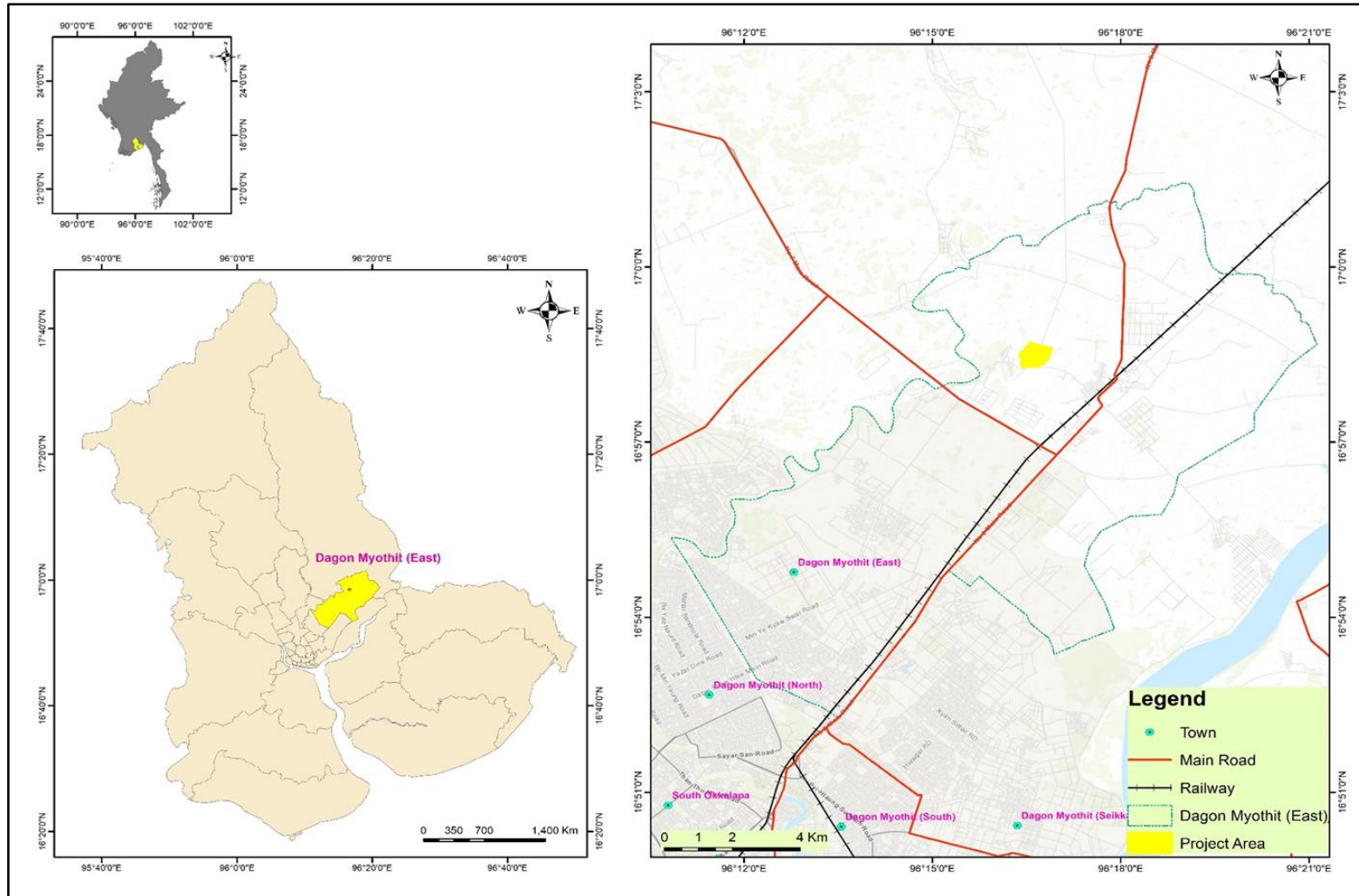


Figure 2.1 Location of Cement Grinding Plant

2.1.2 Project Period

Myanmar Than Taw Myat Company has received a permit to produce cement production on 8th August 2019 (Appendix 1) issued by the Myanmar Investment Commission.

Project Phase	permit
Construction Phase	2 years
Construction Phase (Extension)	1year + 1 year
Operation Phase	30 years
Decomposition Phase	2 years

2.2 Presentation of the Project Proponent and ESIA Authors

2.2.1 Presentation of the Project Proponent



Myanmar Than Taw Myat Co., Ltd.

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E-mail:	thantawmyat@gmail.com
Contact Person:	U Aung Ko Sett
Designation:	Assistant Director

2.2.2 Presentation of ESIA Authors

Implementation of Preliminary EIA Assessment -

Leading Organization - Sustainable Environment Myanmar Co., Ltd. (SEM)

**Sustainable Environment
Myanmar Co., Ltd. (SEM)**



Secondary Organization	Sustainable Environment Myanmar Co., Ltd (SEM)
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Sustainable Environment Myanmar Company Ltd. (SEM) is one of the subsidiary company of Resource and Environment Myanmar Company Ltd. (REM). REM provides services for Environmental, Social and Health Impact Assessment of development projects of private and government enterprises. We have also extended our services to geotechnical engineering, geological and hydrogeological investigation, land surveying, geo-hazard assessment including potential landslide hazard mapping, deterministic and probabilistic earthquake hazard assessment and flood hazard mapping.

Sustainable Environment Myanmar Co., Ltd. has the resources and capability to handle environmental management issues as per the provisions of the Environmental Conservation Law, 2012. Environmental work includes the following:

1. Environmental Audit (regarding ongoing projects)
2. Environmental Impact Assessments (regarding new projects)
3. Environmental & Social Management Plan
4. Environmental Monitoring

Secondary Organization - Resource & Environment Myanmar Co., Ltd. (REM)

(REM) is located in the city of Yangon, Myanmar, in the country it is a leading resources and environment consulting firm that composed of geoscientists, engineers, biologist, botanist, socio-economic experts, cultural heritage experts, environmental engineers and physical resources management specialist.

**Resource & Environment
Myanmar Co., Ltd.**



Leading Organization	Resource & Environment Myanmar Co., Ltd (REM)
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The member of EIA team and their responsibilities are shown in the following.



Organization	Name of Expert	Position	Background	Years of Experience	Responsibility
<i>Sustainable Environment Myanmar Co., Ltd.</i>	Chit Myo Lwin	Environmental Expert	<p>Master of Engineering in Photogrammetry and Remote Sensing (Wuhan University, China)</p> <p>MSc (Geo-Informatics, Burapha University, Thailand)</p> <p>BSc (Geology)</p> <p>Dip. in Geographic Information Systems</p> <p>Dip. in Environmental Studies</p> <p>Dip. in Project Management (ICM, UK)</p> <p>Cert. in Environmental and Social Impact Assessment AIT-VT, Vietnam</p>	11 years	Overall Management and Review EIA report
	Min Min Oo	Environmental Expert	<p>Bachelor of Engineering (Chemical) Environmental Engineering & Management (Myanmar Engineering Society)</p> <p>Advanced Environmental Engineering & Management (Myanmar Engineering Society)</p> <p>Environmental Studies (Myanmar Environment Institute)</p> <p>Total Water Treatment Training Modules Program, Raw Water Treatment (Myanmar Engineering Society & i-Chem Academy)</p>	8 years	Air Quality Modelling, air quality impact assessment and environmental monitoring plan



			<p>Total Water Treatment Training Modules Program, Waste Water Treatment – Physical, Chemical Process (PCP) (Myanmar Engineering Society & i-Chem Academy)</p> <p>Applied GIS Mapping (Imago Global Co., Ltd)</p> <p>Win OSHE Safety Academy</p> <p>Air Dispersion Modeling using AERMOD in Singapore</p> <p>Remote Sensing for Conservation & Biodiversity (NASA’s Applied Remote Sensing Training Program (ARSET))</p> <p>AERMOD & CALPUFF Air Dispersion Modeling in Hyderabad, India (Lakes Environmental)</p>		
	Arkar Phyo	Environmental Expert	<p>Bachelor of Engineering (Mining)</p> <p>Certificate in Occupational Safety and Health Specialist (Win OSHE Safety Academy)</p> <p>Technical Writing (ICML Institute for Communication Management and Leadership)</p> <p>Conducting and Writing Environmental Impact Assessment Reports for EIA Practitioners in Myanmar (United Nations Development Programme Myanmar and Myanmar Koei International Ltd.)</p>	7 years	Preparation of Project Description, Risk assessment and health and safety



			<p>Certificate in Using Earth Observation to Monitor Water Budgets for River Basin Management II</p> <p>Certificate in Remote Sensing of Costal Ecosystem (NASA's Applied Remote Sensing Training)</p>		
	Myat Thitsar Naing	Social Expert	<p>B.A (Hons), M.A. (English)</p> <p>Certificate in EIA (A.I.T. Vietnam)</p> <p>Diploma in Human Resource Management by IQN, UK</p> <p>Certificate in Environmental Studies by Myanmar Environmental Institute</p> <p>Certificate in Basic concepts and application of statistic using SPSS software</p> <p>Diploma in Environmental Studies, University of Yangon</p> <p>Certificate in Project Management, Myanmar-Japan Center</p> <p>Certificate in Social Impact Assessment and Management, IFC</p> <p>Certificate in Land Acquisition and Resettlement, IFC</p>	7 years	Public Consultation and Socio-economic baseline report
	Nan Cherry Thein	Social Expert	<p>B.A (Hons), M.A. (English)</p> <p>Diploma in Business Management (ICM (UK))</p>	7 years	Public Consultation, Socio-economic baseline report and Social Impact Assessment



			<p>Diploma in Environmental Studies (Yangon University)</p> <p>Certificate in Involuntary Resettlement (AIT Vietnam)</p> <p>Certificate in Environmental Studies (Myanmar Environment Institute MEI)</p> <p>Certificate in Human Resource Management (Myanmar Japan Center MJC)</p> <p>Certificate in Project Management (Myanmar Japan Center MJC)</p> <p>Certificate of Occupational First Aid Course (Win-OHS)</p> <p>Certificate in Social Impact Assessment and Management, IFC</p> <p>Certificate in Land Acquisition and Resettlement, IFC</p>		
	Naing Naing Win	Environmental Expert	<p>M.Sc. (Zoology)</p> <p>Certificate in Biodiversity Impact Assessment (A.I.T. Vietnam)</p>	10 year	Biodiversity (Fauna) Baseline Data collection and Biodiversity Impact Assessment
	Thet Naing Aung	Environmental Expert	<p>B.Sc. (Zoology)</p> <p>Certificate in Biodiversity Impact Assessment (A.I.T. Vietnam)</p>	10 years	Biodiversity (Fauna) Baseline Data collection and preparation of Baseline report
	Than Than Htay	Environmental Expert	<p>Master of Science (Zoology)</p> <p>Bachelor of Science (Zoology)</p>	10 years	Biodiversity Baseline Data collection and preparation of Baseline report



			Certificate in Biodiversity Impact Assessment (A.I.T. Vietnam)		
	Lwin Moe	GIS Technician	Bachelor of Art (Geography)	6 years	GIS and Mapping
	Kyaw Si Thu	Environmental Physical Consultant	Master of Science (Petroleum Geology)	4 years	Physical Baseline Data collection and preparation of Baseline report
Resource and Environment Myanmar Co., Ltd.	Myo Thura	Environmental Expert	B.Sc. (Geology)	10 years	Noise modelling and noise impact assessment
	Thandar Htun	Environmental Expert	Master of Science (Geology) Bachelor of Science (Geology) Diploma in Global English Certificate in Environmental and Social Impact Assessment (AIT-VT-Vietnam)	7 years	Water, soil, and geology impact assessment
	Ei Ei Win Myat	Legal Expert	L.L.B, Dip. In Business Law	4 years	Legal Chapter

2.3 Proponents Commitments

Myanmar Than Taw Myat Company Limited in respect of the “Cement Grinding Plant in Dagon Myothit (East) Township, Yangon Region” will at all times comply fully with any and all plans and the various components thereof, including without limitation, impact avoidance, mitigation, and remediation measures, and with respect to such commitments, obligations, plans and measures related to the development, operation and closure of the project, and any circumstance in which work done or to be done, or services performed or to be performed, in connection with the project’s development.

We do state that the EIA report, which has been prepared and finalized by Sustainable Environment Myanmar Co., Ltd. comply fully with EIA procedure (December 2015) and other relevant laws/rules.

Myanmar Than Taw Myat and Sustainable Environment Myanmar (SEM) state that;

- The EIA report is accurate and complete, and;
- The EIA report has been prepared in strict compliance with applicable laws, rules, regulations, and procedures in force.

When the proposed project will be operated, Myanmar Than Taw Myat Co., Ltd will fully implement the Environmental Management Plan that prepared by Sustainable Environment Myanmar Co., Ltd.



Sai Myo Thant
Managing Director
Than Taw Myat Co., Ltd.

2.4 Third Party Consultant Confirmation

Sustainable Environment Myanmar Co., Ltd. (SEM); a local environmental consultant firm, conducted Environmental Impact Assessment Report for Myanmar Than Taw Myat Company Limited in compliance with EIA Procedure (December 2015) and other relevant laws/rules and formally submitted to the Environmental Conservation Department (ECD) for final approval.

We do state, to the best of our knowledge at the time of report preparation, that

- the accuracy and completeness of the EIA Report,
- that the EIA Report has been prepared in strict compliance with applicable laws including this Procedure, and

We also consulted to Myanmar Than Taw Myat Company Limited to undertake that;

Myanmar Than Taw Myat Company Limited in respect of the “Cement Grinding Plant in Dagon Myothit (East) Township, Yangon Region” will at all times comply fully with any and all plans and the various components thereof, including without limitation, impact avoidance, mitigation, and remediation measures, and with respect to such commitments, obligations, plans and measures related to the development, operation and closure of the project, and any circumstance in which work done or to be done, or services performed or to be performed, in connection with the project’s development.



Nyomie Razak

Director

Sustainable Environment Myanmar Co., Ltd. (SEM)

3. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Corporate Environmental and Social Policies

Environmental and social impact assessment means systematic identification and assessment of potential adverse impacts including cumulative impacts of the proposed project, systematic assessment of feasible project alternatives; and determination of appropriate measures to mitigate potential adverse impacts. EIA Report shall include an EMP. The primary objective of the environmental management and monitoring is to record environmental impacts resulting from the project activities and to ensure implementation of the “mitigation measures” identified earlier in order to reduce adverse impacts and enhance positive impacts from specific project activities. The company shall undertake the following policy and legislation.

EIA Policy

- To minimize the environmental impacts
- To control noise pollution and air pollution
- To dispose solid waste systematically
- To maintain oil, fuel, and lubricant systematically
- To organize monitoring committee
- To allocate budget for EIA operating system, according to EIA procedure

SIA Policy

- To avoid agricultural land during operation
- To maintain and improve local transportation
- To avoid historical and cultural buildings of rural area
- To implement CSR programs

HIA Policy

- To control air pollution in the surrounding area
- To minimize noise pollution in and around the project area
- To operate health insurance for local people

EMP Policy

- To follow up the environmental impacts assessment
- To prepare management plan
- To operate mitigation activities that describe in EMP

3.2 Policy and Legal Framework

The Union of Republic of Myanmar adopted a series of policies in order to make rational use of water, land, forest, mineral resources, marine and other natural resources. Thus, protect resources and prevent environmental degradation.

3.2.1 National Environmental Policy of Myanmar

On the occasion of the World Environment Day 2019, the Government of Myanmar launched the National Environmental Policy of Myanmar consisting of two new policies that will guide Myanmar’s environmental management and climate change strategy. Figure 3.1 shows the new Myanmar National Environmental Policy.

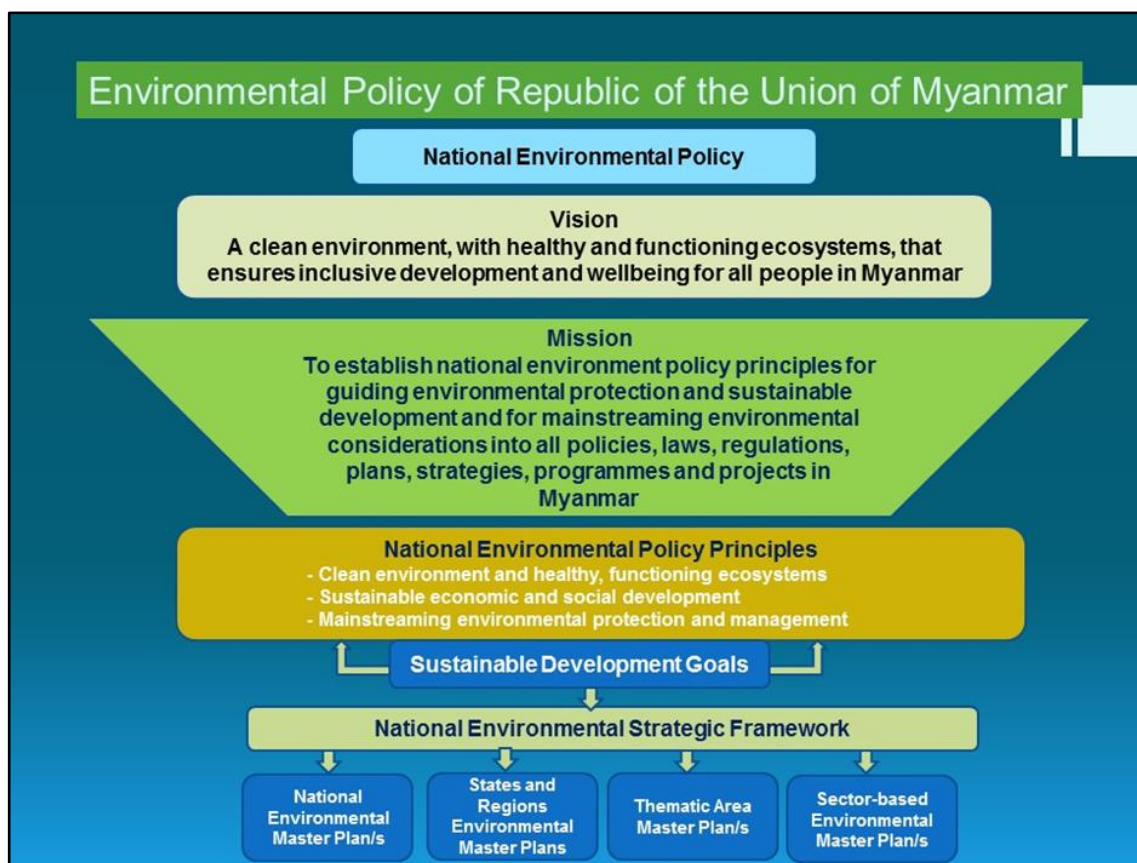


Figure 3.1 National Environmental Policy of Myanmar

3.3 Proponent’s Contractual and other Commitments

The followings are the commitments of Myanmar Than Taw Myat Co., Ltd for cement grinding project;

- Myanmar Than Taw Myat Co., Ltd confirms to take responsibility for implementing environmental mitigation measures in accordance with the commitment in the Environmental Management Plan that mentioned in the EIA report.
- The company will fully comply with existing rules and regulations concerning environment both on social and environmental aspect in Myanmar.
- Operation by Myanmar Than Taw Myat Co., Ltd and its contractors will at all times comply fully with the commitments, mitigation measures, and plans in EIA report.
- Myanmar Than Taw Myat Co., Ltd will submit the Environmental Monitoring Report during construction and operation of the proposed project to Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation.

3.4 Institutional Framework

The former Ministry of Environment and Forestry and the Ministry of Mines were reorganized as The Ministry of Natural Resources and Environmental Conservation by Notification No. (1/2016) of President's Office on March 30, 2016. Hence, MONREC has been acting as focal coordinating body for country's overall environmental management and environmental matters. On the other hand, in collaboration with international financial institutions and United Nations organizations, MONREC has also been carrying out the activities of preparing environmental regulations such as EIA rules, environmental quality standards and other environmental related issues. Regarding the Ministry, the forestry sector, the mining sector is described in two parts. The organization chart of MONREC is shown in Figure 3.2. In 2016, MOECAF has been changed to Ministry of Natural Resources and Environmental Conservation (MONREC). Hence, MONREC has been acting as focal coordinating body for country's overall environmental management and environmental matters.

Forest Sector: Ministry of Forestry was reformed as Ministry of Environmental Conservation and Forestry (MOECAF) in 2011 as a national level agency to coordinate and handle environmental related issues and matters including the implementation of international environmental agreements signed by government, law enforcements and information dissemination. In 2016, it was renamed as the Ministry of Natural Resources and Environmental Conservation (MONREC). Five Departments and an Enterprise under forestry sector are:

Five departments and an enterprise under the MONREC has been organized, namely,

1. Planning and Statistics Department
2. Forest Department
3. Dry zone Greening Department
4. Environmental Conservation Department
5. Survey Department
6. Myanmar Timber Enterprise

Environmental Conservation Department: Environmental Conservation Department (ECD) was newly created in October 11, 2012 as one of the institutions of MONREC to take responsibility for the effective implementation of environmental conservation and management in Myanmar. The objectives of forming ECD are,

- To implement the national environment policy
- To develop short, medium- and long-term strategy, policy and planning for the integration of environmental consideration into the sustainable development process
- To manage natural resources conservation and sustainable utilization
- To manage the pollution control on water, air and land for environmental sustainability
- To cooperate with government organization, civil societies, private and international organizations for the environmental affairs.

3.5 Relevant Legislations Related to EIA and Environmental Management of the Project

The legislative framework applicable to this project is diverse and consists of a number of Acts and Regulations which must be complied with. A summary of the key environmental legislation and relevant policies and/or guidelines is provided in the following sections:

No	Law, Regulation or Guidelines	Applied Section
1	National Environmental Policy (2019)	National Environmental Policy (2019) builds on Myanmar's 1994 National Environmental Policy, the 1997 Myanmar Agenda 21 and the 2009 National Sustainable Development. The Government of the Republic of the Union of Myanmar recognizes the fundamental links between environmental protection, economic and social development, and poverty alleviation.
2	Environmental Conservation Law, 2012 (Section 7 (o), 14, 15,16)	Section 7 (o)- The company commits to compensate for environmental impact caused by the project, to contribute a portion of fund for obtain benefit from the natural environmental service system and to contribute a part of the benefit for using the natural resources in environmental conservation works according to Environmental Conservation Law 2012, Section 7 (o). Section 14- The project proponent commits to treat, emit, discharge and deposit the substances which cause pollution in the environment in accordance with stipulated environmental quality standards. Section 15- The project proponent shall monitor, control, manage, reduce or eliminate environmental pollution by installing on-site facility or controlling equipment.
3	Environmental Conservation Rules, 2014 (Rule 69(a) and (b))	Rule 69(a) and (b) - The project proponent shall avoid directly or indirectly discharging or emitting hazardous waste or substance which can cause impacts on the people, or which are identified as hazardous by rules and which can cause environmental pollution.
4	EIA Procedures, 2015 (Article 102 – 110, 113, 115, 117)	Article 102 to 110- The project proponent shall take responsibility for all the adverse impacts caused by the project activity or project related activity. Article 113,115 & 117 - The project proponent shall cooperate for environmental monitoring processes, environmental auditing processes undertaken by Ministry and contractor and sub-contractor on behalf of Project Proponents.
5	National Land Use Policy (2016)	The objective of this policy is to promote sustainable land use management and protection of cultural heritage areas, environment, and natural resources for the interest of all people in the country.
Guidelines		

6	National Environmental Quality (Emission) Guidelines (2015)	The project proponent shall comply National Environmental Quality (Emission) Guidelines (NEQG) formulated by MOECAAF in coordination with ADB in December 2015. It is compiled for the guideline values for general emission such as air emissions, wastewater, noise levels, odor, and those for sector-specific emission such as emission from forestry, agribusiness/food production, chemicals, oil and gas, infrastructure, general manufacturing, mining, and power. The project shall consider emissions standards in its environment impact assessment and environmental management plan.
7	National Ambient Water Quality Guidelines (in preparation)	The project proponent shall follow National Ambient Water Quality Guidelines for ambient water quality.
Forestry/Biodiversity		
8	Forest Policy 1995	The project proponent shall comply forest policy based on requirement of the project for sustainability of forest resources and biodiversity.
9	Forest Law (2018) (Section 12 and 16)	According to Section 12, the project proponent commits to obtain the prior approval of Ministry for carry out an economic activity on forest land and forest covered land at the disposal of the government. Complying Article 16, the project proponent commits to take the responsibility of establishing forest plantations or carrying out natural regeneration under a permit.
10	The Protection of Wildlife and Protected Areas Rule 2002	The project proponent will commit it to provide the sustainability of ecosystems, habitats, and biodiversity.
11	The protection of Biodiversity and Protected Area Law, 2018 (Section 39, 40 and 41)	As per section 39, 40 and 41, project proponent will commit it to protect wild life and wild plants liable to the danger of extinction and the habitats thereof and conserve natural areas.
12	The Conservation of Water Resources and Rivers Law 2006 and Amending Law 2017	The project proponent complies it for conservation and protection of the water resources and river systems avoiding water pollution for beneficial utilization by the public.
13	The Conservation of Water Resources and Rivers Rules 2013 and Amending 2015 Rule 8 (c, d, e)	According to the Rule 8 (c, d, e), the project proponent commits to protect water pollution from disposal of hazardous substances from cement plant and sewage from facilities into surrounding creek.
14	Underground Water Act (1930)	The project proponent complies it to conserve and protect underground sources of water supply.
15	Myanmar Climate Change Strategy and Master Plan 2018-2030	The long-term goal by 2030, Myanmar has achieved climate-resilience and pursued a low-carbon growth pathway to support inclusive and sustainable development.

Protection of Ethnic Nationalities and Cultural Property

16	The Protection and Preservation of Antique Objects Law, 2015. (Section – 12)	<p>It aims to implement the policy of protection and preservation of the perpetuation of antique objects and to protect and preserve antique objects so as not to deteriorate due to natural disaster or man-made destruction.</p> <p>The project company commits to comply section 12. According to section 12, the project proponent commits to inform to the relevant administrators and department when antique object is found within the project site during construction, operation and decommissioning phases.</p>
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Public Health and Safety

17	The Public Health Law (1972) (Section- 2 and 5)	<p>The project proponent will comply section 2 to protect the public health</p> <ul style="list-style-type: none"> ❖ by avoiding disposal of solid waste and sewage into resident area, ❖ by ensuring good water quality and ❖ by avoiding the emission of hazardous smoke, odor and particulate matters and noise in the surrounding area. <p>Under section 5, they also commit to cooperate with the relevant authorities for inspection if it is needed.</p>
18	The Prevention and Control of Communicable Diseases Law, 1995 (Section 3 (a) (b), 4, 9, 11)	<p>To ensure the healthy work environment and prevention the communicable diseases, the project owner will comply the followings.</p> <p>Section 3 (a) (b): The project owner will cooperate with health department for preventive practices such as vaccination for communicable disease for both young and adult.</p> <p>Section 4: The project owner will shall abide by the measures undertaken by the Department of Health when Principal Epidemic Disease or a Notifiable Disease occurs.</p> <p>Section 9: The project owner will inform promptly to the nearest health department or hospital when Principal Epidemic Disease or a Notifiable Disease occurs.</p> <p>Section 11: The project owner will accept any inspection, anytime and anywhere if it is needed.</p>
19	Traffic Safety and Motor Vehicle Management Law, 2020	<p>According to section 18 (a), the company will maintain and repair the vehicle in line with the standards set by the department to drive safely.</p> <p>In accordance with section 75 (a), (c), (e), (f),(h),(j),(k),(m), the company will made their drivers keep driving licenses with them whenever they drive in public area, avoid having expired driving license, they will not let the drivers to driver at the abnormal mental and physical situation, avoid overload, they will not allow to drive against the rules concerning crossing area, they will make their drivers to cooperate with police officer to inspect the license and make them avoid using handphones while driving and they will make every passenger including driver wear the seat belts.</p>

		<p>As per section 81(a) to (i), the company will commit to follow the restriction of driving licenses, technical restriction of vehicles and restriction of loading dangerous goods and other general restriction for drivers and vehicles for the safety at the public area.</p> <p>The company will install the noticeable vehicle registration plate issued by the department and will avoid uninstalling the plates whenever the vehicle is in public area or changing the plates of other vehicles as per section 84 (a) to (d).</p>
20	Traffic Safety and Motor Vehicle Management Rules, 2022	<p>Under section 56 (a) to (e) and, the company will commit to follow the technical guideline for the safety of the road and vehicle while driving with load.</p> <p>According to section 87 (a) to (d), the company will maintain the vehicles not to emit smokes and gases polluted to the ambient air quality by installing emission control device.</p> <p>In accordance with section 88, the company will comply the emission standard of vehicles regulated by the department.</p> <p>As per section 89, the company will manage not to have pollutant emission from the vehicle like oil leakage polluted to the water, air, soil and roads.</p> <p>Under section 261 (a), the company will ensure not to spill or drop anything on the public roads.</p> <p>In accordance with section 287 (b), the company will follow the speed restriction for downtown area and the outskirts.</p> <p>As per section 309 (a) to (c), the company will follow the technical guideline for loading safely.</p>
Pollution Prevention		
21	Prevention of Hazard from Chemicals and Related Substances Law (2013)	<p>Establishes the licensing and approval system for the use of chemicals. Prohibited the operation of a chemical substances business without a license and prohibits the use of prohibited and unregistered chemicals or related substances.</p>
Investment Laws		
22	The Myanmar Investment Law, 2016 Section 50, 51, 72, 75	<p>According to Myanmar Investment Law, 2016 (Section 50, 51, 72, 75), the project proponent commits to</p> <ul style="list-style-type: none"> - To act in compliance with land use rights according to the section 50, - To comply with the provisions on the appointment of staff and workers mentioned in section 51, - To inform the commission if the permitted investment is transferred and rent to another one during the term of business mentioned in section 72, - To comply with the provisions of the income exemption mentioned in section 75.

23	<p>Myanmar Investment Rules, 2017</p> <p>Rule 202, 203, 206, 212</p>	<p>The project company commits to comply with rule 202, 203, 206 and 212 as follows.</p> <p>To comply with rule 202, the project company shall comply with all terms and conditions in the permit and other applicable laws when the investment is carried out.</p> <p>The project company fully assist the negotiation processes with the relevant government departments and government organizations for the affected persons due to proposed project according to Rule 203.</p> <p>The project company commits to submit the application attached with reference documents to the Commission and obtain the approval if the company desires to appoint expert foreigner according to Rule 206.</p> <p>The project company promise to ensure that Bodily Injury Insurance and Workmen Compensation Insurance at any insurance business entitled to carry out insurance business within the Union by the company in accordance with Rule 212.</p>
24	<p>The Myanmar Insurance Law, 1993</p> <p>Section 15, 16.</p>	<p>According to section 15 of The Myanmar Insurance Law 1993, the company will be insured Third-Party Liability Insurance for vehicles used in the project.</p> <p>According to section 16 of The Myanmar Insurance Law 1993, the company will be insured General Liability Insurance for the implementation of the proposed project.</p>
Labor Law		
25	<p>Minimum Wages Law (2013)</p> <p>Art 12(a), Art. 14(e), Art 14 (f) and Art 14(h).</p>	<p>Project Proponent commits:</p> <ul style="list-style-type: none"> ▪ Not to pay wage less than the minimum wage stipulated, do not have the right to deduct any other wage; ▪ To pay minimum wage stipulated for part time work. ▪ To give a holiday per week with pay in the salary paid work. ▪ To give stipulated minimum wage without gender discrimination
26	<p>The Payment of wages Law, 2016 (Section 3, 4, 5)</p>	<p>The project company commits to comply with the provisions of the section 3, 4 and 5 mentioned in The Payment of Wages Law, 2016.</p>
27	<p>The Labor Organization Law, 2011</p> <p>Section 17 to 22</p>	<p>The project proponent commits to comply the provisions acted in the section 17 to 22 of the Labor Organization Law, 2011.</p>
28	<p>The Settlement of Labor Dispute Law, 2012 (Amending Law 2014)</p> <p>Section 38, 39, 40, 51</p>	<p>For safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly.</p> <p>The project proponent commits to comply the provisions acted in the section 38, 39, 40, and 51 of the Settlement of Labor Dispute Law, 2012.</p>
29	<p>Employment and Skill Development Law, 2013</p>	<p>According to Employment and Skill Development Law, 2013 (Section 14, 15, 30), the project proponent commits to -</p>

	Section 14, 15, 30	<ul style="list-style-type: none"> - To carry out Skill Development of Workers and Training programs according to the section 14 and 15 of Employment and Skill Development Law, 2013. - To compliance with the provisions of section 30.
30	Social Security Law (2012)/ Came into force 1 April 2014 Section 11(a), 15 (a), 18 (b), 48, 49, 75.	<p>According to the Social Security Law, 2012's Section 11(a), 15(a), 18(b), 48, 49, and 75, the project proponent commits to comply -</p> <ul style="list-style-type: none"> - the provisions of section 11 (a), - setting up the social security fund according to the Section 15 (a), <p>the provisions mentioned in Section 18 (b), 48, 49 and 75.</p>
31	Workmen's Compensation Act, 1923	The project company commits to comply the provisions mentioned in Section 13 of Workmen's Compensation Act, 1923.
32	The Leave and Holiday Act, 1951; Amendment in 2014 (Section 3, 4, 5, 7 (a))	The project company commits to comply the provisions mentioned in Section 3, 4, 5, and 7(a) of the Leave and Holiday Act, 1951; Amendment in 2014.
33	Rights of Persons with Disabilities Law (2015). Rules currently under internal discussion between Ministry of Social Welfare and PWD groups (2017)	Applies to companies who are required to provide employment opportunities for PWD.
Occupational Health and Safety		
34	The Fire Force Law (2015) (Section-25 a and b)	<p>To ensure to prevent the fire, to provide the precautionary material and apparatuses, if the fire caused in the project area to be defeated because the project is business in which electricity and any inflammable materials such as petroleum are used. So, the project owner has to institute the specific fire service in line with the law.</p> <p>Sub-section (a) of section 25: The project proponent will institute the specific fire services.</p> <p>Sub-section (b) of section 25: The project owner will provide materials and apparatuses for fire precaution and prevention.</p>
35	Occupational Health and Safety Law 2019 Section 12, 14 ,26 (a) to (R), 27 to 29, 31, 33, 34, 49 (a) to (e) & 50.	<p>It aims to implement occupational health and safety activities at each workplace, to reduce occupational accidents, damages and disease, to improve production by preventing workers from occupational damages and diseases and to work safety and healthily.</p> <p>The project proponent shall follow the section 12,14, 26 (a) to (r), 27 to 29, 31, 33, 34, 49 (a) to (e) & 50.</p>
Land Law and Land Tenures		
36	Farmland Law, 2012	The Township Farmland Management Body shall issue the Land Certificate to the Township Land Record Department Office passing it through the relevant ward or Village Tract Farmland Management Body.

37	Farmland Rules, 2012	In the farm land is requisitioned under farm land law for the interest of the state or the public the grievance and compensation for improving the farm land without delay farm the concern, the central farm land management committee shall conduct as necessary.
Criminal Matters		
38	Penal Code (1861) and Amending Law 2016	Prohibits water pollution, air pollution and discharges of poisonous substances that may harm human health or cause injury. Prohibits explosives causing harm. Prohibits public nuisance

3.6 Environmental Quality Standards

Ministry of Natural Resources and Environmental Conservation, in exercise of the power conferred by sub-section (b) of section 42 of the 2012 Environmental Conservation Law (ECL), the National Environmental Quality (Emission) Guidelines were issued on December, 2015.

These Guidelines have been excerpted from the International Finance Corporation (IFC) Environmental Health and Safety (EHS) Guidelines, which provide technical guidance on good international industry pollution prevention practice for application in developing countries. The Guidelines are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of these Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them.

Emissions Guidelines shall apply to any project subject to EIA Procedure, as adopted by the Ministry, in order to protect the environment and to control pollution in the Republic of the Union of Myanmar. These Guidelines specifically apply to all project types listed in the EIA Procedure under 'Categorization of Economic Activities for Assessment Purposes' which sets out projects that are subject to EIA, IEE, or EMP.

3.6.1 Air Emission

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that: (i) emissions do not result in pollutant concentrations that reach or exceed ambient quality guidelines and standards, or in their absence the current World Health Organization (WHO) Air Quality Guidelines; and (ii) emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards (i.e. not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same airshed (Source: National Environmental Quality (Emission) Guidelines, 2015.

<Table 3.1> Ambient quality guidelines

Parameter	Averaging Period	Guideline Value $\mu\text{g}/\text{m}^3$
Nitrogen dioxide	1-year	40
	1-hour	200
Ozone	8-hour daily maximum	100

Particulate matter PM10a	1-year	20
	24-hour	50
Particulate matter PM2.5b	1-year	10
	24-hour	25
Sulfur dioxide	24-hour	20
	10-minute	500

^aParticulate matter 10 micrometers or less in diameter

^b Particulate matter 2.5 micrometers or less in diameter

Source: National Environmental Quality (Emission) Guidelines, 2015

3.6.2 Wastewater

This guideline applies to projects that have either direct or indirect discharge of process wastewater, wastewater from utility operations or storm water to the environment. It is also applicable to industrial discharges to sanitary sewers that discharge to the environment without any treatment. Wastewater process may include contaminated wastewater from utility operations, storm water, and sanitary sewage. Projects with the potential to generate process wastewater, sanitary (domestic) sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety or the environment.

<Table 3.2> Wastewater, storm water runoff, effluent and sanitary discharges (General Application)³

Parameter	Unit	Guideline Value
5-day Biochemical oxygen demand	mg/l	50
Ammonia	mg/l	10
Arsenic	mg/l	0.1
Cadmium	mg/l	0.1
Chemical oxygen demand	mg/l	250
Chlorine (total residual)	mg/l	0.2
Chromium (hexavalent)	mg/l	0.1
Chromium (total)	mg/l	0.5
Copper	mg/l	0.5
Cyanide (free)	mg/l	0.1
Cyanide (total)	mg/l	1
Fluoride	mg/l	20

Parameter	Unit	Guideline Value
Heavy metals (total)	mg/l	10
Iron	mg/l	3.5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.5
Oil and grease	mg/l	10
pH	S.U.a	6-9
Phenols	mg/l	0.5
Selenium	mg/l	0.1
Silver	mg/l	0.5
Sulphide	mg/l	1
Temperature increase	°C	<3b
Total coliform bacteria	100 ml	400
Total phosphorus	mg/l	2
Total suspended solids	mg/l	50
Zinc	mg/l	2

^a Standard unit

^b At the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity; when the zone is not defined, use 100 meters from the point of discharge

Note ; 3 Pollution prevention and abatement handbook. 1998. Toward cleaner production. World Bank Group in collaboration with United Nations Environment Programme and the United Nations Industrial Development Organization.

Source: *National Environmental Quality (Emission) Guidelines, 2015*

3.6.3 Noise Level

Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception. Noise impacts should not exceed the levels presented below, or result in a maximum increase in background levels of three decibels at the nearest receptor location off-site.

<Table 3.3> Target Noise Level

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Source: National Environmental Quality (Emission) Guidelines, 2015

3.7 International Conventions, Treaties and Agreements

No.	International Environmental Conventions/ Protocols/ Agreements	Date of Signature	Date of Ratification	Cabinet Approval Date
Regional				
1	ASEAN Agreement on Transboundary Haze Pollution	10/6/2002	13-3-2003 (Ratification)	7/2003 27-2-03
International				
1	United Nations Framework Convention on Climate Change, New York, 1992	11/6/1992	25-11-1994 (Ratification)	41/94 9-11-94
2	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985	24-11-1993 (Ratification)	22-2-1994	46/93
3	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987	24-11-1993 (Ratification)	22-2-1994	46/93
4	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990	24-11-1993 (Ratification)	22-2-1994	46/93
5	Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, D.C., 1973; and this convention as amended in Bonn, Germany, 1979 (CITES)	13-6-1997 (Accession)	11-9-1997	17/97 30-4-97
6	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997	13-8-2003 (Accession)	26/2003 16-7-03	

3.8 International Finance Corporation Environmental, Health and Safety Guidelines

The IFC EHS Guidelines are technical reference documents with general and industry-specific examples of good international industry practice.

The General EHS Guidelines are designed to be used together with the relevant industry sector EHS guidelines that provide guidance to users on EHS issues in specific industry sectors. The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent.

The EHS Guidelines for cement and lime manufacturing include information relevant to cement and lime manufacturing projects. Extraction of raw materials, which is a common activity associated with cement manufacturing projects, is covered in the EHS Guidelines for Construction Materials Extraction. The contents of both sector EHS Guidelines will be described in the following sections, after a brief presentation of the general EHS Guidelines.

General EHS Guidelines

The General EHS Guidelines are organized as reported in the following Table.

<Table 3.4> **Organization of the IFC EHS General Guidelines**

Main Area	Topic
Environmental	<ul style="list-style-type: none"> • Air Emissions and Ambient Air Quality • Energy Conservation • Wastewater and Ambient Water Quality • Water Conservation • Hazardous Materials Management • Waste Management • Noise • Contaminated Land
Occupational Health and Safety	<ul style="list-style-type: none"> • General Facility Design and Operation • Communication and Training • Physical Hazards • Chemical Hazards • Biological Hazards • Radiological Hazards • Personal Protective Equipment (PPE) • Special Hazard Environments • Monitoring

<p>Community Health and Safety</p>	<ul style="list-style-type: none"> • Water Quality and Availability • Structural Safety of Project Infrastructure • Life and Fire Safety • Traffic Safety • Transport of Hazardous Materials • Disease Prevention • Emergency Preparedness and Response
<p>Construction and Decommissioning</p>	<ul style="list-style-type: none"> • Environment • Occupational Health & Safety • Community Health & Safety

With respect to the environmental issues, IFC Guidelines refer to World Health Organization (WHO) standards that include the following:

- WHO Ambient Air Quality Standards;
- WHO Guidelines for Community Noise;
- WHO Drinking Water Quality; and
- WHO Guidelines for the Safe Use of Wastewater, Excreta and Grey water.

In addition, the following guidelines and standards may be applicable:

- Dutch Intervention Values for Soil Quality;
- International Union for Conservation of Nature (IUCN) Red Data Book for protected species (fauna and flora);
- Occupational Health and Safety Administration (OHSA) standards – United States Department of Labor; and
- United Nations Framework Convention on Climate Change (UNFCCC) Baseline and Monitoring Methodologies for Large Scale Clean Development Mechanism (CDM) Project Activities.

According to IFC requirements, air emissions should not result in pollutant concentrations higher than the relevant national ambient quality guidelines and standards. In their absence, the current WHO Air Quality Guidelines or other internationally recognized sources, such as the United State Environmental Protection Agency (USEPA), National Ambient Air Quality Standards (NAAQS) and the relevant European Council Directives can be also referred to.

In the following Table, Ambient Air Quality values outlined in the IFC EHS General Guidelines are reported.

<Table 3.5> Ambient Air Quality Values – IFC EHS General Guidelines

Pollutant	Averaging Period	Maximum Limit Value (µg/m ³)
Sulphur Dioxide (SO ₂)	10 min	500
	1 hour	--
	24 hours	20
	Year	--
Nitrogen Dioxide (NO ₂)	1 hour	200
	24 hours	--
	Year	40
Ozone (O ₃)	1 hour	--
	8 hours	100
Carbon Monoxide (CO)	1 hour	-
	8 hours	-
Black Smoke (BS)	24 hours	--
	Year	--
Total Suspended Particles (TSP)	24 hours	--
	Year	--
Particular Matter <10 µm (PM ₁₀)	24 hours	50
	Year	20
Particular Matter <2.5 µm (PM _{2.5})	24 hours	25
	Year	10
Lead (Pb)	Year	--

In addition, IFC EHS General Guidelines require as a general rule that Project specific ground concentration does not contribute more than 25% of the above-mentioned applicable air quality standard to allow additional, future sustainable development in the same airshed.

As outlined in the IFC EHS General Guidelines, noise impacts should be estimated by the use of baseline noise assessments for developments close to local human populations to verify that the levels

presented in the following Table are not exceeded, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

<Table 3.6> Noise Level Guidelines – IFC EHS General Guidelines

Noise Level Guidelines		
Receptor	IFC - One Hour L_{Aeq} (dBA)	
	Day-time 07:00 - 22:00	Night-time 22:00 – 07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

Noise monitoring programs should be designed and conducted by trained specialists. Typical monitoring periods should be sufficient for statistical analysis and may last 48 hours with the use of noise monitors that should be capable of logging data continuously over this time period, or hourly, or more frequently, as appropriate (or else cover differing time periods within several days, including weekday and weekend workdays). The type of acoustic indices recorded depends on the type of noise being monitored, as established by a noise expert. Monitors should be located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface (e.g., wall). In general, the noise level limit is represented by the background or ambient noise levels that would be present in the absence of the facility or noise source(s) under investigation.

In terms of Occupational Health and Safety (OHS) aspects, IFC noise limits for different working environments are provided in the following Table.

<Table 3.7> Noise Limits for Different Working Environments – IFC EHS General Guidelines

Noise Limits for Various Working Environments		
Location / Activity	Equivalent Level $L_{Aeq,8h}$	Maximum $L_{Amax, fast}$
Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	50-65 dB(A)	110 dB(A)
Open offices, control rooms, service counters or similar	45-50 dB(A)	-
Individual officers (no disturbing noise)	40-45 dB(A)	-
Classrooms lecture halls	35-40 dB(A)	-
Hospitals	35-40 dB(A)	B(A)

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. Receiving water use and assimilative capacity, taking other sources of discharges to the receiving water into consideration, should also influence the acceptable pollution loadings and effluent discharge quality.

Waste management should be addressed through a waste management system that addresses issues linked to waste minimization, generation, transport, disposal, and monitoring.

Land is considered contaminated when it contains hazardous materials or oil concentrations above background or naturally occurring levels. Contaminated lands may involve surficial soils or subsurface soils that, through leaching and transport, may affect groundwater, surface water, and adjacent sites. Where subsurface contaminant sources include volatile substances, soil vapor may also become a transport and exposure medium, and create potential for contaminant infiltration of indoor air spaces of buildings. Contamination of land should be avoided by preventing or controlling the release of hazardous materials, hazardous waste, or oil to the environment. When contamination of land is suspected or confirmed during any project phase, the cause of the uncontrolled release should be identified and corrected to avoid further releases and associated adverse impacts. Contaminated lands should be managed to avoid the risk to human health and ecological receptors. The preferred strategy for land decontamination is to reduce the level of contamination at the site while preventing the human exposure to contamination.

With respect to the OHS field, the General EHS Guidelines state that employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. The guidelines provide guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although, the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities.

The General EHS Guidelines on Community Health and Safety complement the guidance provided for the environmental and occupational health and safety topics, specifically addressing some aspects of project activities taking place outside of the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis. These issues may arise at any stage of a project life cycle and can have an impact beyond the life of the Project.

Finally, the General EHS Guidelines provide additional, specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities.

4. PROJECT DESCRIPTION AND ALTERNATIVE

4.1 Presentation of Project

Yunan Jiansheng Investment Co., Ltd has applied the registrations at the Myanmar Investment Commission for the establishment of Joint Venture Company with Myanmar Than Taw Myat Co., Ltd cooperatively. Yunan Jiansheng Investment Co., Ltd and Myanmar Than Taw Myat Co., Ltd were granted the permission (178/2019) on August 8th, 2019 for cement grinding plant.

Myanmar Than Taw Myat cement grinding plant is located in the Dagon Myothit (East) Township, Yangon Region and produces an average of 5000 tons per day (TPD) cement. **The raw materials for the plant will include clinker and gypsum which will be imported from Myanmar Than Taw Myat Cement Plant (Kyaukse Township) Mandalay in Myanmar.**

4.2 Project Location

Myanmar Than Taw Myat cement grinding plant is located in the Dagon Myothit (East) Township, Yangon Region and it is also situated about 2km north-west of the Le Daunt Kan Railway Station. The proposed project will involve the installation and commissioning of cement Grinding Plant producing an average of 5000 tons per day (TPD) cement.

<Table 4.1> Co-ordinate points of Cement Grinding Plant

Name	Latitude	Longitude	Name	Latitude	Longitude
A	16°58'42.23"N	96°16'32.32"E	N	16°58'24.61"N	96°16'25.75"E
B	16°58'36.19"N	96°16'54.39"E	O	16°58'26.20"N	96°16'25.76"E
C	16°58'28.19"N	96°16'51.41"E	P	16°58'25.85"N	96°16'24.03"E
D	16°58'27.43"N	96°16'51.59"E	Q	16°58'30.16"N	96°16'23.35"E
E	16°58'19.69"N	96°16'46.04"E	R	16°58'30.19"N	96°16'24.10"E
F	16°58'19.75"N	96°16'44.93"E	S	16°58'32.54"N	96°16'24.18"E
G	16°58'21.46"N	96°16'45.05"E	T	16°58'32.93"N	96°16'27.49"E
H	16°58'21.83"N	96°16'42.97"E	U	16°58'35.27"N	96°16'27.46"E
I	16°58'17.34"N	96°16'42.67"E	V	16°58'35.28"N	96°16'27.91"E
J	16°58'16.82"N	96°16'25.20"E	W	16°58'37.48"N	96°16'28.03"E
K	16°58'22.63"N	96°16'24.54"E	X	16°58'37.50"N	96°16'30.46"E
L	16°58'22.87"N	96°16'26.73"E	Y	16°58'38.39"N	96°16'30.40"E
M	16°58'24.65"N	96°16'26.54"E	Z	16°58'38.48"N	96°16'32.43"E

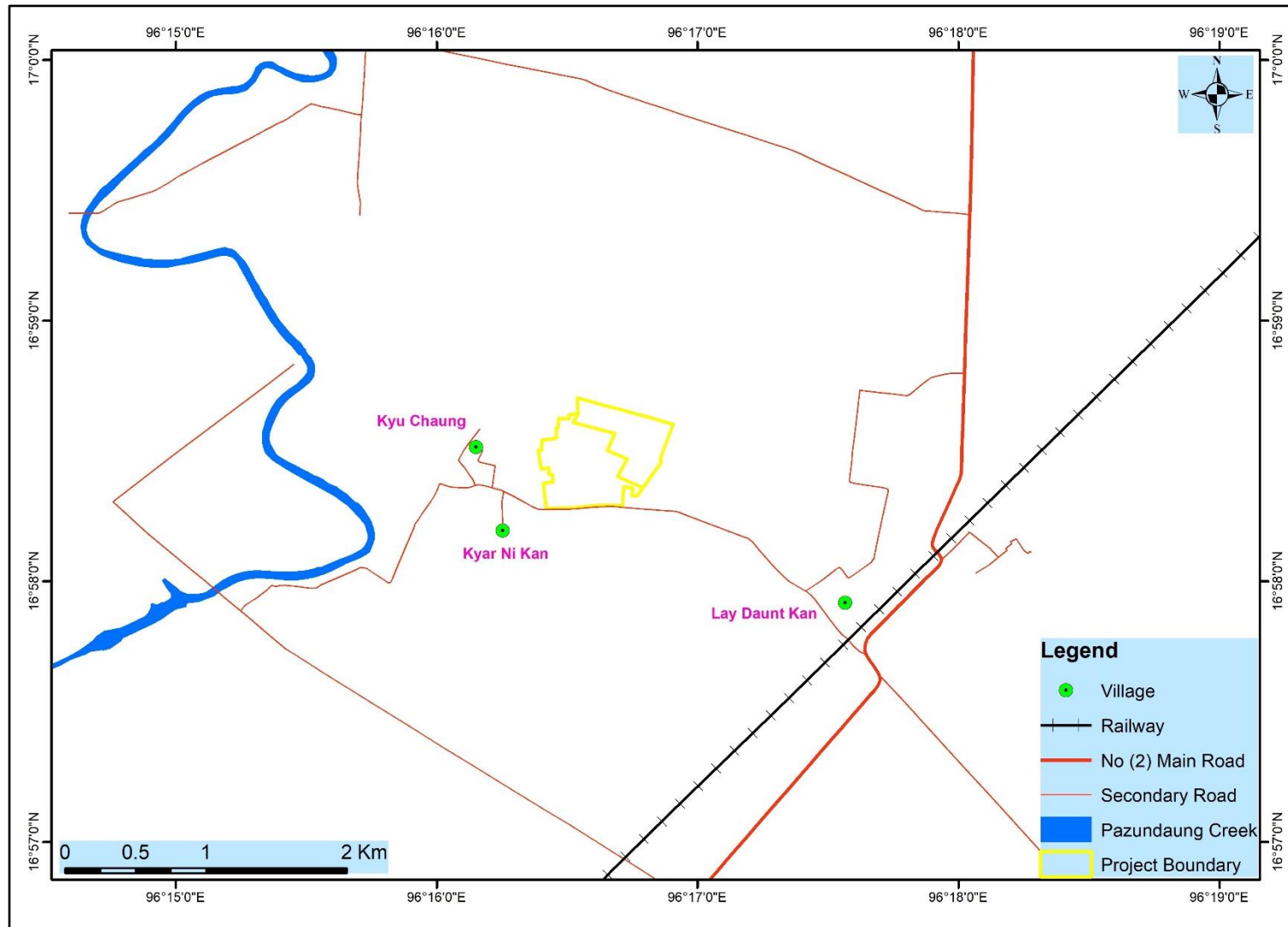


Figure 4.1 Location of Cement Grinding Plant

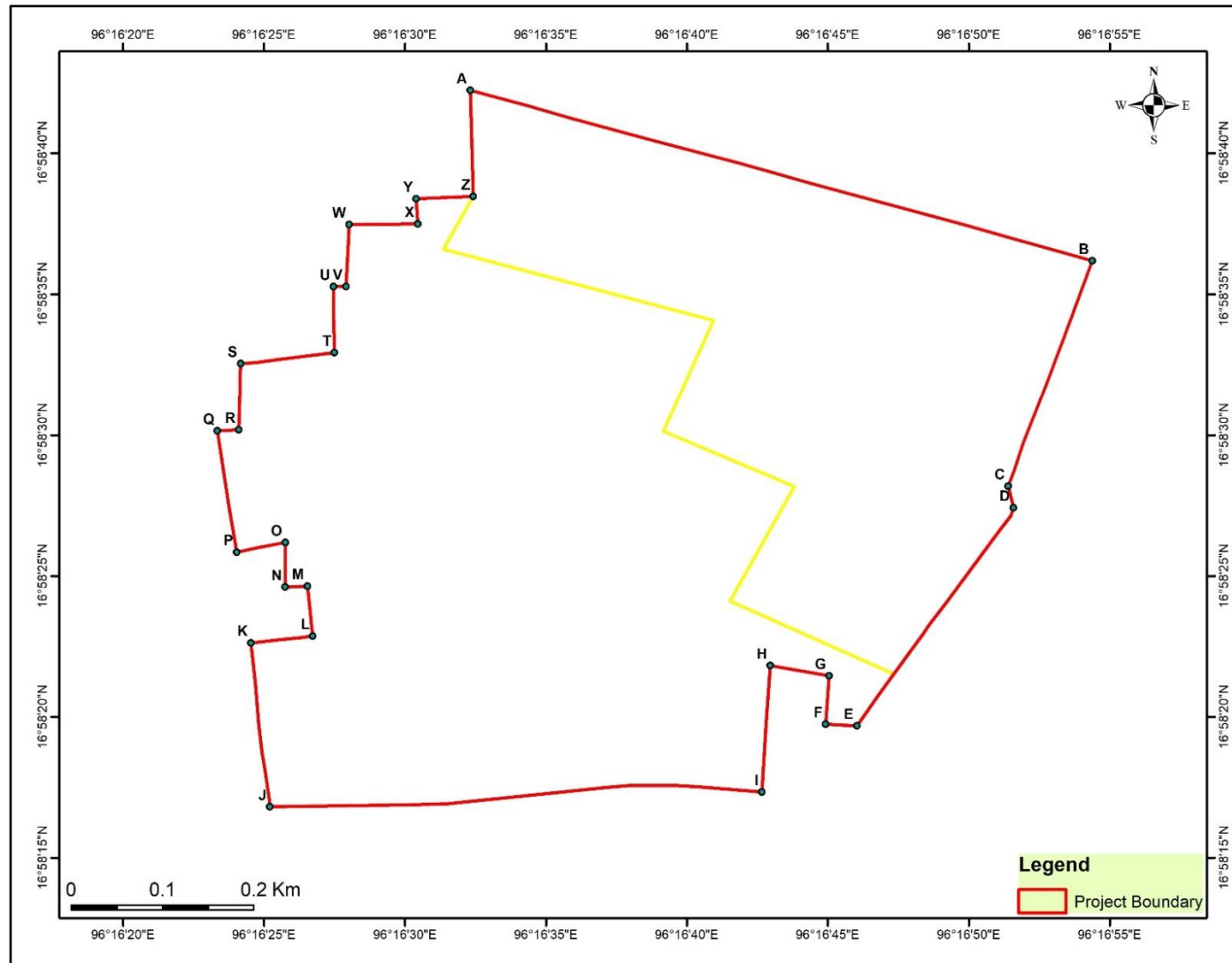
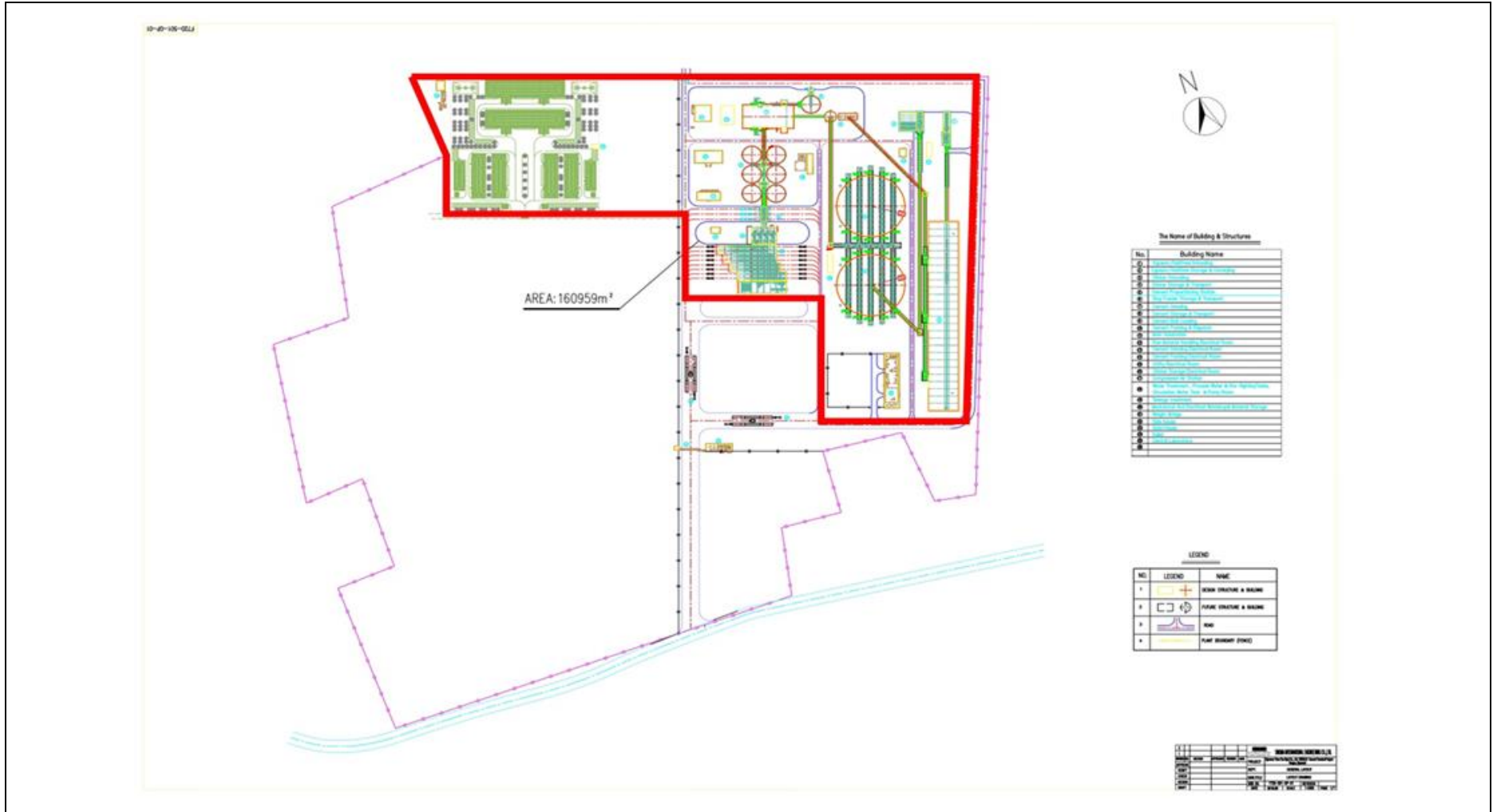


Figure 4.2 Boundary of Cement Grinding Plant

4.3 Site Layout Map or Schematic Diagram



4.4 Project Activities

The present project is manufacturing of cement and the followings are the main process including raw materials that will be used.

- Production Technology : cement grinding plant by using tube-mill (instead of vertical mill)
- Production Process : clinker to cement
- Raw Materials : clinker and gypsum
- Raw Materials source : transport from MTTM Cement Plant (Kyaukse) to MTTM
(Yangon) Cement Grinding Plant

The proposed development entails utilizing clinker and other raw materials (e.g. gypsum, and additives). This material would be milled and mixed in certain combinations to form different grades of cement for the construction industry. The proposed development will consist of the following facilities.

No.	Facilities
1.	Gypsum/Additives Unloading
2.	Gypsum/Additives Storage and conveying
3.	Clinker Unloading
4.	Clinker Storage and Transport
5.	Cement Proportioning Station
6.	Slag Powder Storage and Transport
7.	Cement Grinding
8.	Cement Storage and Transport
9.	Cement Bulk Loading
10.	Cement Packing and Dispatch
11.	Main Substation
12.	Raw Material Handling Electrical Room
13.	Cement Grinding Electrical Room
14.	Cement Packing Electrical Room
15.	Utility Electrical Room
16.	Clinker Storage Electrical Room
17.	Compressed Air Station

18.	Water Treatment, Process Water and Fire-fighting Tanks, Circulation Water Tanks and Pump Room
19.	Sewage Treatment
20.	Mechanical and Electrical Workshop and Material Storage
21.	Weight Bridge
22.	Sale House
23.	Gate House
24.	Toilet
25.	Central Laboratory

Clinker will be transported from the Myanmar Than Taw Myat cement plant, located in the Kyaukse Industrial zone by using waterway. Upon delivery at the site, the clinker will be stored at a clinker covered store while gypsum will be stored in a separate covered store within the project site.

4.5 Project Period

Myanmar Than Taw Myat Company has received a permit to produce cement production at 8th August 2019 (Appendix 1) issued by the Myanmar Investment Commission.

Work Site	permit	Issue Date	Expire Date
Construction Phase	2 years	8.8.2019	7.8.2021
	1 years	8.8.2021	7.8.2022
	1 years	8.8.2022	7.8.2023
Operation Phase	30 years	8.8.2023	7.8.2053
Decomposition Phase	2 years	8.8.2053	7.8.2055

4.6 Construction Phase Activities

4.6.1 Pre-construction Activities

The initial phase in pre-construction and project preparation is the conduct of environmental impact assessment to determine needed environmental management measures and estimate necessary costs to be included in the project feasibility study.

When an initial project feasibility study generates information on project feasibility indices, the physical layout of new facilities is planned, and site development cost including estimating land cut and fill volumes and costs, engineering soil investigations are considered. The locations of additional production facilities are more or less dictated by the layout of the existing plant. The production area

includes clinker storage, gypsum storage, cement grinding, packing and transportation. The project is situated about 2km north-west of the Le Daunt Kan Railway Station.

4.6.2 Construction Activities

Site clearance activities include clearing the land of vegetation, fencing the project boundary and site leveling. Internal site roads will be constructed as the site leveling will require a number of heavy trucks to bring infill to the site and remove unnecessary material.

Generally, 24 months of construction period and 24 month extension construction period for the proposed Myanmar Than Taw Myat cement grinding plant is estimated before commercial production begins.

<Table 4.2> Storage and Capacity of cement Grinding Plant

No	Material	Storage Way	Quantity	Capacity
1	Clinker	Clinker Silo	2 unit (Diameter – 75 x 53 m)	200000 ton/unit
2	Shed	Gypsum Storage	1unit (Diameter - 33m x 100m)	12000 ton/unit
		Additive Silo	1unit (Diameter - 33m x 50m)	7000 ton/unit
3	Cement Proportion Station	Clinker Silo	1unit (Diameter - 12m x 25m)	2000 ton/unit
		Gypsum Bin	1unit (Diameter - 6m x 18m)	350 ton/unit
		Additive Bin	1unit (Diameter - 6m x 18m)	350 ton/unit
4	Cement	Silo	6 unit (Diameter - 20m x 47m)	15000ton/unit

<Table 4.3> Installation of Main Equipment in cement Grinding Plant

No	Activity	Main Equipment	Type of Specification, Performance	Quantity
1	Gypsum Crushing	Hammer Crusher	Inlet size \leq 600 mm Outlet size \leq 50 mm Capacity: 120 t/h	1
2	Cement Grinding	Roller Press	Feeding size: 95% \leq 45 mm Fmax \leq 75 mm Produce Size: < 2 mm: 65% < 0.09 mm: 20% Capacity (Clinker): 610 – 850 t/h	2
		Ball Mill (Tube Mill Type)	Diameter 4.2 x 13 m Capacity: 200 t/h Fineness: 3200 – 3400 cm ² /g	2
3	Cement Bulk Loading	Cement Bulk Loading System	Capacity: 200 t/h	3
4	Cement Packing	Rotary Packer	Capacity: 120 t/h	4
		Bag Cement Truck Loader	Capacity: 2400 bag/h	8
5	Cement Folding	Folding Machine	Capacity: 90 t/h	2

<Table 4.4> Installation of Filter Bag Dust Collector, Pulse Bag Dust Collector and Dust Collector

No	Name of Machine	Quantity	Remarks
1	Pulse bag dust collector (LPF-32-4)	5	Installed at Conveyor Line
2	Filter Bag Dust Collector (LPF 96)	35	On the top of Clinker Silo
3	Filter Bag Dust Collector (LPM 2 x 13 D)	9	Installed at Cement Grinding Mill
4	Dust Collector (LPM 8 C)	6	Installed at Packing Silo

<Table 4.5> Specification of Filter Bag Dust Collector, Pulse Bag Dust Collector and Dust Collector

a) Pulse bag dust collector (LPF-32-4)	
Resistance of the equipment	1470 ~ 1770 Pa
Allow inlet dust content	$\leq 200 \text{ gm/m}^3$
Treated inlet air	8900m ³ /h
Filtering area	124m ²
Filtering wind speed	1.0 ~ 2.0 m/min
Outlet dust content	$\leq 20 \text{ mg/Nm}^3$

b) Filter Bag Dust Collector (LPM 2 x 13 D)	
Capacity	240000 m ³ /h
Total Filtering Area	4210 m ²
Number of Bag Filter	3328
Filter bag size	Diameter 130 x 3100 mm
Filtering Gas Temperature	100°C, Max: 120°C
Filtering Wind Speed	0.99 m/min
Internal Air Pressure	-9000 Pa
Inlet dust Content	<1000 g/Nm ³
Outlet Dust Content	$\leq 30 \text{ mg/Nm}^3$
Resistance Loss	1500 – 1700 Pa
Pulse Air Consumption	13 Nm ³ /min
Pulse Air Pressure	0.4 ~ 0.6 MPa

c) Dust Collector (LPM 8 C)	
Capacity	42000 m ³ /h
Total Filtering Area	780 m ²

Number of Bag Filter	768 Nos
Filtering Wind Speed	1.03 m/min
Filter bag size	Diameter 130 x 2500 mm
Inlet Temperature	100°C, Max: 120°C
Inlet dust Content	<200 g/Nm ³
Outlet Dust Content	≤ 30 m/m ³
Resistance Loss	1470 – 1770 Pa
Pulse Air Consumption	2.4 Nm ³ /min
Pulse Air Pressure	0.4 ~ 0.6 MPa

d) Filter Bag Dust Collector (LPF 96)	
Capacity	22000 m ³ /h
Total Filtering Area	384 m ²
Active Filtering Area	288 m ²
Filtering Wind Speed	≤ 1.2 m/min
Filter Pocket Glass Fiber Membrane	Filter Glass
Inlet dust Content	200 g/Nm ³
Outlet Dust Content	≤ 30 mg/Nm ³
Pressure Drop across filter	< 1470 ~ 1770 Pa
Pulse Air Consume	1.2 Nm ³ /min
Pulse Air Pressure	0.5 ~ 0.7 MPa

4.7 Operation Phase Activities

The clinkers will be stored at a clinker covered store and then are stored in silo to recombine with the gypsum in the correct proportion and then the cement is produced. Finally, the powder cement is bagged and distributed to market. The process flow diagram of Myanmar Than Taw Myat Cement Grinding Plant is described in Figure 4.3.

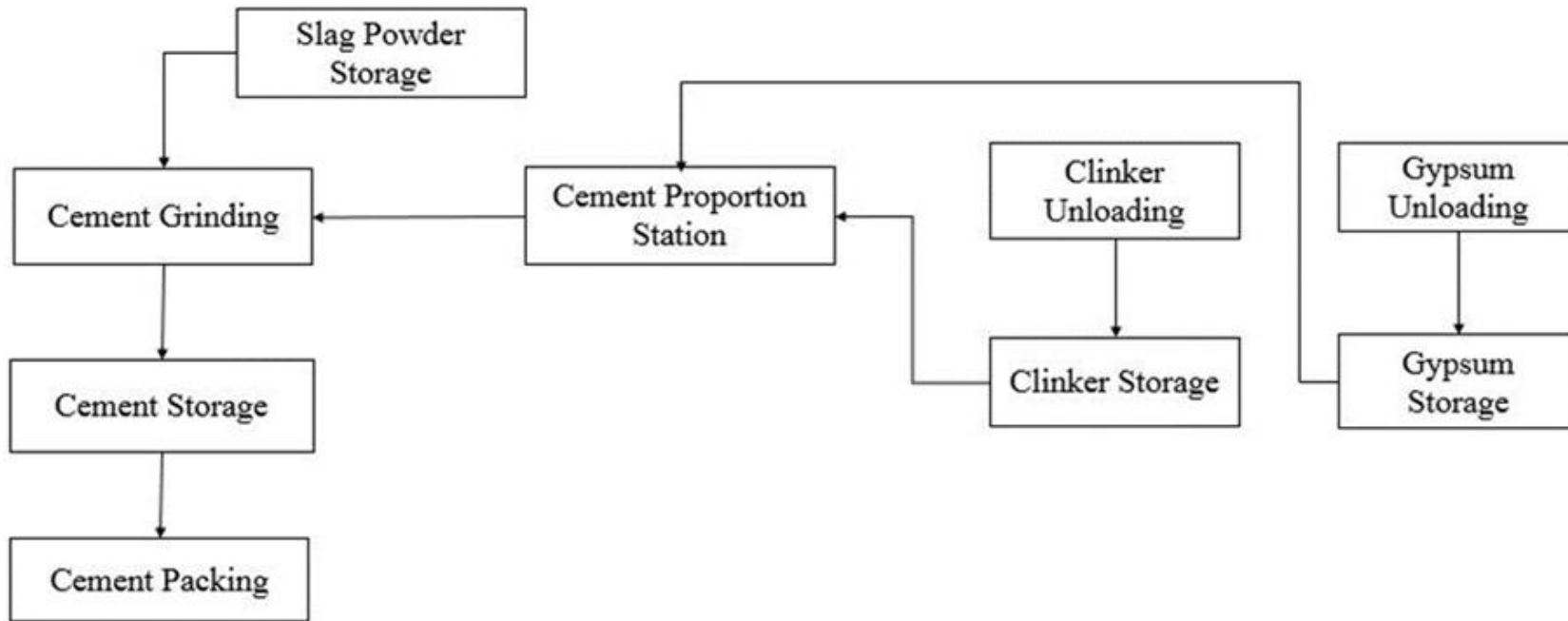


Figure 4.3 Process Flow Diagram

4.7.1 Raw material

The raw materials used in cement grinding process are clinker and gypsum. These raw materials will be unloaded from the vessels using ship cranes onto the hoppers with proper dedusting system (bag filter system) before loading onto trucks and transported to the Grinding Plant using existing road in Yangon.

Gypsum

Gypsum has been produced and utilized in the Hsipaw Township, Shan State (Northern part) and transportation can use trucks. Gypsum is a very soft mineral composed of Calcium Sulphate Dehydrate, with the chemical formula $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. This material provides the Sulphur Dioxide which prevents early softening of the cement when mixed with water. Heating gypsum to between 100°C and 150°C (302°F) partially dehydrates the mineral by driving off exactly 75% of the water contained in its chemical structure. Temperature as high as 170°C are used in industrial calcinations, Gypsum is primary used to mix with clinker to produce cement as gypsum will prohibit the reactivity of clinker.

Clinker

Clinker is the solid material produced in an Integrated Cement Plant from the pyro processing stage. Clinker produce by heating Limestone, Clay, Iron Ore and Sand at high temperature around $1,400\text{--}1,450^\circ\text{C}$, in the kiln at which partial melting (sintering) takes place before producing hard spherical nodules of around 25mm in diameter. These nodules are then rapidly cooled (quenched) to preserve their reactive mineral constituents.



Figure 4.4 Clinker Silo and Conveying System

Raw materials mainly clinker and gypsum will be stored in a covered store within the project site. All the raw materials arriving in the plant will be stored in a fully covered storage facility with dedusting system (bag filter system). All transfer points and intermediate bins will be equipped with dedusting system (bag filter system).

Using automated belt conveyor transportation system, the raw materials will be delivered to the cement proportioning station and later deliver to the cement grinding mill for grinding to produce the final product, cement. The entire grinding process is enclosed and the ground materials will be transported via fan, air slides, bucket elevator which are all equipped with dedusting system (bag filter system).

4.7.2 Cement Proportioning Station

The raw materials would be milled and mixed in certain combinations to form different grades of cement for the construction industry.

Cement Proportioning Station

Clinker Silo	=	2000 ton
Diameter	=	12 m
High	=	25 m
Gypsum Bin	=	350 ton
Diameter	=	6 m
High	=	18 m
Other Bin (2 Nos)	=	350 ton
Diameter	=	6 m
High	=	18 m



Figure 4.5 Cement Proportioning Station

4.7.3 Grinding Process

The Finish Mill section consists of tube mills and a high-pressure roller press with a throughput capacity of 200 TPH. Clinker material from the clinker silo and gypsum as well as other cement additives passed through a proportioning weigh feeder and conveyed to a feed bin. The proportioned materials will then be routed to a common belt conveyor into a bucket elevator feeding the roller press for pre-grinding.

The pulverized materials will then pass through V-separators and a bank of cyclone dust collectors. Cyclone underflow will be fed to the tube mill for finish grinding.

There are two processes involved in cement grinding i.e. the dry process and the wet process. In the case of this proposal, the dry process technology will be used. From the covered clinker storage, the clinker will be transferred to the mill feed bins via an intake hopper and dropped into a conveyer belt. To mitigate the loss of clinker as dust into the environment and potential for air quality pollution the hopper is also installed with a bag filter system.

The clinker and gypsum material feed bins act as buffer storage for proportioning the correct amount of material prior to the mill for grinding to manufacture cement. This process is affected by regulating the speed of respective weigh feeder belts to ensure only high quality cement will be produced.

Crushing and grinding will take place in the rollers as shown in the following Figures (Figure 4.0 and Figure 4.0). Cement particles after grinding will be lifted up to the classifier located above the grinding mill by the induced draft generated using a fan. The reject cement particles will fall on the grinding table for further grinding. If there incoming raw materials contains high moisture especially during the wet season, the hot gas generator using diesel or waste oil will be used to remove the moisture in the raw materials.

The acceptable cement particles will be captured by the main process bag filter and conveyed in an enclosed transportation system to the cement silo.



Figure 4.6 **Cement Silo**



Figure 4.7 Cement Grinding Mill



Figure 4.8 Cement Grinding Mill (Press Roller)

4.7.4 Bagging and Packing Plant

The finished product is stored in the main storage silos. Thereafter the cement is transported to the packing and palletizing plant. In the packing plant, a packer accepts cement feed and puts it into bags. These bags may be loaded directly onto flat-bed trucks. Optionally they may be palletized and covered by plastic. The palletizing process entails stacking approximately 20 bags (1 ton) onto wooden or plastic pallets.

Pallets are stored in a warehouse which also covers the packing and palletizing units. Some fully packed pallets may be stored outside on an open concrete slab. Pallets are also loaded onto flatbed trucks using a forklift truck. The following Figures provide the cement silo, packing plant, method of transportation and cement packing design.



Figure 4.9 Packing Plant



Figure 4.10 Auto Packing Machine



Figure 4.11 Packing Plant (Rotary Packer)



Figure 4.12 Packing Plant (Bag Conveying System)



Figure 4.13 Cement Bag Car Loading



Figure 4.14 Bags Car Loading (Auto Machine)



Figure 4.15 Jumbo Bags Loading

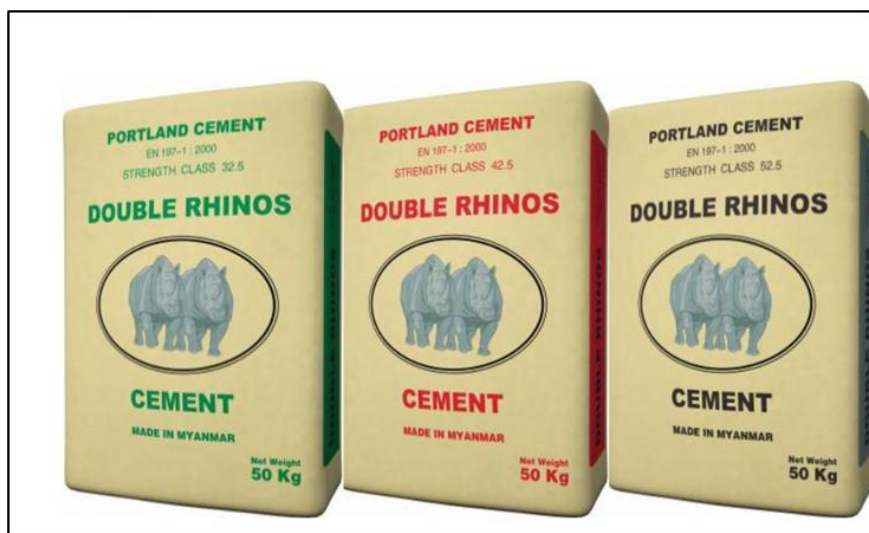


Figure 4.16 Product Packing Design (Double Layers Packaging)

4.8 Water Consumption

Since the plant will employ the dry process in grinding of cement, the water demand will only be for domestic use i.e. drinking and sanitation. The office and sanitary facilities will be connected to the reticulated supply. The domestic water (i.e. drinking and sanitation) use 600000 gal/year.

No	Infrastructure	Required Amount	
		Initial Period	Regular Operation Period
	Water (in cubic meters.):		
1	For industrial (process) purposes:	Total water required during construction period is 200m ³ /day.	50 m ³ /day
2	For drinking purposes:		10 m ³ /day
3	Others, specify:		6 m ³ /day
4	Total requirement:		66 m ³ /day

4.9 Electricity Consumption

The electricity for cement grinding plant will be supplied by 66kV overhead line of East Dagon Sub/Station. The power consumption for cement grinding plant is 48kWh/hour/years.

No	Description	Unit	Qty
1	66 kV OH Line (East Dagon S/S to TTM S/S)	3.7	Miles
2	66/11/kV, 20MVA Myanmar Tan Taw Myat S/S	1	Lot

4.10 Amount and type of emissions to air, effluent discharges to water; amount of type solid waste disposal

(a) Emissions

Particulate matter emissions from cement grinding plant are the main source of air pollution. **PM is dispersed by the wind as a result of raw materials unloading, storage, automated belt conveyor transportation, grinding, packaging and transportation.** PM will lead to air pollution, which can be controlled by installing dust collectors. The transport vehicles used in the cement operation will emit a minor amount of gas.

(b) Water

The water requirement will mainly be for domestic use because the cement grinding plant will use drying technology. **At the project site, a well is drilled to extract groundwater. Groundwater will be used to supply domestic water. The total amount of water required throughout the operation is 66 m³/day of domestic water. Even though it does not cause to water pollution, this kind of consumption may affect the level of groundwater.**

Wastewater will be generated at offices, canteens, and staff accommodation. Domestic sewage is usually generated with fecal and living washing water. Sewage from the staff quarters will be collected using a pit system and disposed by municipal sewage trucks.

(c) Solid Waste Disposal

Solid waste will be generated from domestic activities. The domestic garbage will be generated in the office and living areas including the peels, plastic packaging, kitchen waste, and waste generated. General waste and hazardous waste will be separated and disposed of in designated areas.

4.11 Consideration of alternatives

4.11.1 Identification and Assessment of Alternatives

Recently, Socio-Economic Master Plan (SEMP) focuses on the expansion of Yangon via the development of New Yangon City. Yangon has stood as the economic powerhouse of Myanmar and currently contributes 26% of the country's GDP with only 12% of the population. In line with this SEMF several infrastructure such as new expressway, bridges, etc. will be needed to develop. It requires a significant volume of cement, for building roads, bridges, ports, airports and other economic support infrastructures, an important component of the development of this SEMF.

Importing massive volumes of cement materials to supply the New Yangon City development requirements will bring a negative balance of payment in favor of external suppliers. The Yangon

Regional Government supports the development of New Yangon City that directly contributes to the national development program and by so doing it multiplies economic benefits by way of increasing job creation, tax generation and developing domestic capacity to export and supply foreign markets.

There are several ASEAN neighboring countries that likewise have increasing demand for cement to support their respective development plans and requirements.

The consideration of alternatives as one of the most critical elements of the environmental assessment process and is required in terms of EIA procedures, 2015. **Based on the requirements of Article 58 in EIA Procedures**, the EIA investigation shall also include an analysis of Alternatives. Such analysis shall include a description of each Alternative, and an assessment and comparison of the Adverse Impacts, required mitigation measures and Residual Impacts of the Alternatives.

Assessment of alternatives should include a comprehensive comparison of all potential impacts, direct, indirect and cumulative, on the environment. The goal of evaluating alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, or through reducing or avoiding potentially significant negative impacts.

At present, the project developer has already purchased the land and changed the land title farmland to Industrial land. Myanmar Investment Commission (MIC) has issued permission letter to construct the cement grinding plant and decided to do EIA. Therefore, third party consultant has no chance to advise to consider location alternatives. The following alternatives will be considered for the present project.

- No Go Option (No Project Option)
- Technology and Process Alternatives
- Storage Alternatives
- Transportation alternatives

4.11.2 No Project Alternatives

The first potential alternative considered is the No Project Alternative. This involves retaining the status quo of the Site, i.e. no development and the site would remain and covered by bush and plantation. There would be no additional air, noise and effluent emissions into the environment.

The no project alternative is showed not to be viable due to (i) current demand for cement is unmet by current production levels and as such ceasing plant operations would greatly undermine supply of the commodity and negatively affect the construction industry and the national economy as a whole, (ii) the government priority of economic growth and (iii) there is no additional employment opportunities in local resident would be generated during the construction and operational phases.

4.11.3 Technology and Process Alternatives

This project mainly uses new dry-process cement production technology. Cement Grinding Plant process utilizing milled and mixed with clinker and other raw materials (e.g. gypsum and additives) for cement production.

Comparison of Dry and Wet Process

<i>Dry Process</i>		<i>Wet Process</i>	
1	Mixing of raw material in dry state in blenders	1	Mixing of Raw materials in wash mill with 35 to 50% water
2	Cost of production is less	2	Cost of production is high
3	Capital cost is high due to blenders	3	Capital cost (Cost of establishment) is comparatively less
4	Difficult to control mixing of Raw materials, so it is difficult to obtain a better homogeneous material	4	Raw material can be mixed easily, so a better homogeneous material can be obtained
5	Lesser time of process	5	Higher time of process
6	Inferior quality	6	Superior quality
7	Physical state is raw mix (solid)	7	Physical state is slurry (liquid)
8	Liquid waste may not be discharged to the environment due to the recycling of water	8	Liquid waste may be discharged to the environment

This project chooses the dry process because of liquid waste may not be discharged to the environment due to the recycling of water.

Grinding Mill Alternatives

The tube mill and the vertical cement mill are widely used in the grinding of cement clinker and gypsum.

<i>Grinding Mill</i>	<i>Advantages</i>	<i>Disadvantages</i>
<i>Tube Mill</i>	<ul style="list-style-type: none"> ▪ High Production Capacity ▪ Big powder grinding rate (easy to adjust the fineness of the final products and the grain composition) ▪ Simple structure, solid, reliable operation, convenient maintenance and management and longtime of operation ▪ Product fineness is uniform ▪ the particle shape is approximately spherical, which is conducive to raw material calcination and cement hydration hardening 	<ul style="list-style-type: none"> ▪ High energy consumption and low working efficiency ▪ During it running process, the tube mill has loud noises and strong vibration ▪ Due to the low rotary speed of the mill cylinder, it often needs expensive speed reducer device

Vertical Mill	<ul style="list-style-type: none"> ▪ Low operation pressure, low oil leakage failure rate and high safety ▪ Suitable for ultra-fine powder processing 	<ul style="list-style-type: none"> ▪ the finished product is sent by the wind, the composition of the finished product composition is related to the specific proportion of the material component, which has a certain influence on the quality of the cement grinding
Selective Alternative	Reason	
Tube Mill	Tube mill has the advantage that the particle shape is approximately spherical, which is conducive to raw material calcination and cement hydration hardening. High Production Capacity and Big powder grinding rate.	

4.11.4 Storage Alternatives

A range of options are available for raw materials storage, depending on the product and how it is used. These include indoor and outdoor facilities with pollution controls, security measures, and a number of other steps to protect materials in storage. The best option can depend on a company's needs and regulatory requirements.

Indoor Storage Facilities (Silo Storage and Covered Storage)	<ul style="list-style-type: none"> ▪ Facilities may use air filtration and other measures to control the environment and protect workers ▪ Very Large Storage Capacity ▪ Low labor requirement ▪ Storage silos cost less compared to other storage options ▪ Silo provides ready access as well as quick loading and unloading
Outdoor Storage Facilities (Opened Storage)	<ul style="list-style-type: none"> ▪ Can expose products to weathering and also creates a risk of environmental contamination ▪ Chemicals may leach into the groundwater or could come into contact with storm water runoff ▪ High labor requirement
Selective Alternatives	Reason
Indoor Storage Facilities (Silo Storage and Covered Storage)	Raw materials storage facility is important. Workers need to be able to access supplies quickly and environmental protection. Very large storage capacity and low labor requirement.

4.11.5 Transportation Alternatives

Raw material for cement grinding plant are transport by using transportation method such as Marine transportation, roadways transportation and railways transportation.

<i>Maritime Transportation</i>	<ul style="list-style-type: none"> ▪ Ship large volumes at low costs ▪ Ship transport can also be used for further transportation by road and rail ▪ Suitable for long distance ▪ Slow speed and More risky
<i>Roadways Transportation</i>	<ul style="list-style-type: none"> ▪ Suitable for Short distance ▪ Rapid speed and less risk ▪ More cost effective and quicker to transport raw material over short distances by road ▪ Road transport is not very suitable for transporting raw material over long distances as it proves to be expensive
<i>Railways Transportation</i>	<ul style="list-style-type: none"> ▪ Rail transport can be cost effective ▪ Trains are capable of hauling loads ▪ High speed over long distance ▪ Railways requires a large investment of capital. ▪ Railways transport is inflexibility
<i>Selective Alternatives</i>	<i>Reason</i>
<i>Maritime Transportation and Roadways Transportation</i>	Transportation of raw material (Clinker) are long distance. So, ship transport is used for large volumes at low costs and raw material (Gypsum) is used trucks transport due to terrain condition.

The raw material (Clinker) for Cement grinding plant are transport by ship and trucks. Raw material will be unloaded from the vessels using ship cranes onto the hoppers before loading onto trucks and transported to the Grinding Plant. Gypsum has been produced and utilized in the Hsipaw Township, Shan State (Northern part) and transportation can use trucks.

4.12 Organization Structure & Workforce for Cement Grinding Plant

Myanmar Than Taw Myat Co., Ltd is operating with the 811 number of the workforces for cement grinding plant. There are a total foreign staff of 102 employees and 709 employees of local staff. In cement grinding plant has working three shift per day for cement production. The following chart shows the organization chart of the cement grinding plant.

<Table 4.6> Lists of Foreign Staff and Local Staff

<i>(a) Foreign Staff List</i>		
No	Position	Number of Staff
1	General Manager	1
2	Production Manager	1
3	Technician	100
Total		102

<i>(b) Local Staff List</i>		
No	Position	Number of Staff
1	Admin and HR Manager	1
2	Office Staff	30
3	Finance	9
4	Factory Manager	1
5	Asst; Factory Manager	2
6	Electrical	26
7	Supervisor	10
8	Skill Worker	75
9	Worker	300
10	Mechanic	2
11	General Worker	100
12	Security	45
13	Driver	108
Total		709

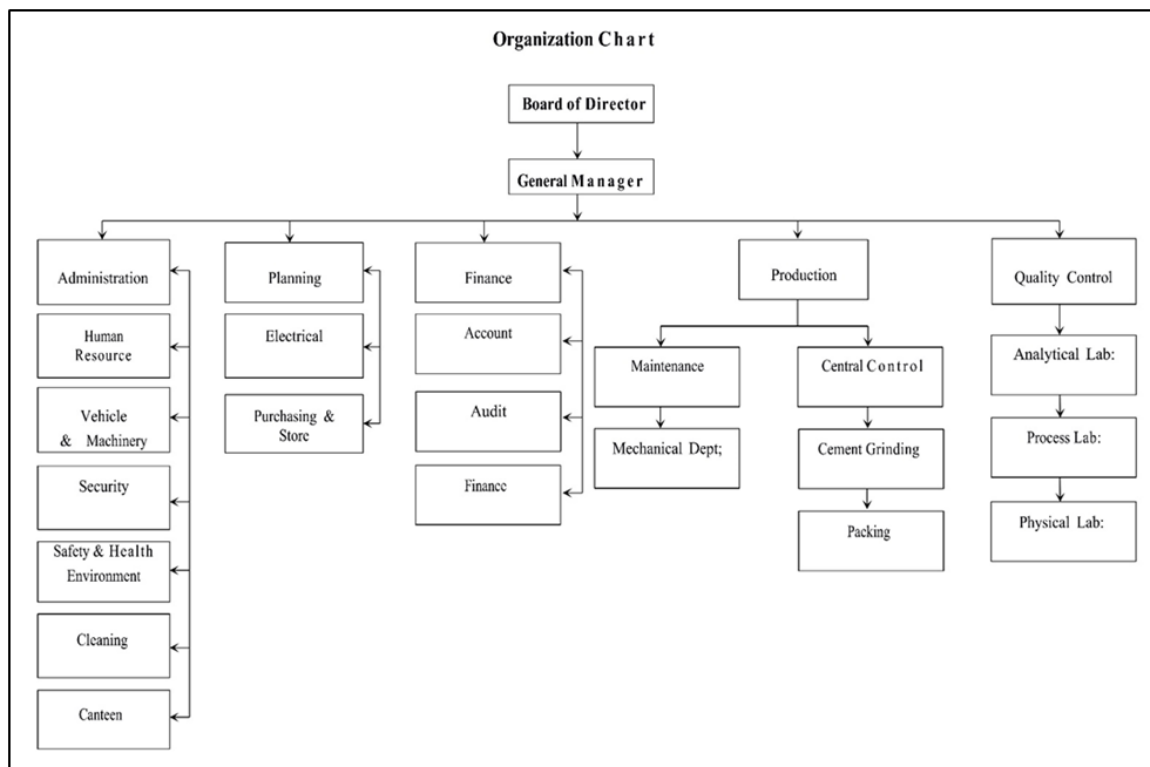


Figure 4.17 Organization Chart of Cement Grinding Plant

4.13 Other Existing Project and Development Project

Cement Grinding Plant of Myanmar Than Taw Myat Co., Ltd is located in the Dagon Myothit (East) Township, situated in the east of Yangon Region and it is also situated about 2km north-west of the Le Daunt Kan Railway Station. Cement Grinding Plant produces an average of 5000 tons per day (TPD) cement. The North-East of the cement grinding plant lies Yangon AMATA Smart and Eco City Project and south-west of the cement grinding plant lies Concrete Batching Plant.

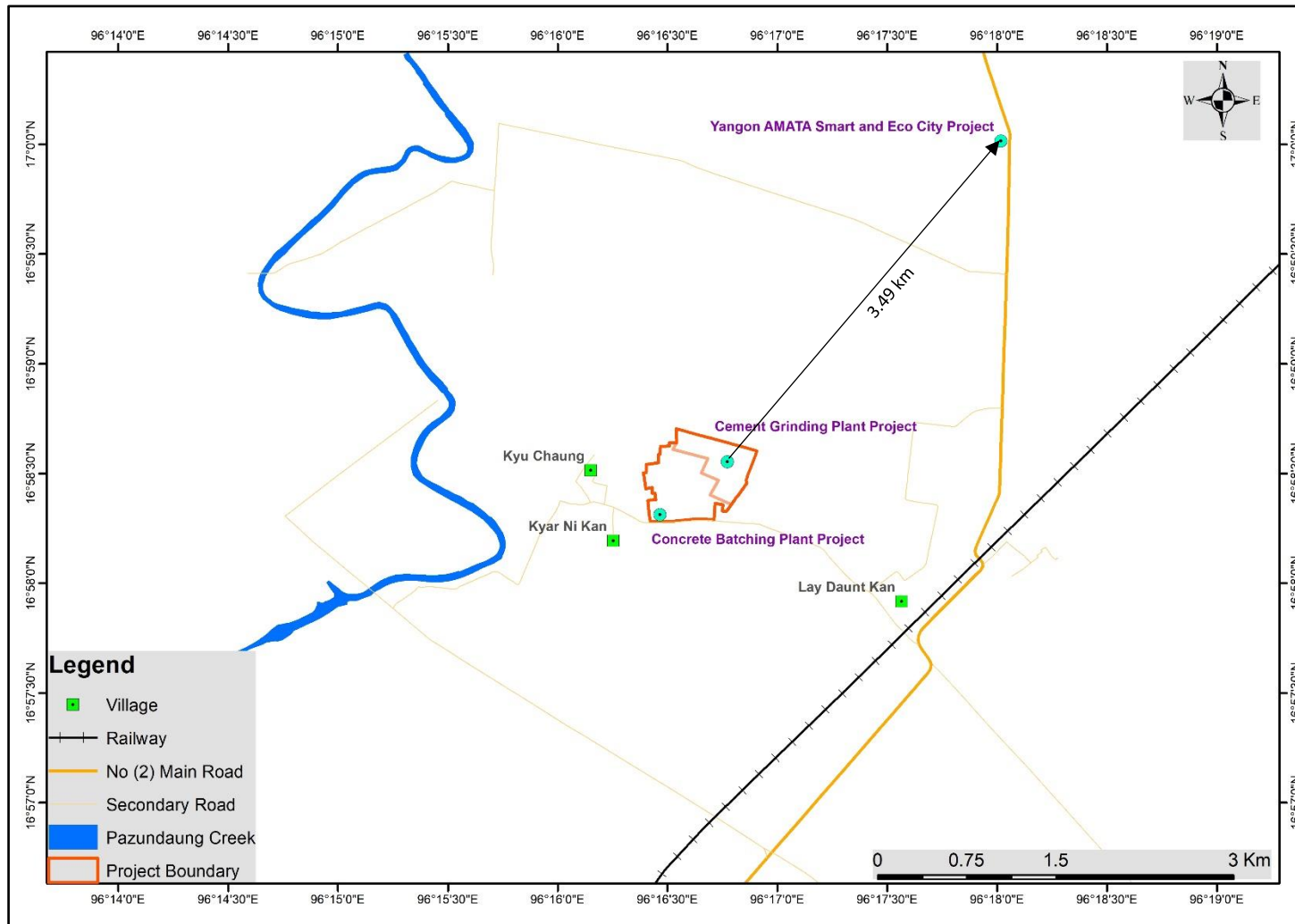


Figure 4.18 Surrounding of the cement grinding plant

5. DESCRIPTION OF THE SURROUNDING ENVIRONMENT AND ENVIRONMENTAL BASELINE STUDY

This Environmental and Social Impact Assessment Study report will give an assessment of the various environmental impacts likely to be caused on the surrounding nature in and around the proposed project. It will also incorporate the appropriate control measures required to be adopted or implemented in order to minimize the adverse effects thereof.

In order to carry out such assessment study, it is first necessary to delineate and define the existing environmental factors in and around the proposed project on the existing environmental scenario which will include various environs like ecology, flora-fauna, socio economic profiles, environmental quality in respect of water, air, and noise. This section incorporates the description of the existing environmental settings within the area of project site. The base line study was conducted during July and August 2022.

5.1 Setting the Study Limits

The following section briefly describes the surrounding environments such as physical environment, biological environment and socioeconomic profile that characterize the potential area of influence of the present project. The area of influence (AOI) for this project will be designated based on the following project components.

Myanmar Than Taw Myat cement grinding plant is located in the north-west of Dagon Myothit (East) Township and it is existed between 16° 46'N and 16° 55'N, east longitudes 96°10' E and 96°12' E. There are some residential areas in the south-east and west of the plant boundary. The present project is cement manufacturing and the followings are the main process including raw materials that will be used.

Production Technology	: cement grinding plant by using tube-mill (instead of vertical mill)
Production Process	: clinker to cement
Raw Materials	: clinker and gypsum
Raw Materials source	: transport from MTTM Cement Plant (Kyaukse) to MTTM (Yangon) Cement Grinding Plant

The Area of Influence (AoI) for the present cement grinding project consists of the following two components:

1. Cement grinding plant boundary
2. Access road

▪ *Temporal boundary for environmental impact assessment*

The environmental impacts are expected in the construction phase, and operation phase to occur on the atmospheric environment, water environment, noise and vibration, loss of natural resources during cement grinding plant manufacturing. The socio-economic impacts are expected to occur mainly during the operational period such as livelihood impacts and health impact for local communities.

▪ *Spatial boundary for environmental (biophysical) impact assessment*

The spatial boundaries of the assessment of the environmental (biophysical) impacts can be divided into direct and indirect impact zones of two components of the proposed project above mentioned.

Direct impacts generated by construction and operation activities will incur dust generation, noise and vibration generation and changes in habitat of flora and fauna in the project area. Indirect impacts such as dust generation due to construction vehicle movements are expected to affect nearby areas. The AOI for ambient air quality, noise, vibration, water quality and biodiversity will be set up within 2 km radius from boundary of project area.

▪ ***Temporal boundary for social impact assessment***

The socio-economic impacts are expected to occur mainly during the operational period such as livelihood impacts and health impact for local communities.

▪ ***Spatial boundary for social impact assessment***

There is no land acquisition and resettlement issue in project area. So, there is no direct impact on social - economic condition. The area of influence (AOI) for this project will be considered the Township level and the mainly emphasized within 2km radius from the center of the project site. The Project site is located in Dagon Myothit (East) Township of Yangon Region. The project area of influence (AOI) for social environment was focused on cement grinding plant. The villages adjacent to the project site will be included in Social AOI because it is potential to be affected by the activities of work site. The following table shows the distance between each village and cement grinding plant.

<Table 5.1> The Distance between Village and Cement grinding plant

No	Name of Village	Distance between Village and Cement grinding plant
1	Kyar Ni Kan	0.7 km
2	Kyu Chaung	0.8 km
3	Lay Daunt Kan	1.8 km

In addition, geographical scopes are set for study along the administrative boundary of the effected village of Dagon Myothit (East) Township for the social impacts such as:

➤ ***Long-term income and livelihood and general improvement of living condition (including traffic, health, and sanitation conditions etc.):***

While the primary beneficiaries of the project would be the job opportunities and the better transportation, the dust emission, and accidents due to traffic are expected to reach the broader community. Thus, the study would include the residents of affected township as secondary level of beneficiaries and include them in the study as part of stakeholder engagement.

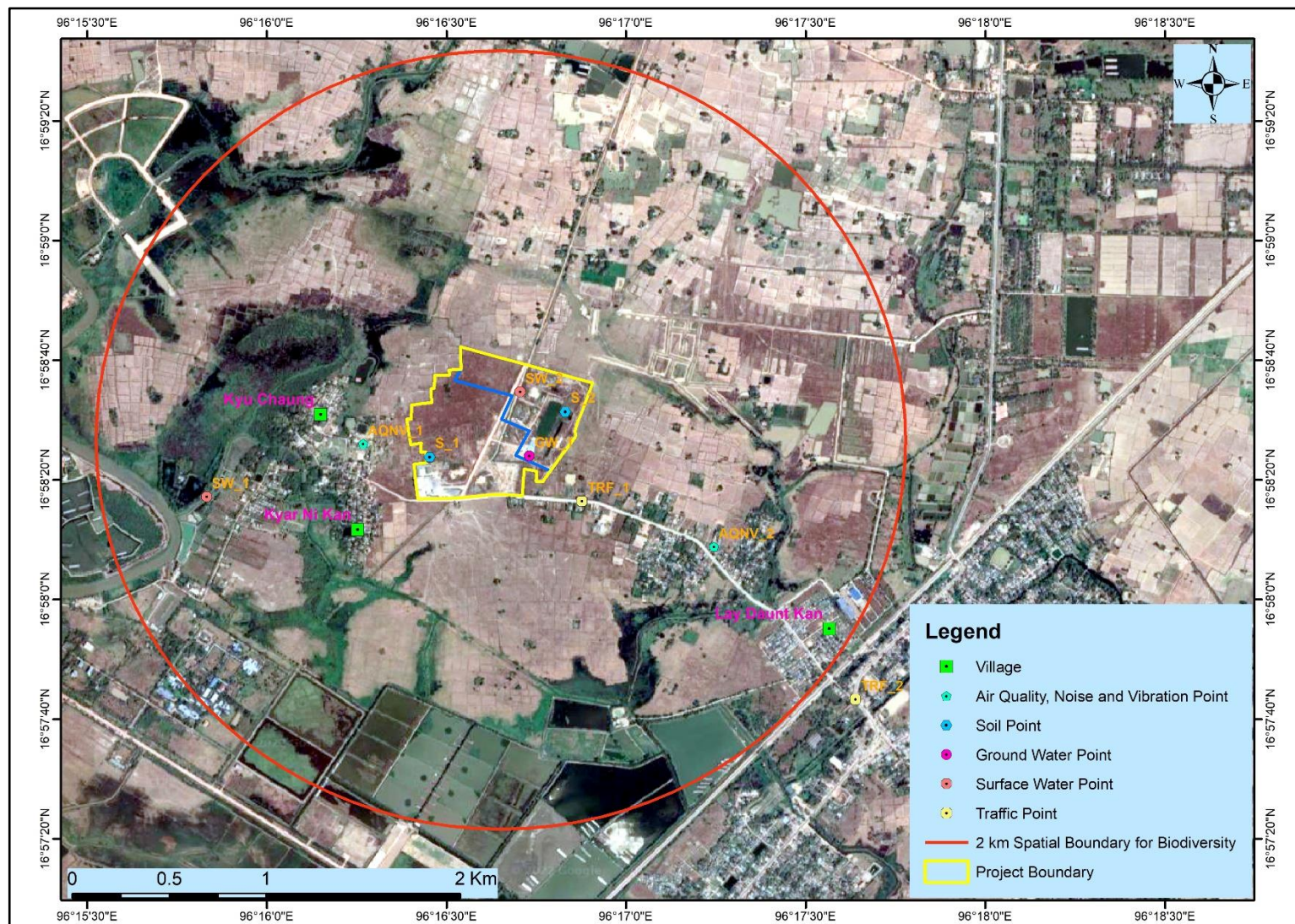


Figure 5.1 AOI for Biophysical Environment Baseline Study

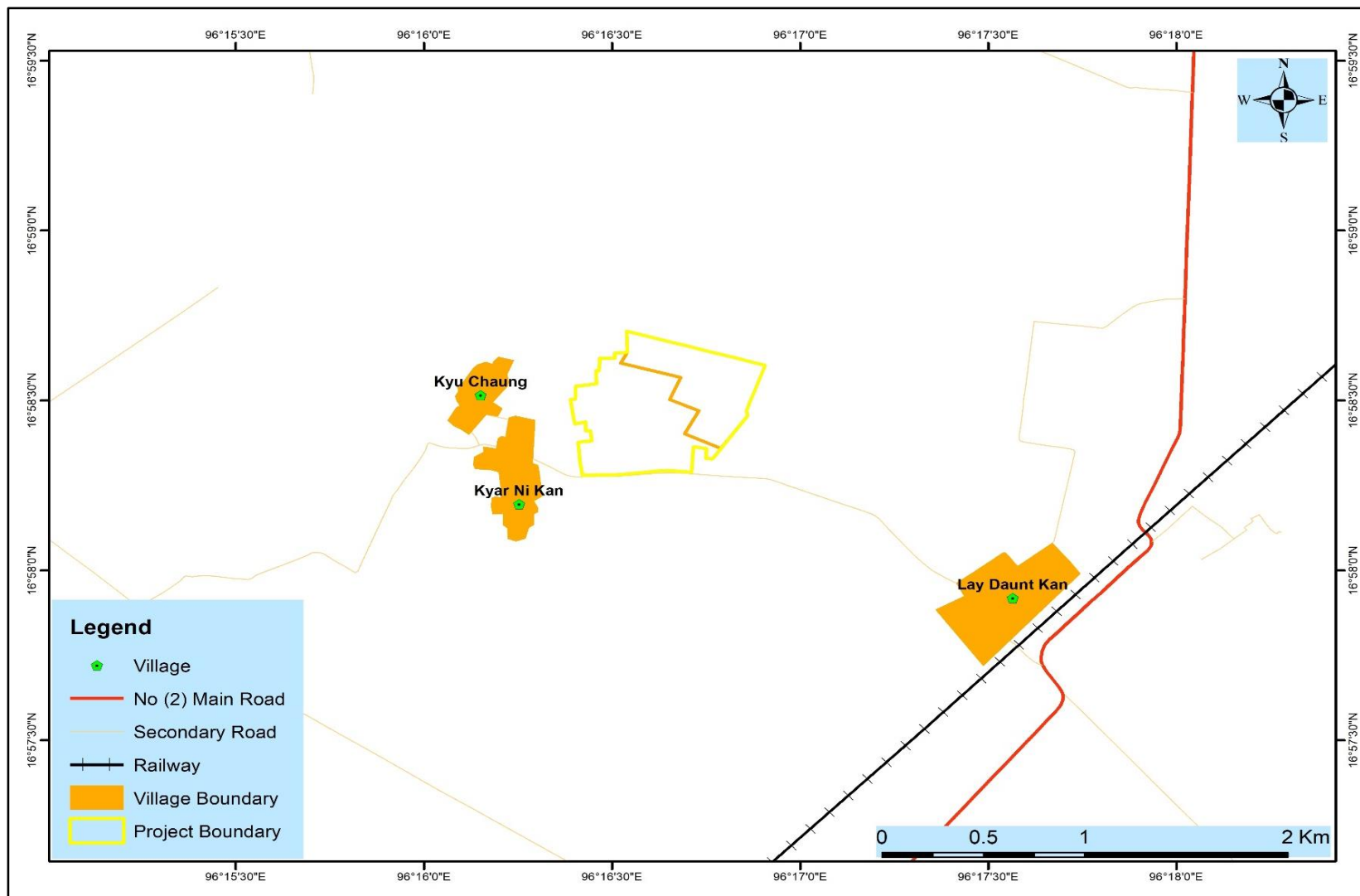


Figure 5.2 AOI of Social Environment

5.2 Physical Components

5.2.1 Climate and Meteorology

The meteorology and climate of Myanmar is controlled by the great monsoon circulation system of SE Asia and is influenced in detail by topographic peculiarities. The mountain ranges in Myanmar are generally running N-S, so that they present effective climate barriers for the SW monsoon in the summer and the NE monsoon in the winter.

Yangon has a tropical monsoon climate under Koppen climate classification system. The city receives rainy season from May to October where considerable amount of rainfall occurs. Dry season starts from November to April. Yangon Region is situated in the tropical monsoon climate of Myanmar. Therefore, a lengthy wet season from May through October when a substantial amount of rainfall is received and a dry season from November through April, when little rainfall is received. The annual rainfall of the Yangon city is about 2,889 mm and mean relative humidity is about 77 percent. The mean maximum temperature is about 33.5 °C and mean minimum temperature is about 21.6 °C. The monthly average temperature and monthly average rainfall are presented in Table 5.3. The April is hottest month in the year and the average temperature is about 30.7 degree Celsius. During June, July and August, humidity reaches 90% and falls to a low of 50% in February. During the monsoon, rainfall is short and intense – often more than 100 mm of water falls in an hour resulting in localized flooding.

<Table 5.2> Annual rainfall, temperature, and relative humidity (Years 2008-2017)

Annual rainfall (mm)	Temperature (°C)		Mean relative humidity (%)
2,889	Mean maximum	Mean minimum	77
	33.5	21.6	

Source: Department of Meteorology and Hydrology

<Table 5.3> Monthly mean temperature and monthly Rainfall of Yangon Region (Years 2008-2017)

Item/Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	8	1	17	35	334	539	667	524	436	259	64	6
Temp (°C)	24.9	26.9	29.1	30.7	29.5	27.6	27	26.9	27.3	27.8	27.6	25.6

Source: Department of Meteorology and Hydrology

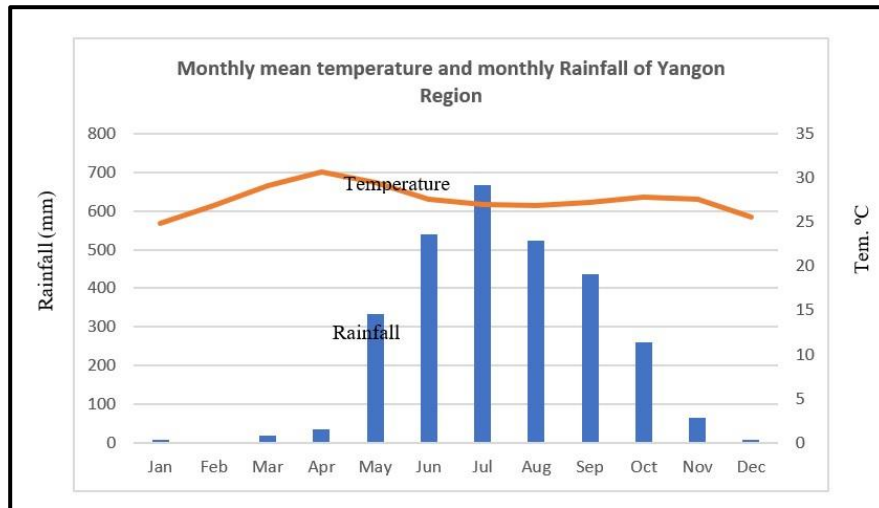


Figure 5.3 Monthly mean temperature and monthly rainfall of Yangon

Wind direction is typically south-west in pre-monsoon season and monsoon and south-west and south-east in post monsoon season. Flood, storm and riverbank erosion are common type of Natural Disasters mostly occurred in Yangon.

5.2.2 Topography

Yangon is situated on the eastern margin of the Ayeyarwady delta, between the Hlaing and Bago rivers. The present project area is located in the east of Ngamoyeik Creek. Ngamoyeik Creek flows from north to south. The general elevation of the present project area is about 5-to-10-meter mean sea level and the physiographic feature is flat and smooth.

Pazundaung creek, Named Ngamoyeik creek in the northern part of the Yangon city, joins the Yangon River at Monkey point, south-eastern extremity of the city. The Ngamoyeik creek is the tidal river and salt water intrusion occurs in some distance from the Yangon city. During low tide, the tide water recedes way out into the sea, transporting the river water with all its contents of wastewater away from the vicinity of the city.

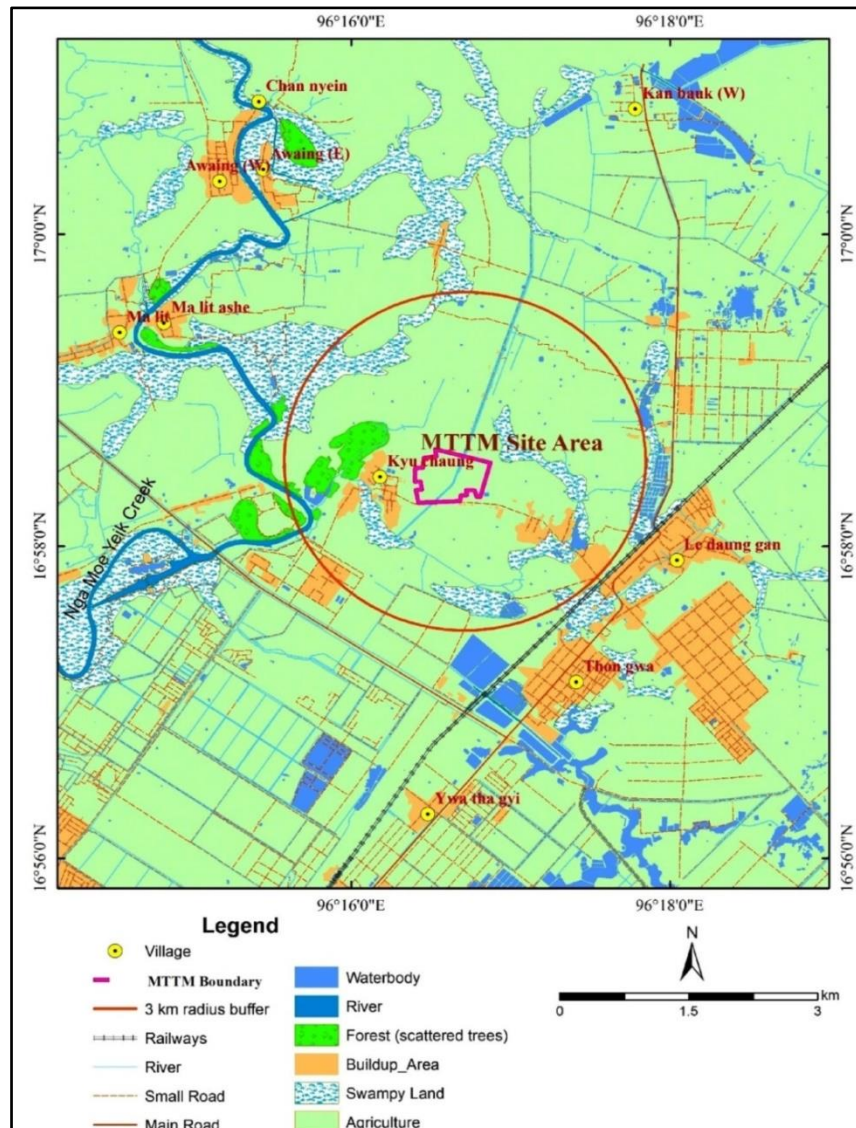


Figure 5.4 Digital elevation model of the project area and surroundings

5.2.3 Geology

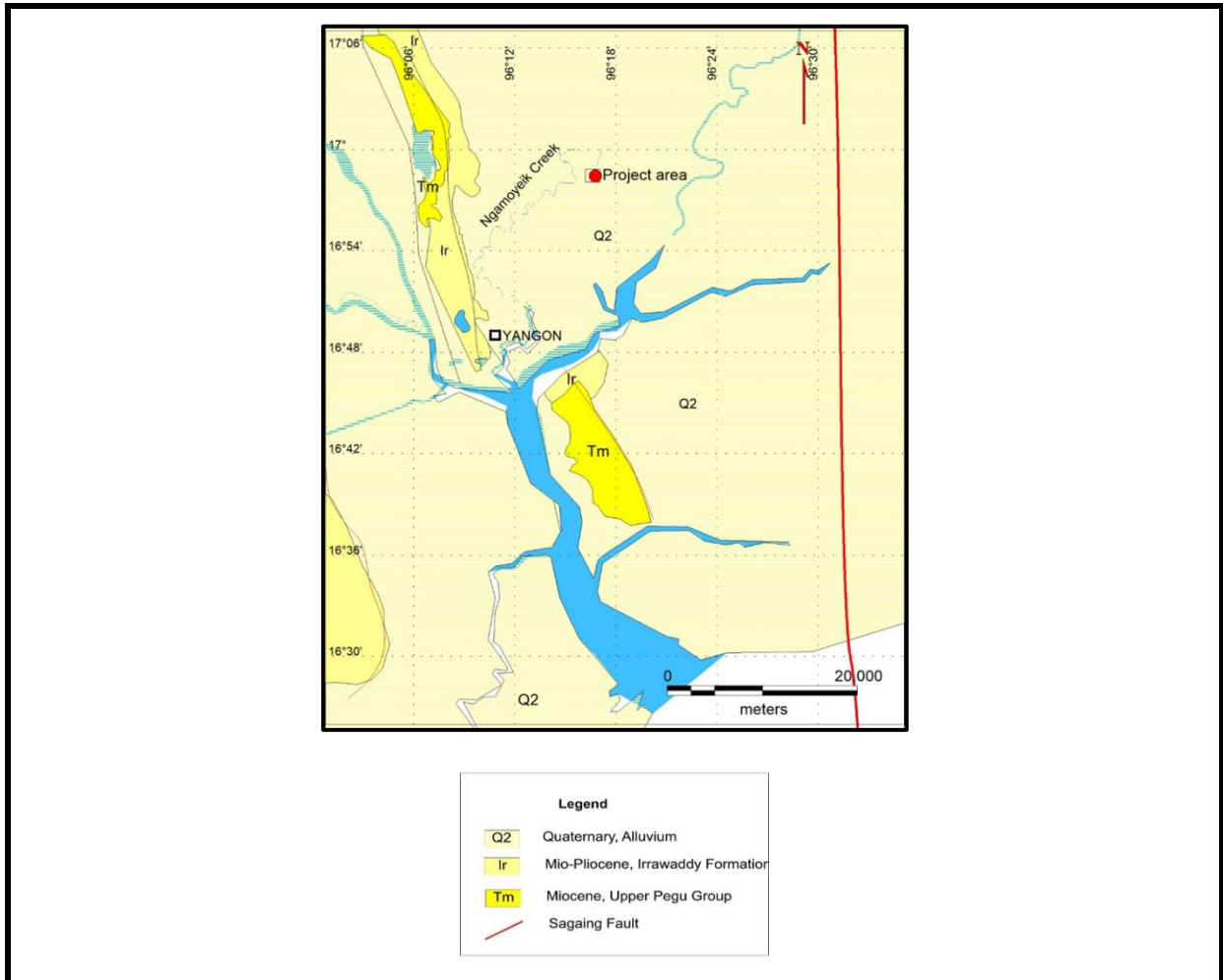
The present project area is also located in the southern part of Bago Yoma and lying about 35 km west of Sagaing Fault. The sediments in the recent condition belong to the molasse facies. These are composed mainly of sandstones and clays which are fossiliferous. The geological map of the present project area is shown in Figure 5.5.

The rocks encountered in the project area and surrounding area is presented as follows;

<i>Formation</i>		<i>Geological Age</i>
Q₂	- Alluvium	(Quaternary)
Ir	- Irrawaddy Formation	(Mio-Pliocene)
Tm	- Upper-Pegu Group	(Miocene)

The present project area is mainly occupied by the Quaternary Alluvium of grey, yellowish grey to yellowish brown, very soft to soft, low plasticity clay and reddish brown to yellowish brown silt and brown to yellowish brown, fine to medium grained sand with minor gravel.

The Irrawaddy Formation (Ir) and Upper Pegu Group (T-m) are widespread in and around the project area especially north and west part of the project area. Irrawaddy Formation is mainly composed of coarse to gritty-sandstones, mottled clays and occasionally pebbly sandstones with wood-fossils and vertebrate remains. The alluvium uncomfortably overlies the Irrawaddy Formation in this region.



Source: Excerpted from One million scale geological map of Myanmar

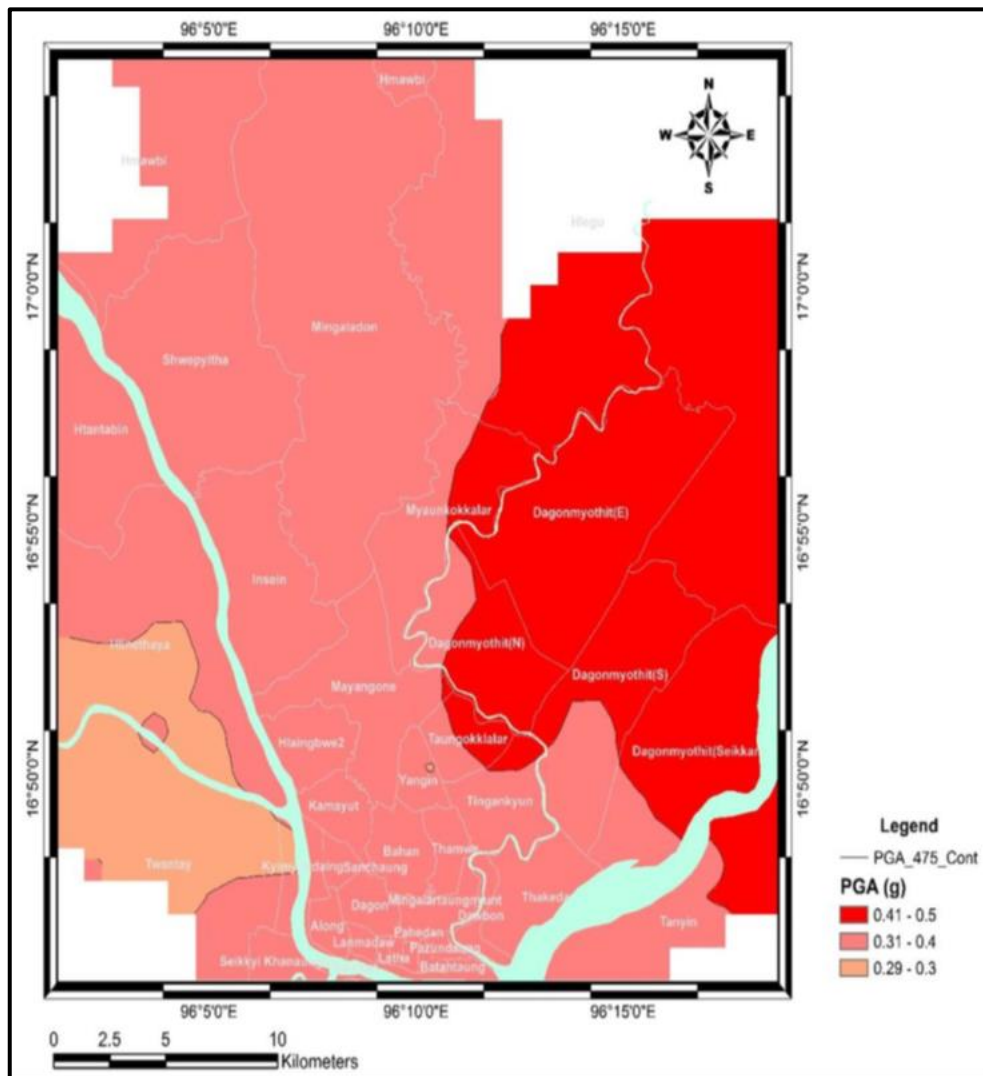
Figure 5.5 Regional geological map of the project area

5.2.4 Natural Hazards

According to the records of the previous considerably high magnitude earthquakes in Myanmar, **Yangon has experienced low to medium seismicity.** Some of the large earthquakes that caused the considerable damages to some buildings and some casualties in and around **Yangon Region can be recognized in the past records, e.g., the magnitude 7.3, earthquake that struck on May 5, 1930 and December 3, 1930 earthquake with the same magnitude.** According to probabilistic seismic hazard map of Yangon City, the city is generally located in the zone of peak ground acceleration, PGA 0.29 – 0.5 g as shown in the following Figure 5.6. The seismicity of the area and some soils in Yangon City are highly susceptible to liquefaction, **it is very important to have at least a general idea as to where liquefaction might occur.** The project site is located in the eastern part of Yangon city, which is near

to the western part of the Sagaing Fault. The right-lateral strike-slip Sagaing Fault is located 40km from eastern Yangon and threatens to create biggest earthquake.

Wind direction is typically south-west in pre-monsoon season and monsoon and south-west and south-east in post monsoon season. A tropical cyclone is a tropical storm with rotating winds at speeds of greater than 74 miles (119 km) per hour. Myanmar is vulnerable to cyclones, which often originate in the Southern Andaman Sea and enter the Bay of Bengal. These cyclones can result in heavy rains, storms, and floods. There are two prominent cyclone seasons for the country, between April to May and October to December. Flood, storm, and riverbank erosion are common type of Natural Disasters mostly occurred in Yangon.



Reference

Myo Thant, *Developing Probabilistic Seismic Hazard Maps of Yangon, Yangon Region, Myanmar, the United Nations Development Programs (UNDP), December 2015.*

Myanmar Climate Report, Department of Department of Meteorology and Hydrology Myanmar, MOTC and Norwegian Meteorological Institute, Norway.

Figure 5.6 Probabilistic Seismic Hazard Map of Yangon City, Yangon Region, for 10% probability of exceedance in 50 years, in terms of peak ground acceleration (PGA) in g.

5.2.5 Hydrology

The project area lies at the confluence of the Bago River and the Hlaing River. The two rivers downstream of the confluence is called as the Yangon River, which is connected to the Gulf of Mottama. The Pan Hlaing River and Twantay Canal, which converge and flow downstream the Yangon River, as well as the Kokkowa River which connects with the Hlaing River, all obtain its water from the Ayeyarwady River. The rivers mentioned are all tidal rivers. During dry season when the river flow is low, salt water intrusion occurs.

This area almost fluvial food plain, other is lower coastal plains where there may be few surface drainages channels. In and around Yangon River areas, the water table is often high; relatively young and subjected to a minimum of dissection. A high-water table minimizes runoff and restricts system that may from between floods.

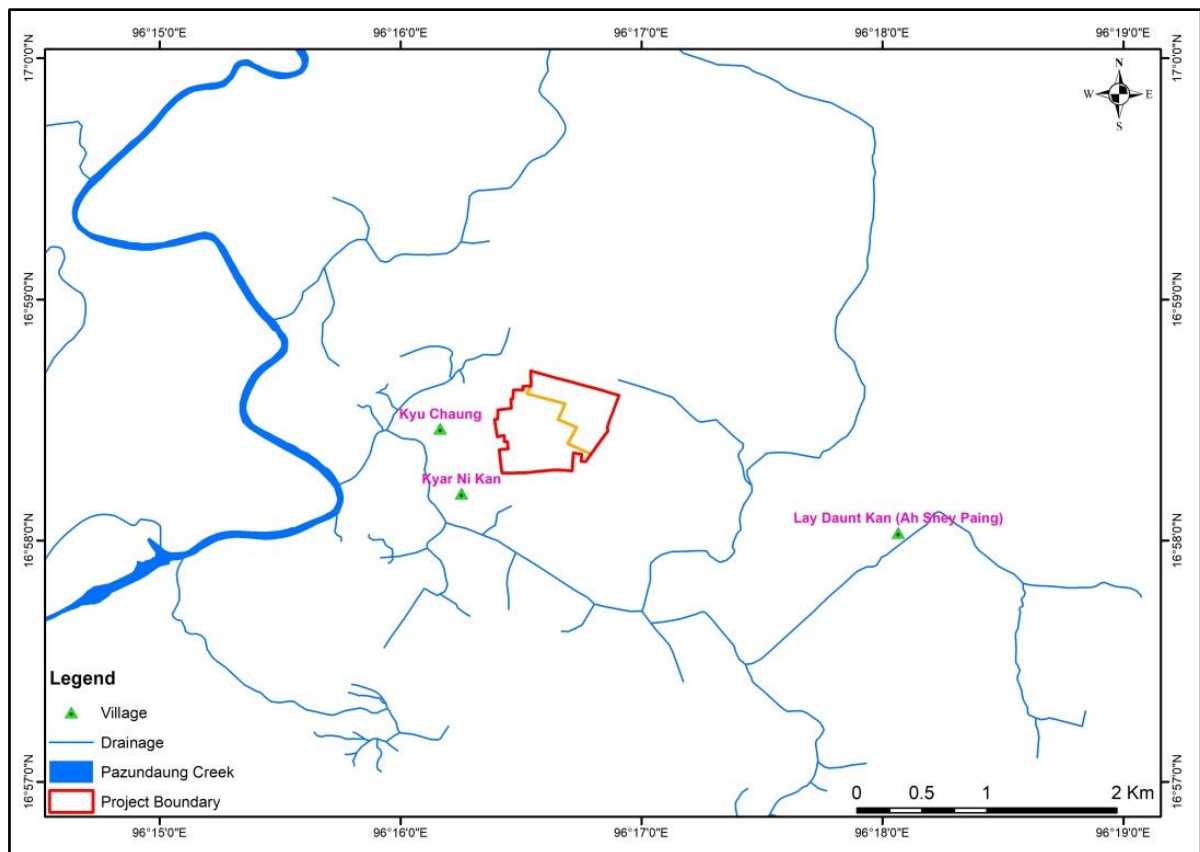


Figure 5.7 Drainage pattern of the project area

5.2.6 Soil

The different varieties of the individual soil characteristics are found vicinity of the project area, such as Meadow and Meadow Alluvial Soil, Gley and Gley swampy soils, Swampy soils, Lateritic soils, yellow brown forest soils, Dune Forest & Beach sand, Mangrove Forest soils and Saline swampy meadow gley soils. The meadow soils which occur near the river plains with occasional tidal floods are non-carbonate. They usually contain large amount of salts. Meadow Alluvial soils (fluvic Gleysols) can be found in the flood plains.

5.2.7 Air Quality

i. Survey Item

Parameters for air quality survey were determined by referring environmental quality standard for air in national emission guideline. Myanmar National Environmental Quality (Emission) Guidelines were announced on 29th December 2015 and guideline values for air pollution level are shown in Table 5.4. In this chapter, the existing environmental condition of ambient air quality was followed under this guideline.

<Table 5.4> Myanmar National Environmental Quality Guideline values for survey parameters of air quality

No	Parameter	Averaging Period	Guideline Value	Units
1.	Nitrogen dioxide	1-hour	200	µg/m ³
2.	Ozone (O ₃)	8-hour daily maximum	100	µg/m ³
3.	Particulate matter PM ₁₀ a	24-hours	50	µg/m ³
4.	Particulate matter PM _{2.5} b	24-hours	25	µg/m ³
5.	Sulphur dioxide	24-hour	20	µg/m ³
6.	Temperature	-	-	°C
7.	Relative Humidity	-	-	%

ii. Survey Point

The locations of sampling points are as shown in Table 5.5. The detail of each sampling point is described below.

<Table 5.5 > Sampling Points for air quality and Noise Survey

Sampling Point	Coordinates	Description of Sampling Point
AQ-1	16°58'25"N 96°16'16"E	In the compound of monastery, between project site and No. (2) Main Road
AQ-2	16°58'08"N 96°17'14"E	Outside of the Mahar Nwe Orphan Charity Monastery, between project site and No. (2) Main Road

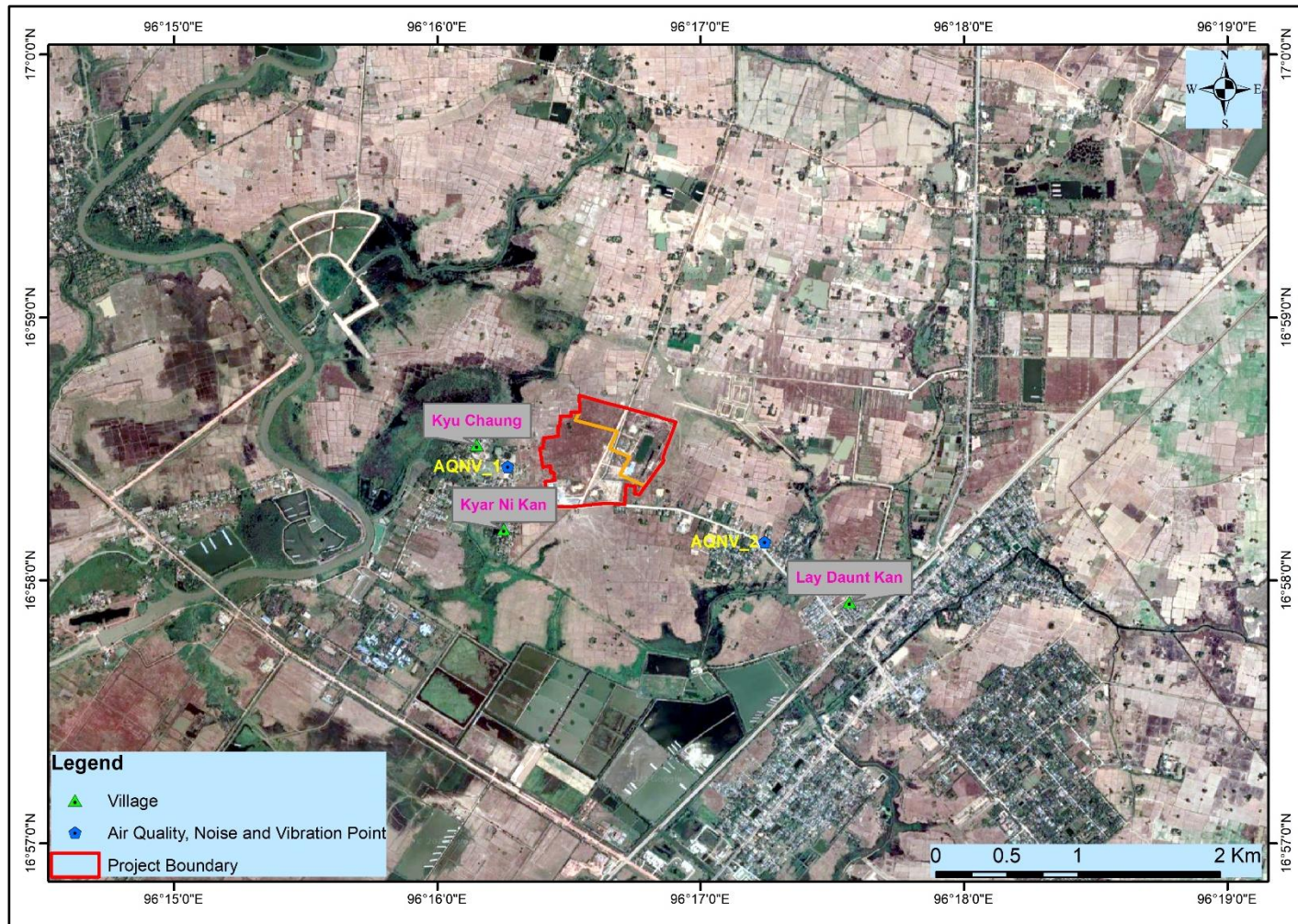


Figure 5.8 Location of Air Quality, Noise and Vibration Level Survey Point

AQ-1

This station was installed in the compound of monastery, located near No.2 main road and about 10.18 km away from Bago River. This survey point is situated about 2.5 km away from No.2 main road. Between survey point and Bago River, its average elevation is about 16 ft, maximum is 26 ft and minimum are 4 ft. And elevation gain/loss are 175 ft and -186 ft.



Figure 5.9 Photo of Air Quality Survey Point

AQ-2

This station was installed in outside area of the Mahar Nwe Orphan Charity Monastery, located near No.2 main road and about 8.36 km away from Bago River. This survey point is situated about 0.9 km away from No.2 main road. Between survey point and Bago River, its average elevation is about 16 ft, maximum is 26 ft and minimum are 0 ft. And elevation gain/loss are 142 ft and -157 ft.



Figure 5.10 Photo of Air Quality Survey Point

iii. Survey Period

Air quality monitoring was conducted 24 hours during 28th July 2022 to 30th July 2022. The measurement duration is shown in the following Table.

<Table 5.6> Duration of Air Quality survey measurement

Sampling Point	Period
AQ-1	28 th -29 th July, 2022
AQ-2	29 th -30 th July, 2022

iv. Survey Method

Sampling and analysis of ambient air quality were conducted by referring to the recommendation of the United States Environmental Protection Agency (U.S.EPA). The Scentinal Environmental Perimeter Air Station (EPAS) was used to collect ambient air survey data. Sampling rate or air quality data were measured automatically and directly read and recorded onsite for measured parameters as shown in Table.

<Table 5.7> Sampling and analysis method for air quality

No.	Parameter	Analysis Method
1	Sulfur dioxide (SO ₂)	On site reading
2	Nitrogen dioxides (NO ₂)	On site reading
3	Ozone (O ₃)	On site reading
4	Particle matter 2.5 (PM _{2.5})	On site reading
5	Particle matter 10 (PM ₁₀)	On site reading
6	Relative Humidity	On site reading
7	Temperature	On site reading
8	Wind Speed	On site reading
9	Wind Direction	On site reading

v. Survey Result

Ambient Air Quality

The average values of ambient gaseous levels of all air quality monitoring for 24 hours are shown in Table 5.8. According to the survey results, the average 24-hour period for PM_{2.5}, PM₁₀ and SO₂ concentrations are within the National Environmental Quality (emission) Guideline. The daily 8-hour maximum ozone level is within the 100 ug/m³ standard. Hourly NO₂ levels are below the specified emission guideline. The hourly results of NO₂ concentration are described in Table 5.9 and 5.10.

<Table 5.8> Ambient Air Quality Results

Sampling No	Date	Time	Ozone (8-hours)	SO ₂	PM ₁₀	PM _{2.5}	RH	Temp (°C)
	D. M. Y	Hours	µg/m ³	µg/m ³	µg/m ³	µg/m ³	%	Deg. C
AQ-1	28 th -29 th July, 2022	24 Hours	5.8	0.4	16.2	10.9	82	31.5
AQ-2	29 th -30 th July, 2022	24 Hours	9.5	0.6	16.07	10.8	84.2	30.2
National Environmental Quality (Emission) Guideline			100	20	50	25	-	-

<Table 5.9> Hourly Nitrogen Dioxide concentration for AQ-1 Station

Date	Time	NO ₂	NEQG Guideline
7/28/2022	12:00-13:00	33	200
7/28/2022	13:00-14:00	27	
7/28/2022	14:00-15:00	23	
7/28/2022	15:00-16:00	27	
7/28/2022	16:00-17:00	35	
7/28/2022	17:00-18:00	42	
7/28/2022	18:00-19:00	38	
7/28/2022	19:00-20:00	36	
7/28/2022	20:00-21:00	33	
7/28/2022	21:00-22:00	35	
7/28/2022	22:00-23:00	38	
7/28/2022	23:00-24:00	73	
7/28/2022	24:00-1:00	63	
7/29/2022	1:00-2:00	59	
7/29/2022	2:00-3:00	36	
7/29/2022	3:00-4:00	29	

7/29/2022	4:00-5:00	27	
7/29/2022	5:00-6:00	42	
7/29/2022	6:00-7:00	31	
7/29/2022	7:00-8:00	29	
7/29/2022	8:00-9:00	35	
7/29/2022	9:00-10:00	79	
7/29/2022	10:00-11:00	67	
7/29/2022	11:00-12:00	29	

<Table 5.10> Hourly Nitrogen Dioxide concentration for AQ-2 Station

Date	Time	NO ₂	NEQG Guideline
7/29/2022	13:00-14:00	30	200
7/29/2022	14:00-15:00	21	
7/29/2022	15:00-16:00	44	
7/29/2022	16:00-17:00	78	
7/29/2022	17:00-18:00	61	
7/29/2022	18:00-19:00	25	
7/29/2022	19:00-20:00	21	
7/29/2022	20:00-21:00	21	
7/29/2022	21:00-22:00	32	
7/29/2022	22:00-23:00	41	
7/29/2022	23:00-24:00	42	
7/30/2022	24:00-1:00	37	
7/30/2022	1:00-2:00	34	
7/30/2022	2:00-3:00	32	
7/30/2022	3:00-4:00	31	
7/30/2022	4:00-5:00	32	

7/30/2022	5:00-6:00	29	
7/30/2022	6:00-7:00	25	
7/30/2022	7:00-8:00	26	
7/30/2022	8:00-9:00	27	
7/30/2022	9:00-10:00	28	
7/30/2022	10:00-11:00	21	
7/30/2022	11:00-12:00	21	
7/30/2022	12:00-13:00	21	

Wind Speed and Direction

According to the wind rose diagram, average wind speed of air quality station is 0.50 to 2.10m/s. Prevailing wind direction of air quality station is blowing from southeast and southwest direction. Hourly results of wind direction and wind speed is shown in Table 5.11. Wind rose diagram of air quality station is shown in Figure 5.11 and 5.12.

<Table 5.11 > Hourly Wind Speed and Direction Results

AQ-1				AQ-2			
Date	Time	Wind Direction	Wind Speed	Date	Time	Wind Direction	Wind Speed
7/29/2022	12:03:11	141	0	7/30/2022	13:10:28	340	0
7/29/2022	11:58:10	238	0	7/30/2022	13:05:26	230	0
7/29/2022	11:53:09	244	0	7/30/2022	13:00:24	336	0
7/29/2022	11:48:08	223	0	7/30/2022	12:55:22	39	0.3
7/29/2022	11:43:07	9	0	7/30/2022	12:50:20	126	0.3
7/29/2022	11:38:06	190	0	7/30/2022	12:45:18	287	0
7/29/2022	11:33:05	190	0.7	7/30/2022	12:40:16	80	0.2
7/29/2022	11:28:04	190	0.5	7/30/2022	12:35:14	21	0
7/29/2022	11:23:03	190	0.2	7/30/2022	12:30:12	332	0
7/29/2022	11:18:02	190	0	7/30/2022	12:25:10	243	0



7/29/2022	11:13:01	190	0	7/30/2022	12:20:08	43	0
7/29/2022	11:08:00	190	0	7/30/2022	12:15:06	39	0.2
7/29/2022	11:02:59	190	0.5	7/30/2022	12:10:04	41	0.2
7/29/2022	10:57:58	190	0	7/30/2022	12:05:00	334	0.2
7/29/2022	10:52:57	190	0	7/30/2022	12:00:55	5	0.3
7/29/2022	10:47:56	190	0	7/30/2022	11:55:54	29	0.3
7/29/2022	10:42:55	190	0	7/30/2022	11:50:53	35	0
7/29/2022	10:37:54	190	0	7/30/2022	11:45:51	23	0
7/29/2022	10:32:53	190	0	7/30/2022	11:40:49	88	0.8
7/29/2022	10:27:52	190	0	7/30/2022	11:35:47	327	0
7/29/2022	10:22:51	190	0	7/30/2022	11:30:46	52	0.2
7/29/2022	10:17:50	190	0.3	7/30/2022	11:25:44	323	0
7/29/2022	10:12:49	190	0.2	7/30/2022	11:20:43	117	0
7/29/2022	10:07:48	190	0.2	7/30/2022	11:15:43	317	0

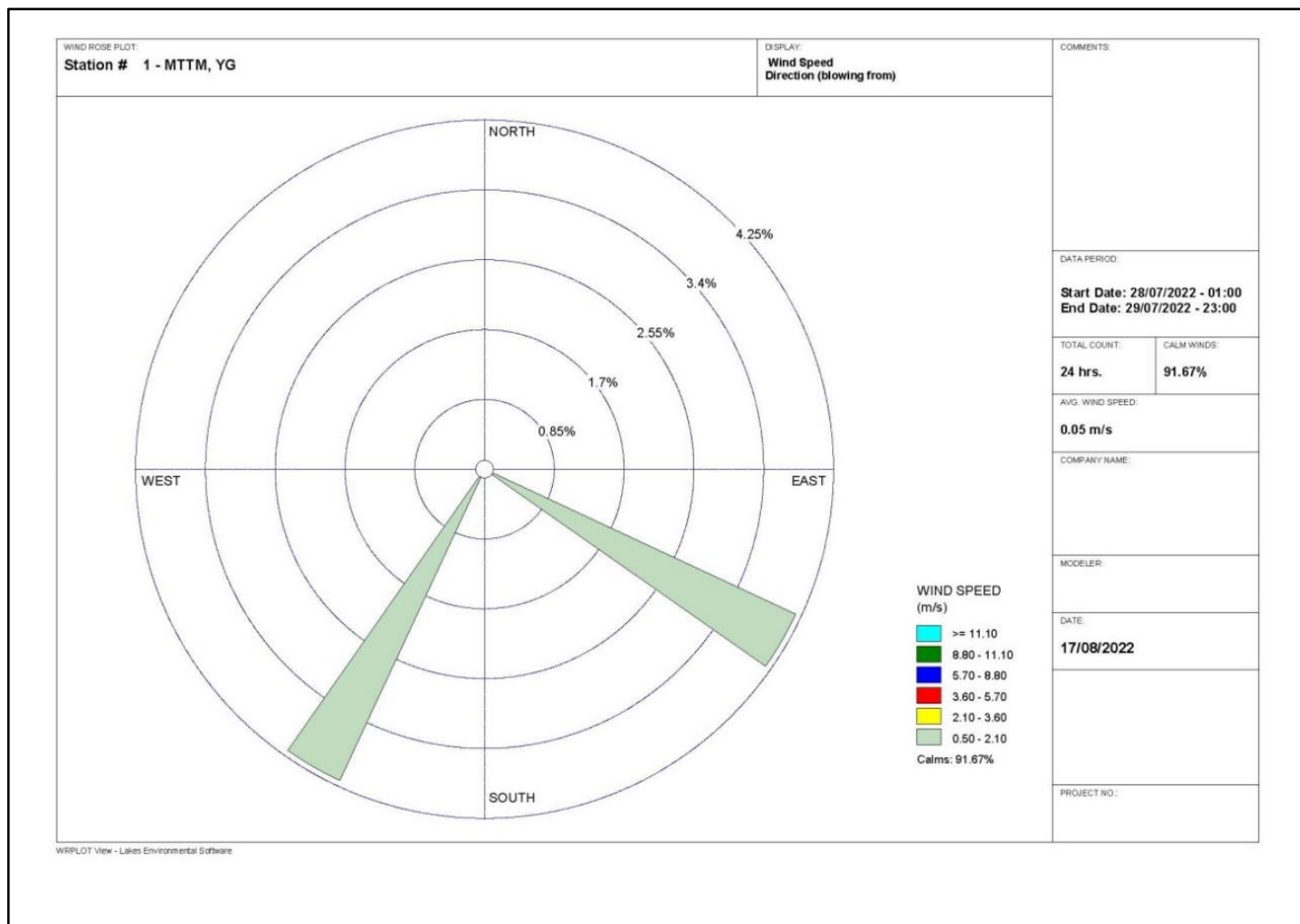


Figure 5.11 Wind Speed and Direction diagram at AQ1

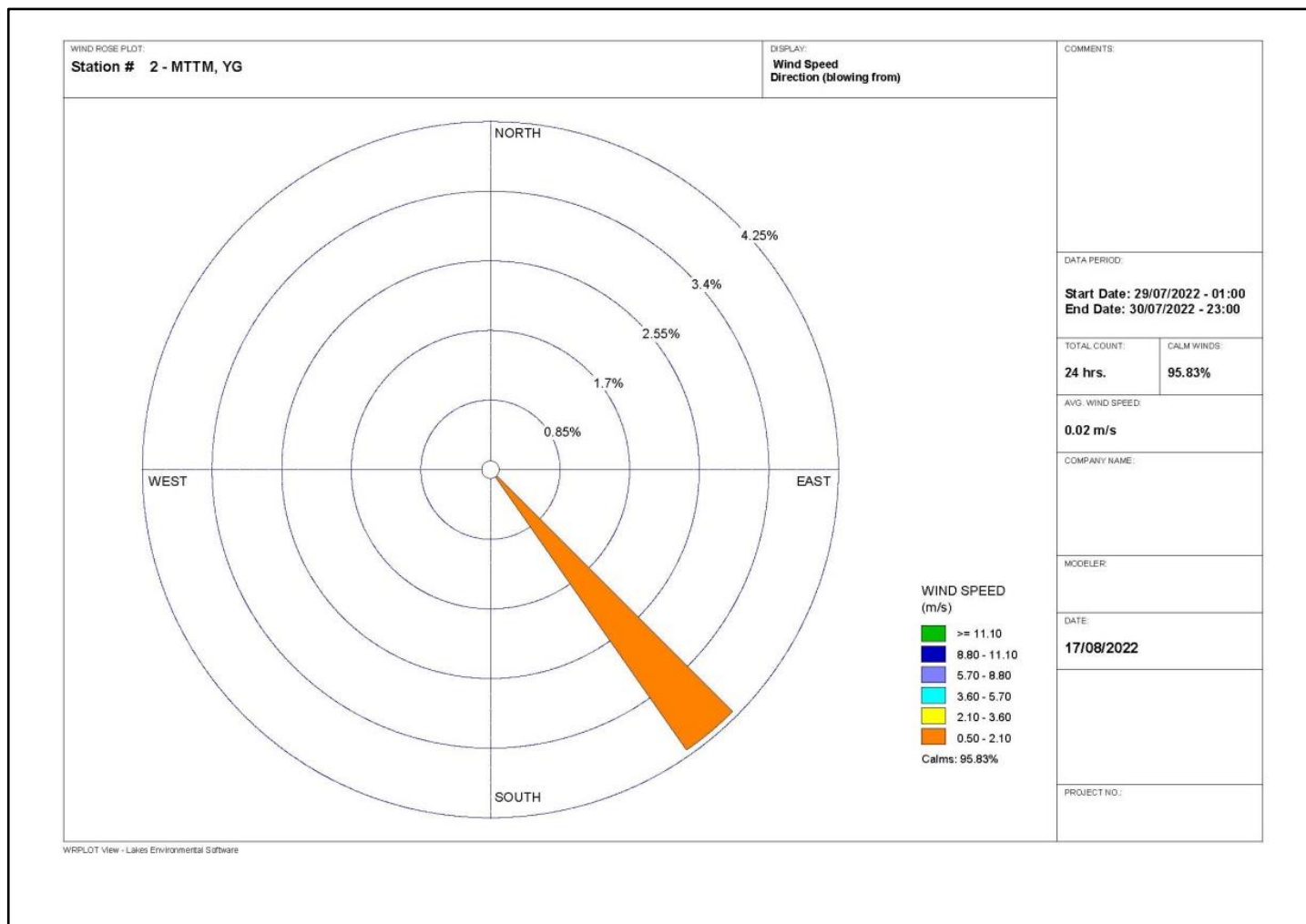


Figure 5.12 Wind Speed and Direction diagram at AQ2

5.2.8 Noise

i. Survey Item

Noise prevention and mitigation measures should be taken by all projects where predicted or measured noise impacts from a project facility or operation exceed the applicable noise level guideline at the most sensitive point of reception. Noise impacts should not exceed the levels shown below, or result in a maximum increase in background levels of three decibels at the nearest receptor location off-site.

The noise level results were compared against daytime and night time limits of Myanmar National Environmental Quality (Emission) Guideline for residential, institutional, educational environment, i.e., 55 dB(A) for day time and 45 dB(A) for night time.

<Table 5.12 > Applicable Noise Level Guideline

Receptor	One Hour LAeq (dBA) ^a	
	Daytime 07:00 - 22:00 (10:00 - 22:00 for public holidays)	Nighttime 22:00 - 07:00 (22:00 - 10:00 for public holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

^a Equivalent continuous sound level in decibels

ii. Survey Point

Noise monitoring stations were conducted as same time and same location as of air quality station.

iii. Survey Period

The survey duration of noise level is as same as air quality monitoring survey.

iv. Survey Method

Sampling and monitoring of surrounding sound were conducted by using following instrument for 24 hours/1-day measurement. Measurement of environmental sound level was conducted by referring to the recommendation of International Organization for Standardization (ISO), i.e., ISO 1996-1:2003 and ISO 1996-2:2007. The instrumentation used for noise quality survey is shown in the following Table 5.13. Noise meter was set up to record the log as ten minutes intervals during an hour for one consecutive day.

<Table 5.13 > Instrumentation for noise survey

Instrumentation	Description
Sound level meter	Sound level meter with SD Card (Brand - Lutron; Model - SL-4023SD)



Figure 5.13 Lutron Sound Level Meter

v. Survey Result

Daily average noise levels (LAeq) of the monitoring point were presented in Table 5.14. Day time and night time was calculated by using the following array formula in the excel sheet. This formula is firstly used for hourly LAeq and then for the 24 hours LAeq.

$$10 * \text{LOG}_{10}(\text{AVERAGE}(10^{((\text{RANGE})/10)}))$$

Possible noise emission sources have around the noise level monitoring station. So, noise levels found the lower than the Myanmar National Environmental Quality (Emission) Guideline values for residential, institutional, educational environment.

<Table 5.14 > A-weighted loudness Equivalent (LAeq) Level

Result	N-1		N-2	
	Day	Night	Day	Night
		49	44	50
NEQG Guideline (Residential, institutional, educational)	55	45	55	45

5.2.9 Vibration

i. Survey Item

As there is no vibration standard to receptors in Myanmar, the target vibration level at construction phase shall be set based on the standards in some foreign countries. Accordingly, the target level of vibration is set based on the following policies.

- Monastery and residential house where are necessary to keep quiet and sleep shall comply with the Japanese standard for residential area,
- Office, commercial facilities, and factories areas shall comply with the Japanese standard for mixed areas including residential and commercial and industrial areas, and

- The category of times divided into three types in a manner consistency with target noise level for construction.

Regulatory Standards for Vibration Emitted from Specified Factories (Summary)			
Time Area	Daytime	Nighttime	Applicable Areas
I	60 – 65 dB	55 – 60 dB	Areas where maintenance of quiet is particularly needed to preserve a good living environment and where quiet is needed for as they are used for residential purposes.
II	65 – 70 dB	60 – 65 dB	Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating.

Note: Vibration level shall be measured at the boundary line of the specified factory.

2. Standards for Vibration Emitted from Specified Construction Works (Summary)		
Type of Restriction	Area Classified	
Standard value	I & II	85dB
Work prohibited time	I	7 p.m. - 7 a.m.
	II	10 p.m. - 6 p.m.
Maximum Working duration	I	10 hours per day
	II	14 hours per day
Maximum consecutive working days	I & II	6 days
Work prohibited days	I & II	Sundays and holidays

Notes: 1. 'Area I' stands for areas to which one of the following descriptions applies:

(a) Areas where maintenance of quiet is particularly needed to preserve the residential environment.

(b) Areas which require maintenance of quiet since they are used for residential purposes.

(c) Areas used for commercial and industrial as well as residential purpose which are in need of measures to prevent vibration pollution since a considerable number of houses are located.

(d) The neighborhood of schools, hospitals and the like. 'Area II' stands for areas where there is a need to preserve the living environment of inhabitants and other than Area I.

Note: 2. Vibration level shall be measured at the boundary line of the specified construction work site.

3. Request Limits for Motor Vehicle Vibration (Summary)			
Time Area	Daytime	Nighttime	Applicable Areas
I	65 dB	60 dB	Areas where maintenance of quiet is particularly needed to preserve a good living environment and where quiet is called for as they are used for residential purposes.
II	70 dB	65 dB	Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local inhabitants and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating.

ii. Survey Point

Vibration monitoring stations were conducted as same time and same location as of air quality station.

iii. Survey Period

The survey duration of noise level is as same as air quality monitoring survey.

iv. Survey Method

The instrumentation for vibration level was used by RION VM-55 vibration meter. This instrument is a 3-Axis (X, Y, Z) vibration meter that can be used in a wide range of applications for measurement and analysis of different parameters. The unit is equipped to measure the instantaneous value for vibration level and vibration acceleration level, as well as the time percentile level, time averaged level, maximum and minimum values in three axes simultaneously.

<Table 5.15> Instrumentation for noise survey

Instrumentation	Description
Vibration meter	Rion VM55 with SD Card



Figure 5.14 Instrumentation for vibration meter

v. Survey Result

Average vibration level results of four points for 24hours are presented in Table 5.16.

<Table 5.16> Vibration level results for all monitoring station

Result	V-1		V-2	
	Day	Night	Day	Night
		30	28	45
Environmental Standard	65	60	65	60

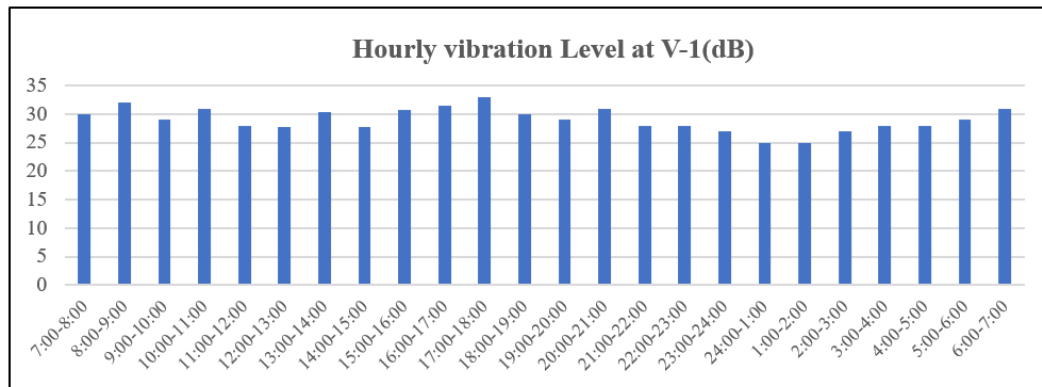


Figure 5.15 Hourly Vibration Level at V-1 (dB)

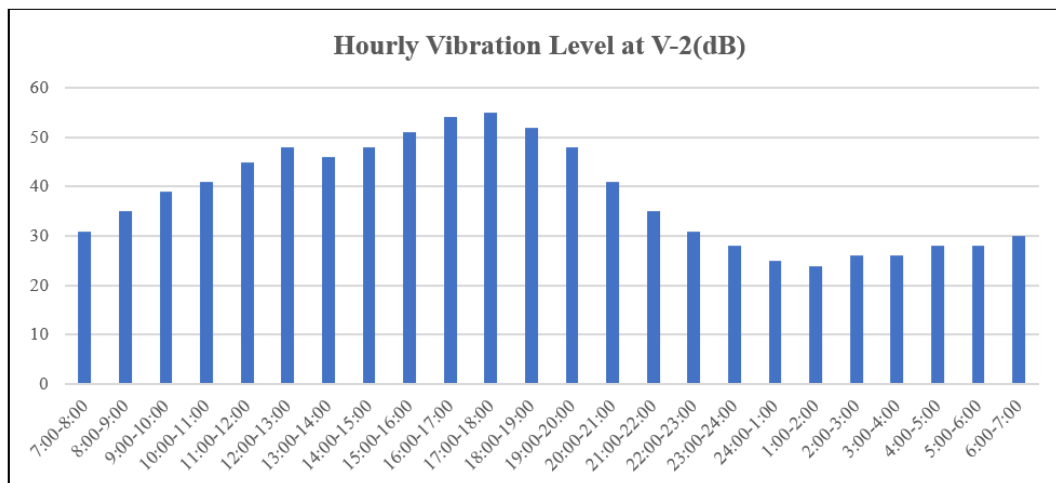


Figure 5.16 Hourly Vibration Level at V-2 (dB)

5.2.10 Water Quality

i. Survey Item

Water quality for this project was referenced by NEQG. In this project, water quality standard was applied by general guideline in NEQG.

The water quality study comprises literature study and field study for water quality sampling and analysis. The results of water quality measurements will be compared with the Myanmar National Environmental Quality (Emission) Guidelines. The other parameters will be analyzed in a certified laboratory. The water quality locations are described in the Figure 5.17. The following Table is described the ESIA study for water quality.

<Table 5.17> Survey parameters for water quality

Surface Water Quality Measurement	Number of samples	Two points
	In situ parameters	pH, DO, EC, TDS, water temperature, Turbidity
	Laboratory analysis parameters	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus
	Period	One time
	Instrument	High accuracy measurement device (multi-parameter for water quality)
Ground Water Quality Measurement	Number of samples	One point
	In situ parameters	pH, DO, EC, TDS, water temperature, Turbidity
	Laboratory analysis parameters	BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus
	Period	One time
	Instrument	High accuracy measurement device (multi-parameter for water quality)

ii. Survey Point

The brief description of water sampling point is presented in Table.

<Table 5.18> Sampling point of Water Quality

Category	Sampling Point	Coordinates	Description of Sampling Points
Water Survey	SW-1	16°58'17.20"N 96°15'49.93"E	At Thon Gwa Chaung, 1.62km from project area
	SW-2	16°58'34.74"N 96°16'42.31"E	In the compound of project area
	GW-1	16°58'24.10"N 96°16'43.70"E	In the compound of project area

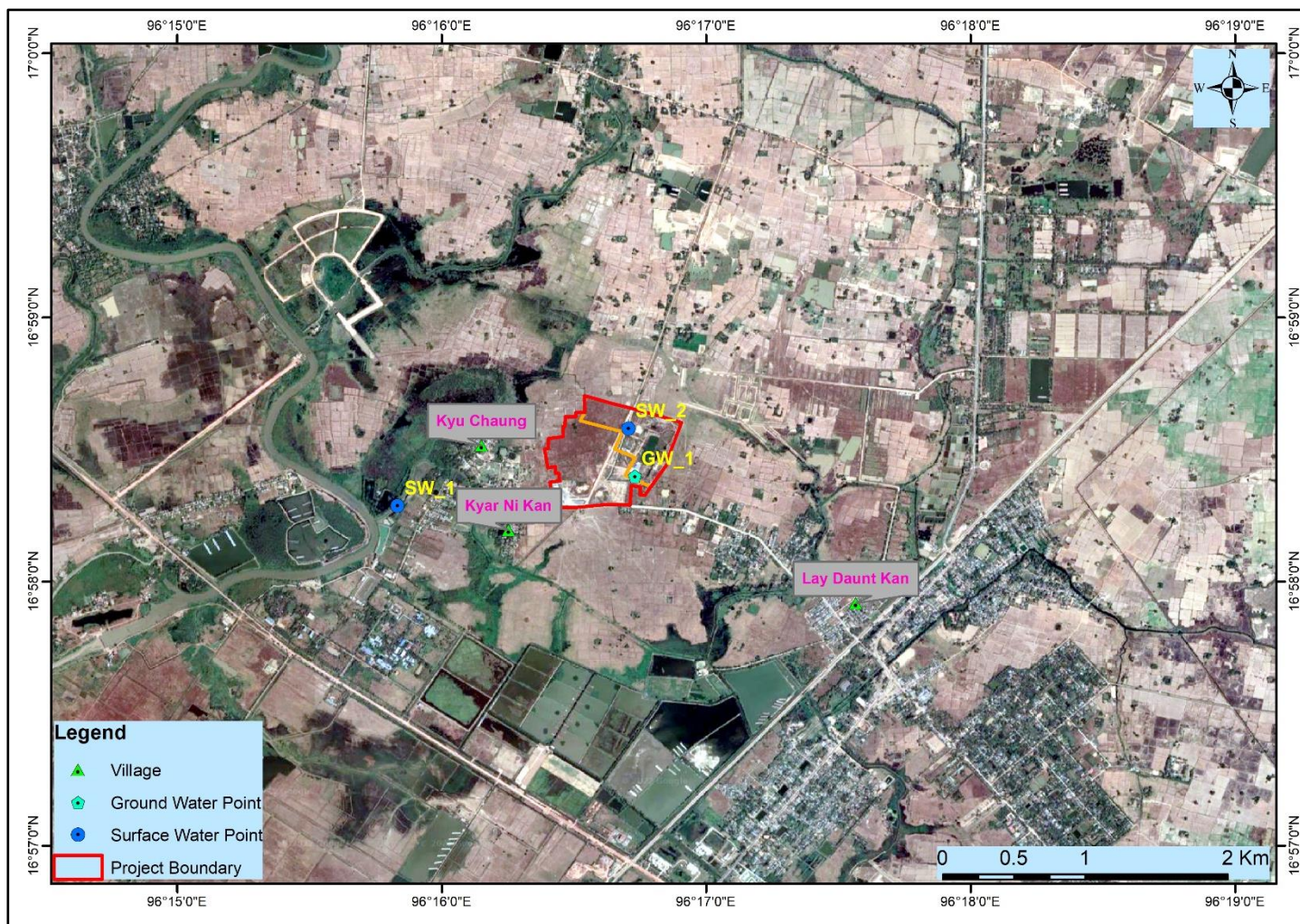


Figure 5.17 Location of Water Quality Survey Point

SW-1

SW-1 was surveyed and collected at Thon Gwa Chaung which located in 1.62km from project area. The project area is situated in the Dagon Myothit (East) Township, Yangon Region. The color of water is light brown. The transparency of water is low and the turbidity is 69.9 NTU. The survey activities of SW-1 are shown in Figure 5.18.



Figure 5.18 Photo of water quality survey activity

SW-2

SW-2 was surveyed and collected in the compound of project area which located in the Dagon Myothit (East) Township, Yangon Region. The color of water is light grey. The transparency of water is medium and the turbidity is 15.9 NTU. The survey activities of SW-2 are shown in Figure 5.19.



Figure 5.19 Photo of water quality survey activity

GW-1

GW-1 was surveyed and collected within the project area. It is situated in the Dagon Myothit (East) Township, Yangon Region. GW-1 is used as domestic water in the project area. The color of water is light grey. The transparency of water is medium. The survey activities of SW-2 are shown in Figure 5.20.



Figure 5.20 Photo of water quality survey activity

iii. Survey Period

The sampling period shown in the following Table.

<Table 5.19 > Survey Period for Water Quality

Sample ID	Period
SW-1	2 nd August, 2022
SW-2	
GW-1	

iv. Survey Method

Water samples were taken by Alpha horizontal water sampler and collected in plastic and sterilized glass sample containers. All sampling was in strict accordance with recognized standard procedures. The parameters as pH, temperature, turbidity (NTU), dissolved oxygen (DO), electrical conductivity (EC), and total dissolved solid (TDS) including the odor and color in visual analyzing were measured at each site concurrently with sample collection. According to the Laboratory standard, some samples were preserved using the chemicals. All samples were kept in iced boxes and were transported to the laboratory within 24 hours.

<Table 5.20 > Field Equipment for water quality survey

No.	Equipment	Manufacturer	Originate Country	Model/Serial No.
1	Multi Parameters for water quality (water checker)	HORIBA	Japan	Model – U52G SN – G2YBAJWD

v. Survey Result

In-situ Result

Table 5.21 are presented the result of In-situ water quality. These results were compared by effluent water quality level for general guideline of NEQG.

<Table 5.21> In-Situ Measurement of Water Quality

Sample No./ Physical Parameter	SW- 1	SW- 2	GW-1	Guideline for drinking- water quality (WHO)
Weather	Sunny	Sunny	Sunny	-
Color	Light brown	Light Grey	Light Grey	-
Transparency	Medium	Medium	Medium	
Water Sampling Depth	2m	1m	-	-
Temp(°C)	30.3	30.65	30.55	-
pH	6.23	6.24	6.58	6.5 to 8.5(Acceptable)
EC (mS/cm)	0.074	0.412	1.17	-
TDS (g/L)	0.051	0.268	0.751	1000 mg/L
DO (mg/L)	4.83	6.41	5.87	
Turbidity (NTU)	69.9	15.9	0.0	
Remark	-	-	Domestic use	

Laboratory analysis result

The water samples sent to ISO Tech Laboratory and SGS Laboratory in Myanmar. Laboratories analysis results presented in Table 5.22. Water quality results were compared by effluent level of general guideline in NEQG. Most of the water results are lower than the applicable NEQG guideline. However, the total coliform bacteria are higher than the specified standard in SW-1 and SW-2. The main cause of water pollution may be due to feces (cattle feces in open field) and waste near the surface of the water. The total coliform count is a general indication of the sanitary condition of the water.

<Table 5.22> Laboratories analysis results for water quality

Analysis Parameter	Units	SW- 1	SW- 2	GW-1
Total Nitrogen	mg/L	<1	<1	<1
Total Phosphorus	mg/L	0.077	0.018	0.171

Total Coliform Bacteria	MPN/100ml	2,300	2,300	170
TSS	mg/L	46	28	12
BOD	mg/L	2.2	1.7	1.2
COD	mg/L	56	54	34
Oil and Grease	mg/L	<5	<5	<5

5.2.11 Soil

i. Survey Item

Parameters for soil quality survey are determined to cover the parameters of existing available environmental standards. Soil sample was taken by the manual hand auger. Parameter for soil contamination survey is determined by referring to the parameter of soil content observation of Japan and other countries as shown in Table 5.23. Survey parameter is shown in Table 5.24.

<Table 5.23 > Applicable guideline for soil quality

No.	Parameter	Unit	Standard
			Japan
1	pH	-	-
2	Mercury	ppm	15
3	Arsenic	ppm	150
4	Lead	ppm	150
5	Cadmium	ppm	150
6	Copper	ppm	125
7	Zinc	ppm	150
8	Chromium	ppm	250
9	Fluoride	ppm	4000
10	Boron	ppm	4000
11	Selenium	ppm	150

Source: *Japan: Ministry of Environment, Government of Japan (2002), "Regulation for Implementing the Law on Soil Contamination Countermeasures"*

<Table 5.24> Survey parameter for soil quality

Category	Parameter
Soil Quality	pH, Cadmium, Copper, Zinc, Manganese, Lead, Arsenic, Iron, Chromium, Mercury, Nickel

ii. Survey Point

The detail of the soil sampling points is described as below.

<Table 5.25 > Sampling and survey points of soil quality survey

Category	Sample ID	Coordinates	Description of Sampling Point
Soil	S-1	16°58'23.81"N 96° 16'27.23"E	Soil quality survey were conducted around the project site.
Soil	S-2	21°38'14.20"N 97° 4'36.59"E	

S-1

The soil sample was taken in the southwest of the project area. When the soil samples collected, three locations as the triangle shape were taken by composite sampling method. The top soil was removed 00-30cm and taken from 30-50 cm. The soil is composed grey to dark grey colored silty clay. The soil quality survey activities were shown in Figure 5.21.

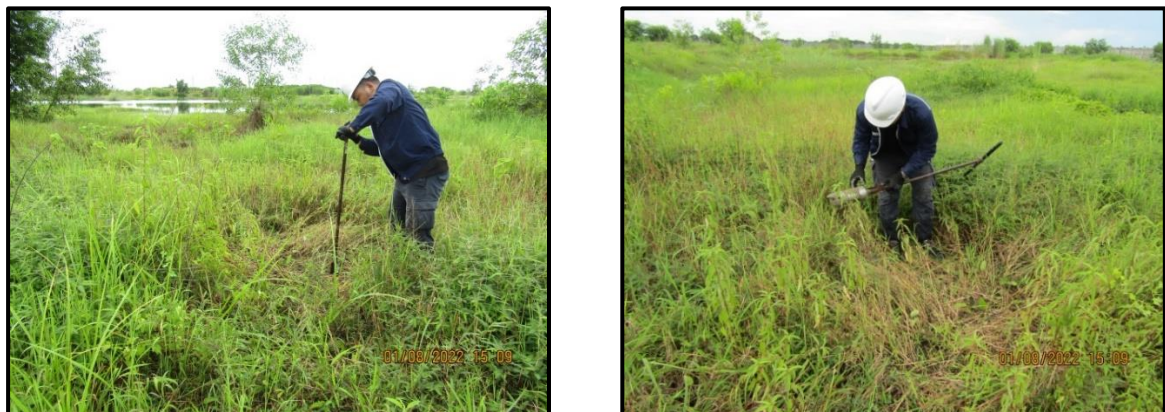


Figure 5.21 Photo of Soil Quality Survey Activity

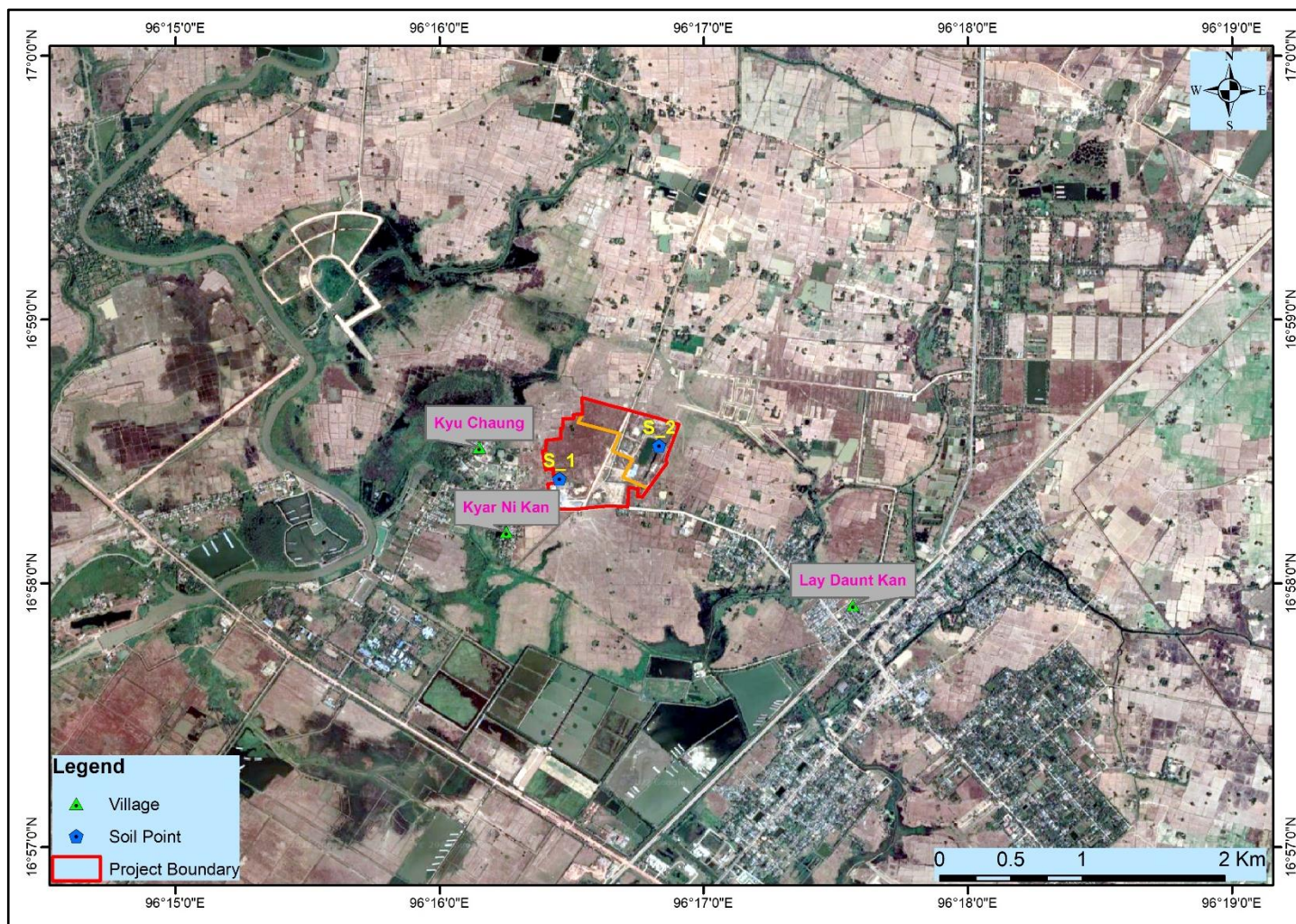


Figure 5.22 Location of Soil Quality Survey Point

S-2

The soil sample was taken in the northeast of the project area. The top soil was removed 00-30cm and taken from 30-50 cm. The soil is composed grey to dark grey colored clayey silt. The soil quality survey activities were shown in Figure 5.23.

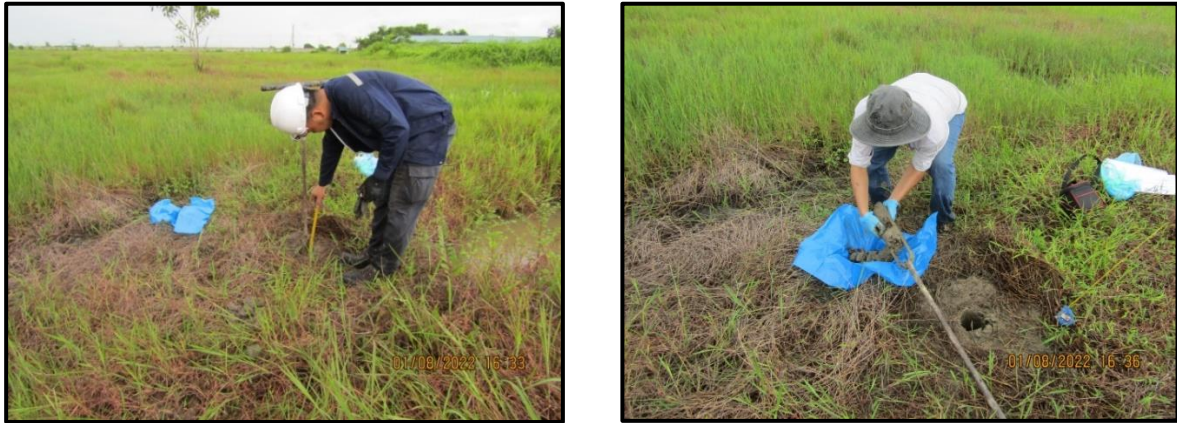


Figure 5.23 Photo of Soil Quality Survey Activity

iii. Survey Period

The sampling period was shown in Table.

<Table 5.26 > Survey period for soil survey quality

Sample ID	Period
S-1	1 st August 2022
S-2	

iv. Survey Method

For soil sampling, the standard environmental sampler (soil auger) was applied. The sampler is a stainless-steel tube that is sharpened on one end and fitted with a long, T-shaped handle. This tube is approximately three inches inside diameter. In order to refrain from contamination, about 00-50 cm of top soil was removed by the sampler before sampling. Most of samples were taken and collected from 50-70 cm depth. During sample collection, wear the glove, rinse glove and soil auger with clean water. Then sample was taken and collected in cleaned plastic bag. Chemical preservation of soil not generally recommended. Samples were cooled in an ice box which temperature was under 4°C. Samples were protected from sunlight to minimize any potential reaction. Field equipment used on site is also shown in the Table.

<Table 5.27 > Field Equipment for Soil Quality Survey

No.	Equipment	Originate Country	Model
1	Soil Auger (Hand held)	U. S. A	AMS

v. Survey Result

Chemical analysis for soil quality was tested in the laboratory of Land Use Department of Yangon Region. Soil quality result is presented in Table 5.28. Most of the results are complied with the proposed standard value of contamination whereas soil result is lower than the applicable guideline.

<Table 5.28 > Soil quality analysis results

Parameter	Unit	S-1	S-2
Cadmium	ppm	ND	ND
Chromium	ppm	ND	ND
Color	ppm	Dark Brown	Dark Brown
Zinc	ppm	ND	ND
Copper	ppm	0.502	0.334
Iron	ppm	22.21	11.59
Manganese	ppm	11.04	5.43
Lead	ppm	ND	ND
Nickel	ppm	ND	ND
pH	-	6.75	7.35

5.2.12 Vehicle Traffic

i. Survey Item

The survey items for traffic volume survey were number of vehicles, types of vehicles and direction of vehicle movement when vehicles pass through the survey point.

ii. Survey Point

TS-1 lies on the junction of No-2 Main Road to Kyu Chaung and Kyar Ni Kan villages, at the Latitude of 16°58'16.27"N and Longitude of 96°16'52.53"E. Vehicles travelling from Kyu Chaung and Kyar Ni Kan villages to the junction of No-2 Main Road and from the junction of No-2 Main Road to Kyu Chaung and Kyar Ni Kan villages directions were counted.

TS-2 lies on the Yangon - Bago of No-2 Main Road, at the Latitude of 16°57'40.88"N and Longitude of 96°17'40.43"E. Vehicles travelling from Yangon to Bago and from Bago to Yangon directions were counted.

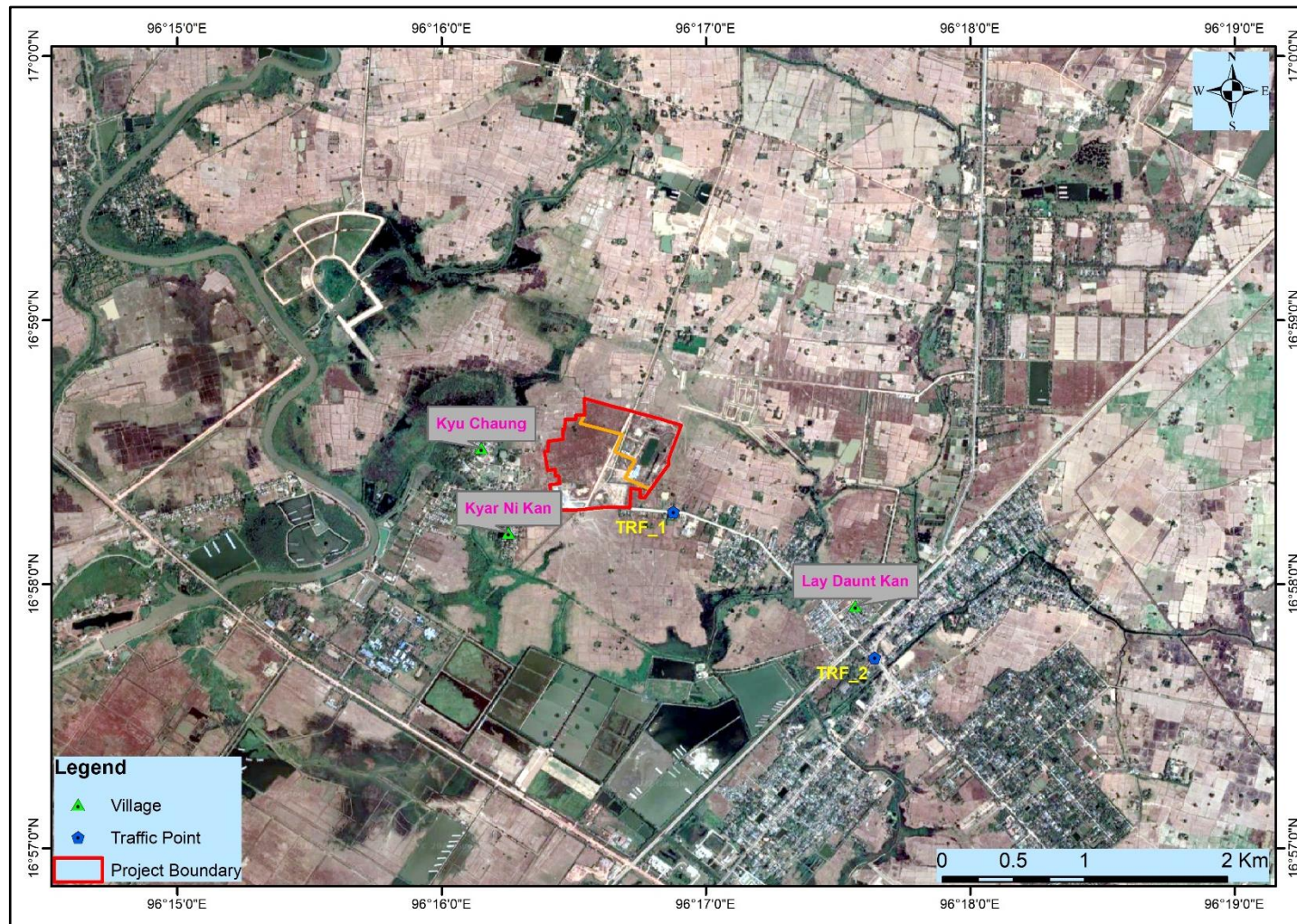


Figure 5.24 Location of Traffic Survey Point

iii. Survey Period

The traffic volume surveys were collected weekday and weekend during July in 2022. Detail survey period is shown in the following Table.

<Table 5.29> Survey period of traffic survey

Survey Point	Survey Period
TRF-1	31 st July 2022 (Weekend) to 1 st Aug 2022 (Weekday)
TRF-2	31 st July 2022 (Weekend)

iv. Survey Method

Manual counting method was applied with the structured TSA form. The TSA form was designed based on the classified vehicles on hourly basis. Tally counters were utilized to record the volume of traffic in the study locations. A total of 3 enumerators were used in this study and assigned for each location (from 7:00 am to 7:00 pm).

<Table 5.30> Type of vehicle

No.	Vehicle Category	Description
1	Two-Wheeled Vehicle	Motorcycles
2	Four Wheeled light Vehicles	Sedan/Pickups/Small trucks (2-axies) and Minibus
3	Four Wheeled heavy Vehicle	Truck and Trailer Truck

v. Survey Result

Vehicle Composition at TRF-1

Vehicle category of traffic stream on the junction of No-2 Main Road to Kyu Chaung and Kyar Ni Kan villages appeared that motorcycle made up 86% (weekend) and 88% (weekday). It is said that motorcycles are the major mode of transport in the study area. Four Wheeled light Vehicles (Sedan/Pickups/Small trucks (2-axies) and Minibus) are said to be the most useful vehicles for transport of light goods and materials in the area, account for 13% (weekend) and 11% (weekday) of total traffic volume. Four Wheeled heavy Vehicle appeared at 1% on both days while Truck and Trailer Truck accounted for lower than 10 % of the total traffic volume during the study period. The details TS-1 on are expressed in the following Tables and Figures.

<Table 5.31> Traffic Volume at TRF-1

Day-1 (Weekend)					Day-2 (Weekday)				
Vehicle Category	Number			Percent	Vehicle Category	Number			Percent
	To village	From village	Total			To village	From village	Total	
Two-Wheeled Vehicle	1278	1245	2623	86	Two-Wheeled Vehicle	1679	1565	3244	88
Four Wheeled light Vehicles	234	178	412	13	Four Wheeled light Vehicles	236	170	406	11
Four Wheeled heavy Vehicle	9	13	22	1	Four Wheeled heavy Vehicle	20	26	46	1
Total	1521	1436	3057	100	Total	1935	1761	3696	100

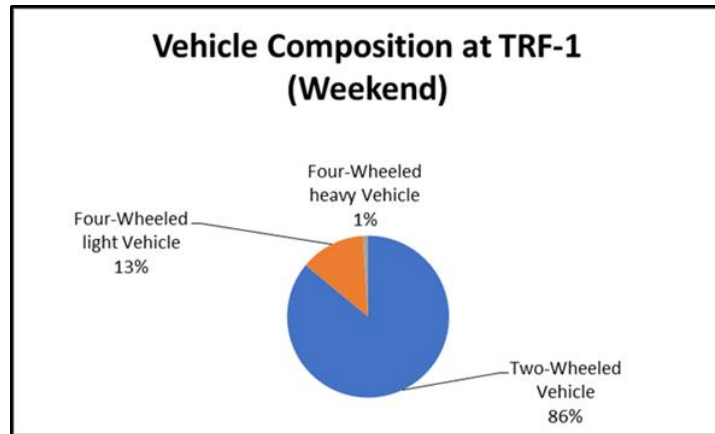


Figure 5.25 Vehicle Composition at TRF-1 (Weekend)

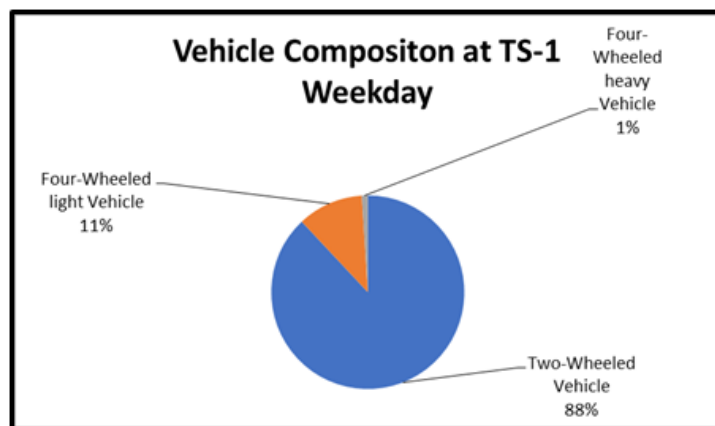


Figure 5.26 Vehicle Composition at TRF-1 (weekday)

Vehicle Composition at TRF-2

Vehicle category of traffic stream on the Yangon-Bago of No-2 Main Road appeared that motorcycle made up 53% (weekend). It is said that motorcycles are the major mode of transport in the study area. Four Wheeled light Vehicles (Sedan/Pickups/Small trucks (2-axies) and Minibus) are said to be the most useful vehicles for transport of light goods and materials in the area, account for 37% (weekend) of total traffic volume. Four Wheeled heavy Vehicle appeared at 10% while Truck and Trailer Truck accounted during the study period. The details TRF-2 on are expressed in the following Tables and Figures.

<Table 5.32> Traffic Volume at TRF-2

Day-1 (Weekend)				
Vehicle Category	Number			Percentage
	To Bago	From Bago	Total	
Two-Wheeled Vehicle	2284	2147	4431	53
Four Wheeled light Vehicles	1441	1696	3137	37
Four Wheeled heavy Vehicle	369	452	821	10
Total	4094	4295	8389	100

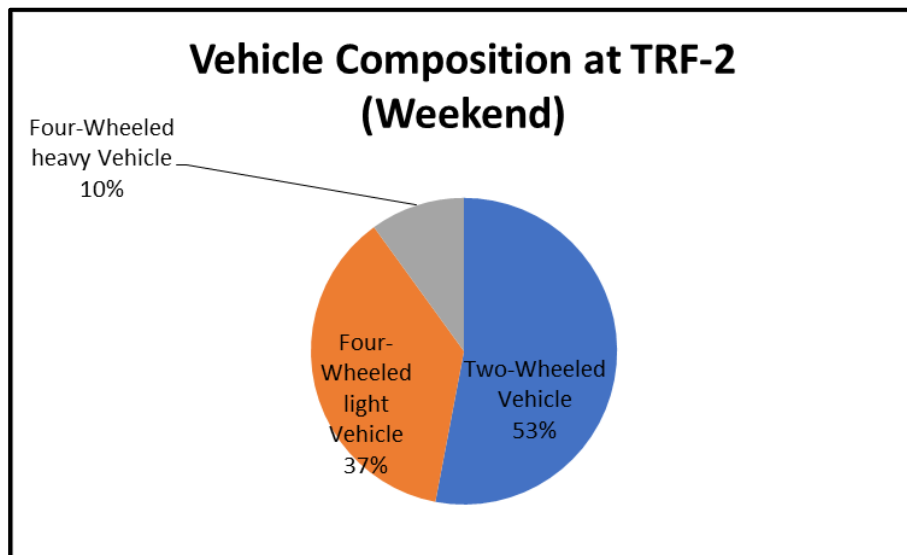


Figure 5.27 Vehicle Composition at TRF-2 (Weekend)

5.3 Environment Biological Component

The biological constituent of the environment is called the biotic components of the environment. The component consists of all living things like plants, animals and small micro-organism like bacteria it interacts with the abiotic component of the environment. This interaction of two components of the environment forms various ecosystems, like pond ecosystem, marine ecosystem, limestone ecosystem etc. As parts of this study, a desktop study was carried out of policy available scientific publication to investigate the ecology and biodiversity of the project AOI.

A site visit was undertaken where the Different biodiversity features, habitat, vegetation, and landscape units present at site were identified and mapped in the field. They include generating a fine-scale vegetation map for the site which identified and mapped the different plant communities. Walk through survey were conducted across the site and all plant and animals species observed were recorded. Searches for listed and protected plant species at the site were conducted and the location of all listed plant species observed was recorded using a GPS. Active searches for reptiles and amphibian were also conducted within habitats likely to be important for such species. The impact assessment phase will involve the determination of the nature of likely impact of the development and recommendation on mitigation. The biodiversity survey had been carried out 2 July to 4 July the survey areas were within buffer zone 2 km. The following information was collected during the biodiversity field survey.

5.3.1 Terrestrial Ecology and Wildlife

The methodologies used in biodiversity surveys were described below.

a) Desktop Study

Publicly available sources of information were analyzed to build an outline of known and likely ecological values for the Study Area. Aerial imagery was used to build a more complete spatial understanding of the pattern of vegetation communities and human uses on the site, and to map access routes and internal tracks. In addition, ecologists with experience of the Study Area were consulted where possible to obtain information about species known to be present or previously recorded from the site, and other ecological values considered by them to be relevant.

b) Field observation

Flora Methodology

A Global Positioning System was used to navigate and mark coordinates around the study area. Field observation was conducted in and around the project area. During the field survey period, a plotless sampling method was used. Plotless sampling methods are based on the random selection of points within a particular survey area. In addition, all trees, shrubs, herbs and cultivated crops were recorded and listed. Identification of plants and animal species was conducted with the assistance of skilled local people. The identified species and families were translated to scientific names with assistance of a checklist of trees, shrubs, herbs, and climbers of Myanmar.

Fauna Methodology

<p><i>Mammals</i></p>	<p>Mammals surveys were conducted through transect count during daytime survey. As the wildlife was very rare and the chance for encounter was exceedingly low no systematic transect line, plots and points were designated. The survey was mainly involved prowling stealthily in the forest looking for mammals. It was a direct intensive search carrying out day time survey. Day time survey was good for small tree dwelling mammals, such as squirrels. Photographs were taken</p>
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	<p>whenever possible. The survey method also involved searching for tell-tale signs or evidences such as new or fresh scats, foot prints, scratches, tracks and trails etc. Scats and foot prints are specific and so the animals could be identified quite correctly based on these two evidences.</p> <p>As wildlife is getting rare it is not possible to observe them during only one survey period. Secondary data have to be gathered from the local elders or old hunters. At least the history of the wildlife of the area can be observed.</p> <p>Mammologist has also to rely on the tell-tale sign of wildlife such as foot prints, traces, scratches and resting spots (of course standard methods in biodiversity study)</p> <p>Another main work was gathering information from hunters (who were very few indeed) and also from old and retired hunters. That was simply gathering secondary data, and looking for recently acquired trophies (horns), leather and other body parts of the wild animals.</p>
<p><i>Herpetofauna (Reptiles and amphibians)</i></p>	<p>As the habitat of amphibian and reptiles on the whole are site specific, for instance, water, pools, shady and moist area, under old logs and big stones and under litters, random surveys was conducted throughout the study area.</p> <p>The survey was mainly involved walking and visual inspection. No traps or snares were used. The animals were captured with specially modified stakes, net and scoops. Small rubber ring were also used to shoot at small reptiles (Lizard and skink) and small amphibians (frogs). The idea was not to kill the small animals but only to daze them by shooting at the head most were released after observation and recording.</p> <p>Herpetofauna were documented where possible by photographs were made of some captured specimens that were not collected for preservation. Photo records were taken by digital.</p>
<p><i>Butterflies and Dragonfly</i></p>	<p>Butterflies and dragonflies of different habitats within the study area were surveyed using point count method subject to the on-site conditions. Butterflies species were identify in field so that we took photo and identify the species with reference book. Butterflies species were released after photo record.</p>
<p><i>Birds</i></p>	<p>Random point count and direct count method was used for the bird survey and took the photograph of birds. Birds were observed with binocular and camera as long as in the field for identified aided with field guided book for (Craig Robson 2011). Species identification observed number of birds habitat utilization, were examined. Nocturnal birds were observed when it becomes dusk. Point count and direct count opportunistic methods were used to census the species richness and point counting was used to get the relative measure of bird abundance.</p>
<p><i>Aquatic</i></p>	<p>Interviewed with local fisherman from the study area were conducted during the collection of the specimen. Fishermen were interviewed with regard to fishery process including kinds of gear used, number of fishing time per day, target species. The fishes were photographed soon after the collection and measurements were also taken for key characteristics. The most frequently recorded group of fish that are considered most economical among the fishermen communities within the Project area are pelagic and semi pelagic species.</p> <ul style="list-style-type: none"> ▪ Asses the status of major group (especially fish) within the AOI;

	<ul style="list-style-type: none"> ▪ Collection and complication of secondary information on the status of aquatic component located in the AOI; and ▪ Identification, listing and quantification of aquatic species in conservation significance (Rare, Endangered and Threatened species) in accordance with the Global IUCN, 2022 Ver-3 within the AOI. Fishery resources from the AOI was enumerated based on fishermen survey and fish market survey at East Dagon Township. Based on the discussion local name of the species were recorded.
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c) Interviewing and literature survey

In addition to the field observation, secondary data was also surveyed by interviewing from local residents and literature reviewing. In the interview survey, the surveyor visited the residents in and around the survey area and interviewed the name of plants and animals existing in and around the area. Also, the past situation of flora and fauna, and the change in biodiversity and ecosystem in the area was interviewed for examination.



Figure 5.28 Interview Survey from Local villager

5.3.2 Forest and Vegetation Cover

Vegetation Cover

In the block area, the vegetation cover consists of Shrub Land, Grass Land, Agricultural Land, and some plantation land. Common tree includes Kokko (*Albizia lebbek*), Letpan (*Bombax ceiba*), Ma-u (*Anthocephalus morindaefolius*).

Moreover, some kinds of bamboo like Kyathaung Wa (*Bambusa polynorpha*) and Wa-bo (*Dendrocalamus brandisii*) are also found around the project area.

The Field survey identified vegetation cover with in Shrub land and agriculture land. The shrub land and small woody tree are more abundant in area. As preset bamboo with sparsely grow small tree species and shrub species replace naturally area. The Shrub land small woody tree is more sparsely grow small tree species and shrub species naturally replaced the area. The natural vegetation grow in Dagon Myothit (East) area were Thayet, Malaka, Kokko, Magyi Species. Grinding plant boundary area is connected to plantation land, (Mangansha and Malay sia padauk species).

5.3.3 Protected and Environmentally sensitive Areas

Protected Areas are one of the most important tools for biodiversity conservation, safeguarding ecosystems services and preserving cultural landscapes. Myanmar has 42 Protected Areas. Seven of the Protected Areas are ASEAN Heritage Parks (AHPs) recognized for their biodiversity value within ASEAN countries; and five are Ramsar Sites (wetlands of international importance).

There are no protected and environmentally sensitive areas and also in the present project area. Within 20km from the area is Hlawga Wildlife Sanctuary.



Figure 5.29 Protected Area Map

5.3.4 Biodiversity and Ecosystem Service

The Project site is consisting of land use for a shrub land, Some Plantation, agricultural land, and Grass land is located in proposed project area.

The area is presumed habitat of bird, mammal, reptile, and amphibian on the IUCN Red List of (endangered, etc.). Construction work and operation have a possible impact on rare species and ecosystem. Environmental impacts of air pollution, water, and noise etc. during operation phase will be mitigated through appropriate countermeasure as described above and result of stimulation also indicate that environmental standard will be met. Very few trees will be cut down due to the construction work and the operation environmental impact of air pollution, noise and other environmental impact during construction will be minimized through appropriate countermeasure.

As for precious species of animals designated by IUCN classified as were observed within the project site. There were no other precious species of Insect, amphibians designated by IUCN observed Breeding and nursery take place at night time when human activity however the light and noise of any nighttime construction may have adverse effects. On these species' consequence night construction

activity in the breeding season should be avoided as much as possible and should be conducted under minimum light. Lighting color that does not affect the breeding should be selected. The careful monitoring breeding status is necessary.

5.3.5 Invasive Alien Species

Flora

<Table 5.33> Invasive species of Flora during Survey

No	Scientific Name	Common Name	IUCN	Origin	Threat Level
1	<i>Ziziphus jujuba</i>	Zi	LC	China, Native	N
2	<i>Chromolaena odorata</i>	Bizat	NE	Central America, South America	N
3	<i>Casuarina equisetifolia</i>	Pinle-kabwe	LC	Australia	R
4	<i>Mimosa pudica</i>	Htikayon	LC	South America, Mexico,	-
5	<i>Oroxylum indicum</i>	Kyaung-sha	NE	India	R
6	<i>Arundo donax</i>	Kyu	LC	India	R

R = Regional, N = National

Fauna

a) Fish

<Table 5.34> Invasive Species of Bird during survey

Sr No.	Scientific Name	Common Name	IUCN	Origin	Threat Level
1	<i>Hypostomus plecostomus</i>	Suker fish	LC	Tropical northeastern South America	-

b) Bird

<Table 5.35> Invasive Species of Bird during Survey

Sr No.	Scientific Name	Common Name	IUCN	Origin	Threat Level
1	<i>Acridotheres tristis</i>	Common Myna	Least Concern	Resident	-
2	<i>Acridotheres fuscus</i>	Jungle Myna	Least Concern	Resident	-

3	<i>Passer domesticus</i>	House Sparrow	Least Concern	Eurasia, Northern Africa	-
4	<i>Pyconotus cafer</i>	Red-vented Bulbul	Least Concern	Resident	-

5.3.6 Threatened Species

Description of Near Threatened Bird (NT) (Grey - headed Ibis)

A total of 43 bird species identified during survey, one species is Near Threatened (Black - headed Ibis (*Threskiornis melanocephalus*)). These species are observed in the proposed project area.

Threskiornis melanocephalus (Grey-headed Ibis) is a species of bird in the family Threskiornithidae. Black headed Ibis is one of several large water bird species in south and south - east Asia with adults measuring 65 - 76cm in length.

Black-headed ibis are native to the following countries: Bangladesh, Cambodia, China, Hong Kong, Indian, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Russian Federation, Srilanka, Thailand and Vietnam. They are migratory or vagrant in Japan, Republic of Korea, Lao People's Democratic Republic, and Mongolia. The species is a widespread breeding bird in India, Srilanka, Nepal Myanmar, and has declined considerably to few locations or breeding colonies in Cambodia, Indonesia, Malaysia, Thailand, and Vietnam. The most rapid decline in recent times is suspected to be the population in Sumatra.

The black-headed Ibis is very versatile being able to use a large variety of natural and man - made habitats. These include freshwater and salt-water marshes, lakes, and ponds, as also rice field, freshly ploughed crop fields, irrigation canals, riverside, reservoirs, urban lakes, open sewage gutters, grazing lots, and garbage dumping sites. Ibis alter use of varied preferred foraging habitats by season in agricultural landscapes such as in south - western Uttar Pradesh in India.


Mostly, Grass Land and some Agricultural land (Paddy field) were covered within the cement grinding plant boundary area. However, near threatened bird species, Grey -headed Ibis (*Threskiornis melanocephalus*), is relatively common and observed in a wide area in Myanmar, though classified as NT by IUCN list. This bird species can easily move to other places, because they can find similar habitats such as paddy and grass land, etc. in nearby areas. Therefore, loss of near threatened bird species would be avoided.

In this area, terrestrial fauna refers mainly to small mammals, birds, and reptiles, as there is essentially no large fauna in the area. It should be stated again that the project area is not widely rich in faunal species with most domestic animals pertaining to local settlers.

It is noted that the faunal species of the surrounding area is generally mobile hence no particular territorial needs will be affected by the works. However, noise may disturb animal breeding, feeding and migration patterns.

The light (night-time guard watch) and noise impacts experienced by local species is expected to be of long-term duration given the expected 24 months construction phase followed by the on-going operation procedures required for cement manufacturing.

<Table 5.36> Threatened Species of Bird during Survey

Scientific Name	Common Name	Location	IUCN	Photo
<i>Threskiornis melanocephalus</i>	Black-headed Ibis	N- 16 5811	NT	
		E-96 16 36		

NT = Near Threatened

5.3.7 Biodiversity Baseline study and result

a) Habitat

In and around the Area of proposed project area, four major habitat types were observed namely;

1. Agricultural land and
2. Mixed grass and Shrub land
3. Bare land
4. Some extent of tree in plantation.

Habitat map of proposed project area shown in Figure 5.31 and Sceneries of the Survey Area shown Figure 5.30.

b) Study Area

The location of the survey area was shown in Figure 5.30 and in the Figure were the survey points.

c) Habitat map and Land Use Map

To obtain the habitat map, there is a combination between field observation and secondary image from Google Earth and generating it by applying it in GIS software. At first, the field observations were performed for habitat survey at site collecting the data with the Garmin GPS and uploading it in MapInfo Software. On the other hand, the Google image was visually digitized based on the primary field survey. Finally, the habitat map was analyzed based on both field survey and secondary image data using the MapInfo software.

Source & Tools

- Map info 11.0 and Discover
- Google Earth Image
- Garmin GPS 62 cx
- Field survey

The habitat map of the grinding Plant and surrounding region show in Figure 5.31 and 5.30.

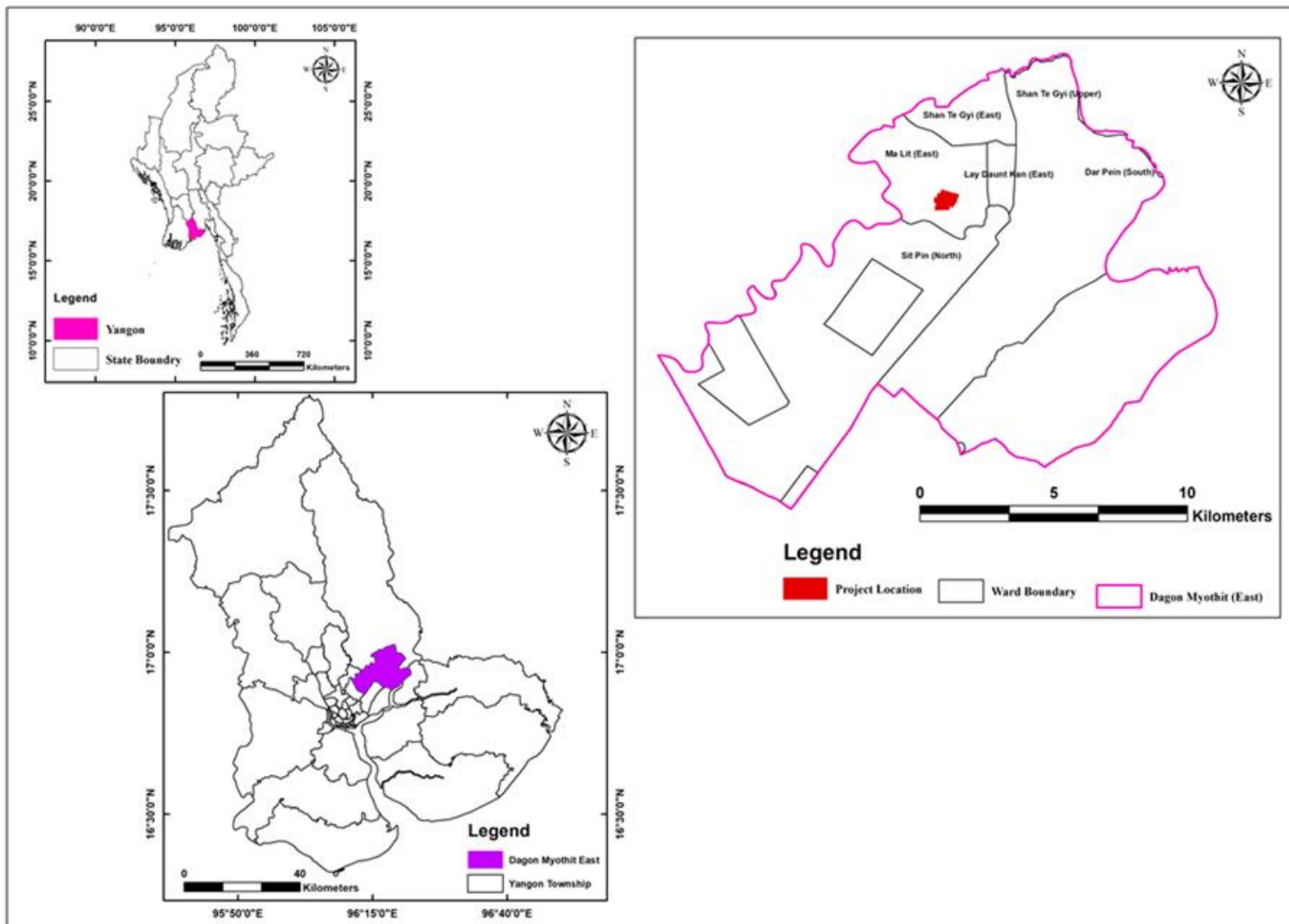


Figure 5.30 Location area map

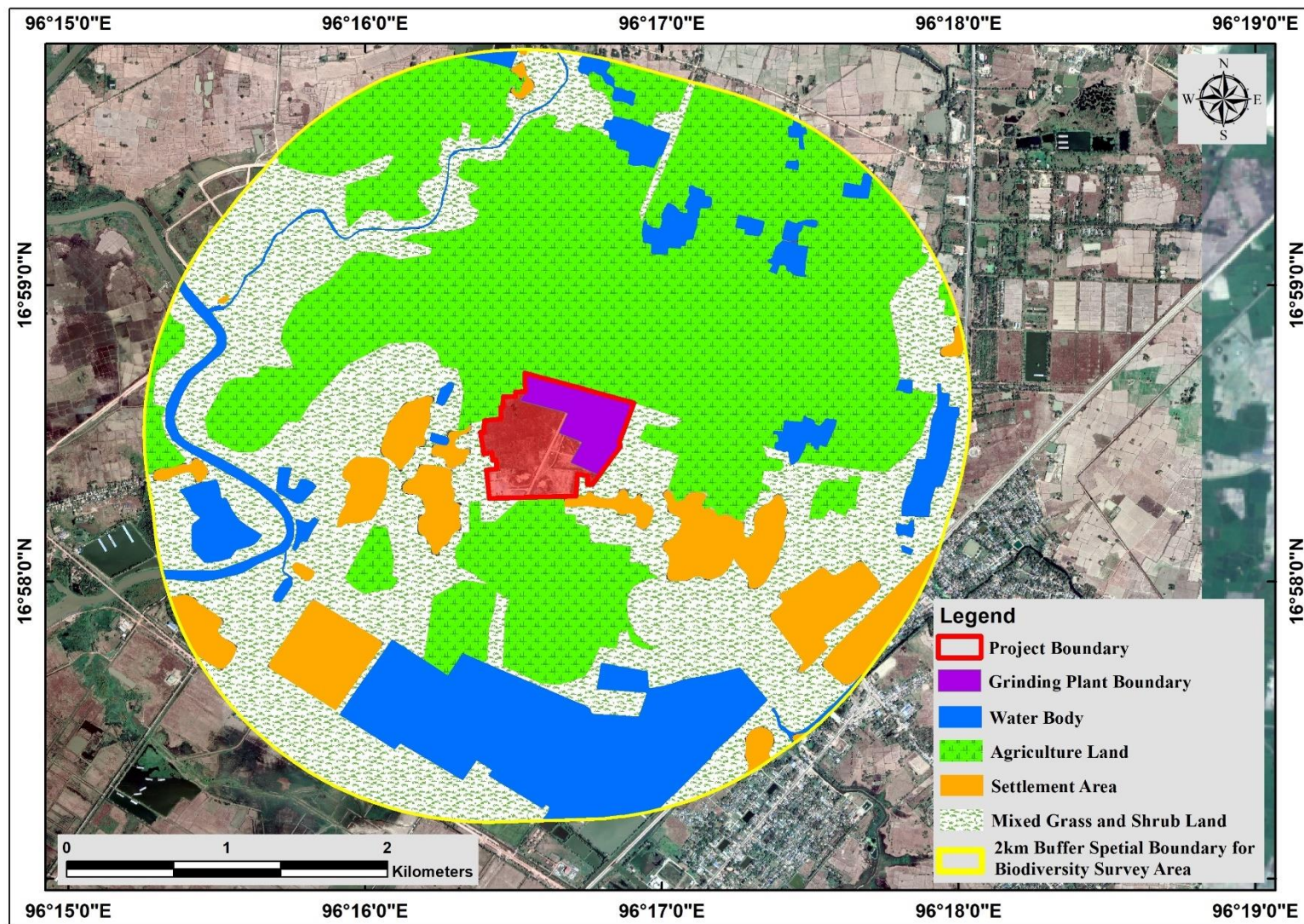






Figure 5.31 Photo Biodiversity Habitat Ma

Vegetation Communities

In and around the project area, Bare Land, agricultural land, shrub land and residential area some extents of plantation were found. Description of vegetation community was summarized below.

<Table 5.37> Vegetation Community and plant species observed in community footprint

Community Name	Description	Photo
Grass Land	Grassland is an area covered in large part by grass and other non-woody trees. Grasslands are generally open and fairly flat. When rainy season arrives, many types of grassland become coated with flowers and the most agriculturally useful habitat to humans.	
Agricultural land	Land able to be used for farming is called agricultural land. Agricultural land refers to plots that are permitted to be used for agricultural activities.	
Shrub Land	Shrub land habitat contain thickets of shrub and young trees mixed with scattered grasses and wildflowers.	
Plantation	Plantation Include a great deal of land not devoted to agricultural use. The land actually under annually replanted crops in any given year is instead said to constitute “plantation” or “cropped land” permanent cropland includes forested plantation used to harvest. Mangan sha, Malaysha Padauk, Banana tree farms or proper forest used for wood or timber.	

d) Flora

Flora survey was conducted to obtain an understanding of the diversity of flora taxa group. A total of 47 flora species identified during the survey. Flora Species were classified species of least concern. (18) Species of Not Yet Assessed and one species of data deficient on the IUCN Red List. There was no endemic species in this area. According to the IUCN red list of threatened species (2022 ver-3.1), these area was no threatened flora species.

<Table 5.38> List of plant species recorded during survey

Sr. no	Family Name	Scientific Name	Common Name	Habitat	Distribution	IUCN
1	Combretaceae	<i>Terminalia catappa</i>	Banda	T	Cultivated	LC
2	Moringaceae	<i>Moringa aleifera</i>	Dantalon	T	Cultivated	NE
3	Passifloraceae	<i>Adenia cardiophylla</i>	Kinmon	Cr	Yangon, Sagaing	NE
4	Mimosaceae	<i>Albizia lebbek</i>	Anya-kokko	T	Reported from Myanmar	LC
5	Convolvulaceae	<i>Ipomoea batatas</i>	Kazun	Cl/Cr	Cultivated	NE
6	Anacardiaceae	<i>Mangifera indica</i>	Thayet	T	Wide	DD
7	Myrtaceae	<i>Psidium guajava</i>	Malaka	ST	Cultivated	LC
8	Moraceae	<i>Ficus glomerata</i>	Thapan	T	Bago, Kachin, Mandalay, Yangon	NE
9	Moraceae	<i>Ficus obtusifolia</i>	Nyaung-gyat	T	Wide	LC
10	Fabaceae	<i>Sesbania grandiflora</i>	Paukpan-byu	ST	Cultivated	NE
11	Mimosaceae	<i>Samanea saman</i>	Thinbaw-kokko	T	Cultivated	LC
12	Rhamnaceae	<i>Ziziphus jujuba</i>	Zi	T	Cultivated	LC
13	Myrtaceae	<i>Syzygium mytifolium</i>	Thabye	ST	Cultivated	NE
14	Rubiaceae	<i>Ixora coccinea</i>	Ponna-yeik	S	Cultivated	NE
15	Amaranthaceae	<i>Achyranthes aspera</i>	Kyet-mauk-pyan	H	Magway, Yangon	NE
16	Asteraceae	<i>Chromolaena odorata</i>	Bizat	S	Wide	NE
17	Malvaceae	<i>Urena lobata</i>	Kat-sine	S	Bago, Chin, Mandalay, Taninthayi, Yangon	LC

18	Casuarinaceae	<i>Casuarina equisetifolia</i>	Pinle-kabwe	T	Cultivated	LC
19	Caesalpiniaceae	<i>Bauhinia acuminata</i>	Swe-daw	ST	Wide	LC
20	Mimosaceae	<i>Mimosa pudica</i>	Htikayon	H	Wide	LC
21	Bignoniaceae	<i>Oroxylum indicum</i>	Kyaung-sha	T	Wide	NE
22	Mimosaceae	<i>Albizia lebbekoides</i>	Kokko	T	Reported from Myanmar	LC
23	Mimosaceae	<i>Acacia auriculiformis</i>	Malaysia-padauk	ST	Cultivated	LC
24	Amaranthaceae	<i>Alternanthera sessilis</i>	Pazun-sar	H	Yangon	LC
25	Poaceae	<i>Dendrocalamus longispatus</i>	Wa-net	B	Bago, Mandalay, Mon, Rakhine, Shan, Taninthayi, Yangon,	NE
26	Lythraceae	<i>Lagerstromia speciosa</i>	Pyinma	T	Reported from Myanmar	NE
27	Solanaceae	<i>Solanum indicum</i>	Khayan-kazaw	S	Bago, Mandalay, Shan, Yangon	NE
28	Poaceae	<i>Cynodon dactylon</i>	Mye-sa-myet	G	Wide	NE
29	Poaceae	<i>Mnesithea striata</i>	Kaing	G	Reported from Myanmar	NE
30	Vitaceae	<i>Cayratia trifolia</i>	Taw-sabyit	Cl/Cr	Bago, Mandalay, Yangon, Unknown	NE
31	Poaceae	<i>Arundo donax</i>	Kyu	G	Reported from Myanmar	LC
32	Anacardiaceae	<i>Anacardium occidentale</i>	Thiho-thayet	T	Cultivated	NE
33	Areaceae	<i>Nypa fruticans</i>	Dani	T	Ayeyarwady	LC
34	Convolvulaceae	<i>Operculina turpethum</i>	Kyahin-bin	Cl/Cr	Wide	NE
35	Convolvulaceae	<i>Ipomoea turbinata</i>	Kazun-nwe	Cr	Yangon	NE
36	Asteraceae	<i>Sphagneticola calendulaceae</i>	Nay-kyar-gale	H	Reported from Myanmar	NE

37	Malvaceae	<i>Sida acuta</i>	Shwe-dadaing	H	Reported from Myanmar	NE
38	Mimosaceae	<i>Albizia procera</i>	Sit	T	Reported from Myanmar	LC
39	Costaceae	<i>Costus speciosus</i>	Phalan-taung-hmwe	H	Bago, Kachin, Mandalay, Shan, Taninthayi, Yangon	NE
40	Acanthaceae	<i>Hygrophila phlomoides</i>	Migyaung-kunbat	H	Bago, Taninthayi, Yangon	NE
41	Euphorbiaceae	<i>Bridelia retusa</i>	Seik-chi	T	Wide	LC
42	Tiliaceae	<i>Muntingia calabura</i>	Hnget-thagya	ST	Cultivated	NE
43	Mimosaceae	<i>Acacia pruinescens</i>	Kinmum-gyin	Cl/Cr	Kachin, Mandalay, Sagaing	NE
44	Poaceae	<i>Bambusa bambos</i>	Kyakat-wa	B	Reported from Myanmar	NE
45	Caesalpiniaceae	<i>Cassia angustifolia</i>	Pwegaing	S	Cultivated	NE
46	Fabaceae	<i>Tadehagi triquetrum</i>	Lauk-thay	S	Chin, Kachin, Kayin, Mandalay, Sagaing, Shan, Yangon	LC
47	Asteraceae	<i>Acilepis squarrosa</i>	Taw-kyet-mauk	H	Wide	NE

NE - Not Evaluated, LC - least concerned, DD - Data Deficient

e) Fauna

A biodiversity survey was conducted that covered a range of fauna species mammals, birds, fish, reptiles and amphibians, butterflies, and dragonflies. The fauna survey was conducted via direct observation in the field observation of track and sign such as footprint and feeding sings in their natural habitat and interview were local communities.

Mammals

Mammal was identified through direct observation and interview survey, all mammal species were interviewed from local people in the survey area. According to the IUCN Red List of threatened species, all species was least concerned, there was no threatened species and no endemic species.

<Table 5.39> Mammal species list around the project area

No	Family Name	Common Name	Scientific Name	IUCN	Observation
1	Muridae	House Rat	<i>Rattus rattus</i>	LC	Interview
2	Viverridae	Common Palm Civet	<i>Paradoxurus hermaphroditus</i>	LC	Interview
3	Herpestidae	Javan Mongoose (or)Small Asian Mongoose	<i>Herpestes javanicus</i>	LC	Interview
4	Muridae	Greater Bandicoot Rat	<i>Bandicota indica</i>	LC	Interview

LC-Least concerned

Herpetology

A total of 9 reptile and amphibian species was identified during the survey. Seven species were recorded and Two species were interview from local people in survey area. one species Lizard, one species of skink, one species of Gecko, 3 species of Snake and 3 species of Amphibians were recorded during the survey. According to IUCN Red List of threatened species 2022 ver-3.1. This area was found no endemic species. All species classified as 4 species were Not Evaluated and five Species were Least concerned.

<Table 5.40> Herpetology Species List around the Project area

No	Family Name	Common Name	Scientific Name	Observation	IUCN
Snake					
1	Colubridae	Indian rat Snake	<i>Ptyas mucosa</i>	Interview	Not Evaluated
2	Viperidae	Russell's Viper	<i>Daboia russelii</i>	Interview	LC
3	Colubridae	Chequered Keelback Water Snake	<i>Xenobrophis piscator</i>	Observed	LC
Lizard					
4	Agamidae	Garden Lizard	<i>Calotes versicolor</i>	Observed	Not Evaluated
Skink					
5	Scincidae	Common Sun Skink	<i>Eutropis multifasciata</i>	Observed	Not Evaluated
Gecko					
6	Gekkonidae	Common House Gecko	<i>Hemidactylus frenatus</i>	Observed	Not Evaluated

Amphibians					
7	Bufonidae	Asian Common Toad	<i>Dattaphrynus melanostictus</i>	Observed	LC
8	Ranidae	Common Green Frog	<i>Hylarana erythraea</i>	Observed	LC
9	Dicroglossidae	Asian Grass Frog	<i>Fejervarya limnocharis</i>	Observed	LC

NE- Not Evaluated



Chequered Keelback Water Snake (*Xenocrophis piscator*)



Common Green Frog (*Hylarana erythraea*)



Garden Lizard (*Calotes versicolor*)



Asian Grass Frog (*Fejervarya limnocharis*)

Figure 5.32 Reptile and Amphibians photo from survey area

Birds

Birds A total of 43 bird species were recorded in the proposed project area. Members of the Family Ardeidae, Little egret *Egretta garzetta* and Chinese pondheron *Ardeola bacchus* and Intermediate Egret (*Mesophoyx intermedia*) were found near the water body and listed as water bird species. A part from the species Family Alcedinidae of water bird species were also observed, White-throated Kingfisher *Halcyon smyrnensis* were also noted as water birds. The birds of prey species, Black kite *Milvus migrans govinda*, and Shikra (*Accipiter badius*) were found in project site area. The bird species Spotted Dove *Streptopelia chinensis*, Barn swallow *Hirundo rustica*, and Common myna

Acridotheres tristis were recorded as common species in the proposed project area. Member of the family Cisticolidae and Estrildidae, Plain prinia *Prinia flaxiventris*, Zitting cisticola *Cisticola juncidis*, White-rumped Munia *Lonchura striata* and Scaly-breasted Munia *Lonchura punctulata* are found in grass land and list as grass bird species. One Endemic species of Ayeyarwady Bulbul *Pyconotus blanfordi* were observed in that area. Family Threskiornithidae, Black-headed Ibis *Threskiornis melanocephalus* were recorded in proposed project area but this species is Near-threatened of IUCN red list species.

<Table 5.41> List of the bird species recorded in project area

No	Scientific Name	Common Name(s)	Family	IUCN Status
1	<i>Dendrocygna javanica</i>	Lesser Whistling-duck	Anatinae	Least Concern
2	<i>Nettapus coromandelianus</i>	Cotton- pygmy Goose	Anatinae	Least Concern
3	<i>Egretta garzetta</i>	Little Egret	Ardeidae	Least Concern
4	<i>Mesophoyx intermedia</i>	Intermediate Egret	Ardeidae	Least Concern
5	<i>Ardecola bacchus</i>	Chinese pond-heron	Ardeidae	Least Concern
6	<i>Metopidius indicus</i>	Bronze-winged Jacana	Jacanidae	Least Concern
7	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed jacana	Jacanidae	Least Concern
8	<i>Anastomus oscitans</i>	Asian openbill	Ciconiidae	Least Concern
9	<i>Threskiornis melanocephalus</i>	Black-headed Ibis	Threskiornithidae	Near-threatened
10	<i>Plegadis falcinellus</i>	Glossy Ibis	Threskiornithidae	Least Concern
11	<i>Vanellus indicus</i>	Red-wattled Lapwing	Charadriidae	Least Concern
12	<i>Milvus migrans govinda</i>	Black kite	Accipitridae	Least Concern
13	<i>Accipiter badius</i>	Shikra	Accipitridae	Least Concern
14	<i>Centropus sinensis</i>	Greater Coucal	Cuculidae	Least Concern
15	<i>Coracias benghalensis</i>	Indian Roller	Coraciidae	Least Concern
16	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	Alcedinidae	Least Concern
17	<i>Megalaima haemacephala</i>	Coppersmith Barbet	Ramphastidae	Least Concern
18	<i>Merops orientalis</i>	Little green bee-eater	Meropidae	Least Concern
19	<i>Oriolus chinensis</i>	Black- naped Oriole	Oriolidae	Least Concern
20	<i>Cypsiurus balasiensis</i>	Asian Palm-Swift	Apodidae	Least Concern

21	<i>Streptopelia chinensis</i>	Spotted Dove	Columbidae	Least Concern
22	<i>Streptopelia tranquebarica</i>	Red collared Dove	Columbidae	Least Concern
23	<i>Columba livia</i>	Rock Pigeon	Columbidae	Least Concern
24	<i>Corvus splendens</i>	House Crow	Corvidae	Least Concern
25	<i>Corvus macrorhynchos</i>	Large-billed Crow	Corvidae	Least Concern
26	<i>Hirundo rustica</i>	Barn Swallow	Hirundinidae	Least Concern
27	<i>Aegithina tiphia</i>	Common Iora	Aegithininae	Least Concern
28	<i>Dicrurus macrocercus</i>	Black Drongo	Dicruridae	Least Concern
29	<i>Copsychus saularis</i>	Oriental Magpie-robin	Muscicapidae	Least Concern
30	<i>Pycnonotus cafer</i>	Red-vented Bulbul	Pycnonotidae	Least Concern
31	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	Pycnonotidae	Least Concern
32	<i>Pycnonotus blanfordi</i>	Ayeyarwady Bulbul	Pycnonotidae	LC/ Endemic
33	<i>Acridotheres tristis</i>	Common Myna	Sturnidae	Least Concern
34	<i>Acridotheres fuscus</i>	Jungle Myna	Sturnidae	Least Concern
35	<i>Gracupica contra</i>	Asian pied Starling	Sturnidae	Least Concern
36	<i>Prinia inornata</i>	Plain prinia	Cisticolidae	Least Concern
37	<i>Orthotomus sutorius</i>	Common Tailorbird	Sylviidae	Least Concern
38	<i>Lonchura punctulata</i>	Scaly-breasted Munia	Estrildidae	Least Concern
39	<i>Lonchura striata</i>	White-rumped Munia	Estrildidae	Least Concern
40	<i>Passer domesticus</i>	House Sparrow	Passeridae	Least Concern
41	<i>Passer montanus</i>	Eurasian Tree-sparrow	Passeridae	Least Concern
42	<i>Cisticola juncidis</i>	Zitting cisticola	Cisticolidae	Least Concern
43	<i>Ploceus philippinus</i>	Baya weaver	Ploceidae	Least Concern



Red collared Dove (*Streptopelia tranquebarica*)



Common Myna (*Acridotheres tristis*)



Oriental Magpie-robin (*Copsychus saularis*)



White-rumped Munia (*Lonchura striata*)



Ayeyarwady Bulbul (*Pyconotus blanfordi*)



Black-headed Ibis (*Threskiornis melanocephalus*)

Figure 5.33 Image of the bird species recorded in project area

Butterflies

A total of 9 species with 18 genera of butterflies under the order Lepidoptera belonging to 5 families were recorded. The family Nymphalidae and Pieridae were found dominant. According to the IUCN Red List of (2021-3), all species were not evaluated under any major threatened.

<Table 5.42> Butterflies Species List around the Project area

No	Family Name	Common Name	Scientific Name	Observation	IUCN
1	Pieridae	Common Grass Yellow	<i>Eurama hecabe</i>	Observed	NE
2	Pieridae	Three spot Grass Yellow	<i>Eurama blanda</i>	Observed	NE
3	Pieridae	Mottled Emigrant	<i>Cathosia pyranthe</i>	Observed	NE
4	Pieridae	Common Emigrant	<i>Cathosia pomona</i>	Observed	NE
5	Pieridae	Yellow Orange Tip	<i>Ixias pyrene</i>	Observed	NE
6	Nymphalidae	Common Crow	<i>Euploea core</i>	Observed	NE
7	Nymphalidae	Grey Pansy	<i>Junonia atlites</i>	Observed	NE
8	Nymphalidae	Grey Count	<i>Tanaecia lepidea</i>	Observed	NE
9	Libellulidae	Scarlet Skimmer	<i>Crocothemis servilia</i>	Observed	NE

NE- Not Evaluated

Dragonfly

Recording to the 4 species of dragonfly species in the survey area. Dragonfly species are family Libellulidae. All species are least concerned. In the survey area are very common family Libellulidae. There are no endangered species (IUCN red list 2022-.1) present at the project site.

<Table 5.43> List of dragonfly species around the project area

No.	Family Name	Species Name	Common Name	IUCN Red List
1	Libellulidae	<i>Neurothemis tullia</i>	Pied Paddy Skimmer	LC
2	Libellulidae	<i>Brachythemis contaminata</i>	Ditch Jewel	LC
3	Libellulidae	<i>Orthetrum sabina</i>	Green Marsh Hawk	LC
4	Libellulidae	<i>Diplacodes trivialis</i>	Blue Ground Skimmer	LC

LC=Least Concerned, NE=Not Evaluated



Neurothemis tullia (Pied Paddy Skimmer)



Brachythemis contaminata (Ditch Jewel)



Orthetrum sabina (Green Marsh Hawk)



Diplacodes trivialis (Blue Ground Skimmer)

Figure 5.34 Dragonfly Species Photo recorded during survey

Fish

Field surveys and interviews with local fishermen who lived near the study area were conducted during the collection of the specimens. Fishing activities are mostly traditional method. Fishermen were interviewed with regard to fishery process. A total of 19 species distributed 14 family were identified and recorded from around the proposed grinding plant of project area and Pa zun Taung Chaung. The most occurrence species are *Channa marulius*, *Anabas testudineus*. The dominant Family is Cyprinidae. According to the IUCN Red List of threatened species (2022-ver 3.1), there was no threatened species, other species were least concerned and one species was Not Evaluated. One invasive species were found in this area.

<Table 5.44> Fish species list around the survey period

No	Family Name	Common Name	Scientific Name	IUCN
1	Channidae	Walking Snake head	<i>Channa marulius</i>	LC
2	Channidae	Striped Snakehead	<i>Channa striata</i>	LC
3	Cyprinidae	Mirgala	<i>Cirrhinus mrigala</i>	LC
4	Chaudhuriidae	Burmese spineless Eel	<i>Chaudhuria caudata</i>	DD

5	Anabantidae	Climbing barb	<i>Anabas testudineus</i>	LC
6	Cyprinidae	Sliver Barb	<i>Barbonymus gonlonotus</i>	NE
7	Gobiidae	Tank goby	<i>Glossogobius giuris</i>	NE
8	Heteropenustidae	Stinging Catfish	<i>Heteropneustes fossilis</i>	LC
9	Latidae	Barramundi	<i>Lates calcarifer</i>	LC
10	Pristigasteridae	Big eye Ilisha	<i>Ilisha megaloptera</i>	LC
11	Mastacembelidae	Lesser Spiny Eel	<i>Mucrognathus aculeatus</i>	LC
12	Bagridae	Gangetic Mystus	<i>Mystus cavasius</i>	LC
13	Notopteridae	Bronze Feather back	<i>Notopterus notopterus</i>	LC
14	Cichlidae	Tiliapia	<i>Oreochromis niloticus</i>	LC
15	Osphronemidae	Giant gourami	<i>Osphronemus goramy</i>	LC
16	Osphronemidae	Banded gourami	<i>Trichogaster fasciata</i>	LC
17	Cyprinidae	Catla	<i>Catla catla</i>	LC
18	Cyprinidae	Slender rasbora	<i>Rasbora daniconius</i>	LC
19	Catostomidae	Suker fish	<i>Hypostomus plecostomus</i>	LC

LC-Least concern, NE-Not Evaluated, DD-Data Deficient



Sucker Fish (*Hypostomus plecostomus*)



Lesser Spiny Eel (*Mucrognathus aculeatus*)



Climbing barb (*Anabas testudineus*)



Giant gourami (*Osphronemus goramy*)



Stinging Catfish (*Heteropneustes fossilis*)



Bronze Feather back (*Notopterus notopterus*)



Gangetic Mystus (*Mystus cavasius*)



Striped Snakehead (*Channa striata*)

Figure 5.35 Photo of Fish species around the survey area

5.4 Socio-economic Components

This section presents the socio-economic environment in which the project is situated.

Methodology and Approach

It is necessary to study existing demographic profile of the region, the economic resources, the health conditions, education, and cultural resources of the community for social impact assessment of the project. This study primarily emphasized on the existing socio-economic conditions of villages which are located in the project area especially those residing in the Myanmar Than Taw Myat Cement Grinding project.

Study objectives are:

- To obtain the baseline condition of the surrounding social environment
- To examine the possible impact of the project on socio-economy of the affected area
- To assess people's attitudes, feelings, and opinions on the project before implementation, and
- To comprehend local people's suggestion in the consideration of the project.

Data collection process is necessary to collect and measure information in socio-economic investigation of project affected area. Data are collected in different ways.

Firstly, Secondary data are collected from Dagon Myothit (East) Township General Administrative Departments, Myanmar Population and Housing Census, Myanmar Information Management Unit and records from the project developer.

Stakeholder engagements, consultation meetings and social surveys are carried out. In stakeholder engagement process, regional level engagement, township level engagement and local level engagement are undertaken. Social team met officers, monks, village heads and local villagers who live in targeted three villages for discussion and consultation about the project and observed actual condition of the communities. Then, household data are collected using questionnaire and social data are gathered from respective villages. Qualitative interpretation and examination are applied to assess socio-economy of villagers in the project area.

Public consultation sessions were systematically organized during this study. The approaches of public consultation are as follow:

- Target area: Three villages of Kyar Ni Kan, Kyu Chaung and Lay Daunt Kan which are assumed as project affected area
- Target group: related village heads, villagers, members of health services, monks, and elderly group
- Methodology: visit, consultation and surveying, etc.

The information about a wide variety of them in affected area is collected with the help of questionnaire survey and focus group discussion (FGD). The questionnaires are divided into three parts as

- 1) Household survey
- 2) Health Services Provider In-depth Interview
- 3) Key Informant Interview

Direct conversation, photograph records and consultation with local villagers were made during field observation from 6th July to 1st August 2022. Basic household information, socio-economic information, housing information, health, cultural heritage, traffic in the community, personnel, general facts, employment, gardens and livestock, water and sanitation, education, development and

leadership are studied through questionnaire. Total of 120 households in affected area are interviewed through questionnaire survey.

Total of two villages distributed in one tract and one village tract are located around 2-km radius from the project site. The list of villages is presented below:

- 1) Kyar Ni Kan Village (Malit Village Tract)
- 2) Kyu Chaung Village (Malit Village Tract)
- 3) Lay Daunt Kan Village/Ward (Lay Daunt Kan Village Tract)

5.4.1 Administrative Structure

The Republic of the Union of Myanmar is delineated and constituted by

- seven states; largely on the basis of ethnicity which are Chin, Kachin, Kayin, Kayah, Mon, Rakhine and Shan
- seven regions; Ayeyarwady, Magway, Mandalay, Bago, Sagaing, Tanintharyi and Yangon
- five self-administered zones;
- one self-administered division; and
- one union territory.

According to the General Administration Department, as of January 2020, the Republic of the Union of Myanmar is constituted of 14 states and regions plus 1 Union Territory, 75 districts, 330 townships, 469 towns, 3,470 Wards, 13,590 village tracts and 63,214 villages.

The proposed project is located area in Dagon Myothit (East) Township situated in the east of Yangon. Yangon Region situated in the middle of lower Myanmar is the smallest of all Regions and States in the country. It is a coastal region which exist within the wider Delta Region of the south, sharing borders with Ayeyarwady to the west and Bago to the north and east and resting on the Andaman Sea to the south. The Region is dominated by Yangon city, the country's former capital. It covers 10,276.7 KM². It is administratively divided into 4 Districts and 45 Townships and one Sub Township. The city (or YCDC) area covers 33 out of the 45 townships of Yangon Region.

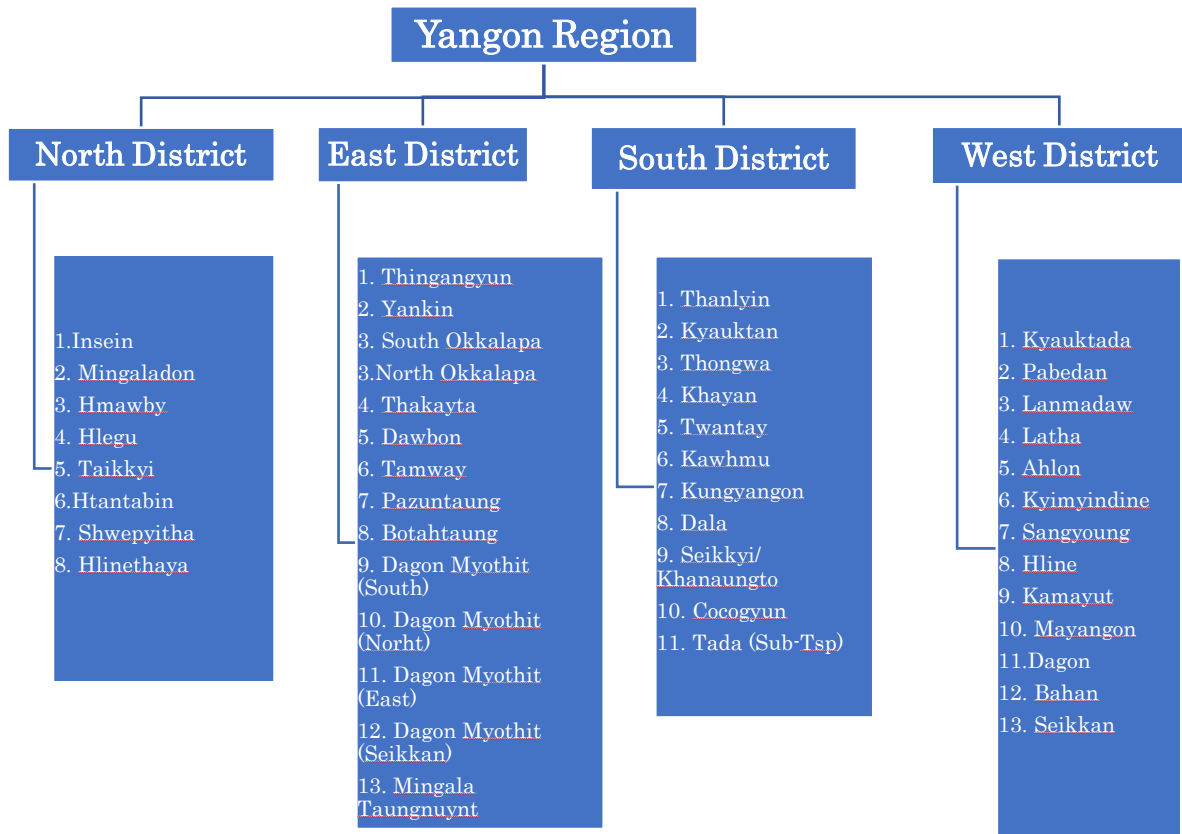


Figure 5.36 Administrative District and Township in Yangon Region

The project located township, Dagon Myothit (East) Township has an area of 35.15 square mile. It is stretching 3.7 miles east to west and 9.5 miles north to south and it has elongated shape. It shares borders with Hlegu township in the east, Dagon Myothit (North) Township in the west, and North Okkalapa Township in the north and South Dagon Township in the south. As natural boundary, Nga Moe Yeik Creek serve on the west flowing from north to south and there is flooded area due to the tide effects, flood, and ebb tide. Although there were a lot of flooded area and farms in the past, it became flat plain because of the new town plots were developed. According to the data from General Administrative Office (2019), there are 39,284 households in east Dagon Township. It is composed with 63 wards, 3 village tracts and 6 villages.

<Table 5.45> Administrative Wards, Village Tracts and Villages in Dagon Myothit (East) Township

Township	Ward	Village Tract	Village
Dagon Myothit (East)	63	3	6

Source: Township data from General Administrative Office, 2019

5.4.2 Social Profile

The project is situated in the northwest of Dagon Myothit (East) Township, Yangon Region. There are three villages in the project AOI for social study namely Kyu Chaung Village, Kyar Ni Kan Village and Lay Daunt Kan Village. Social profile of these villages can be seen as below.

a) Demography

According to 2014 Myanmar Population and Housing Census, Myanmar had a total population of 51,486,253 persons as of 29 March 2014. The total population for Yangon Region as of 29 March 2014 was 7,360,703 and it is about 14 percent of Myanmar's total population. Yangon Region is the most densely populated and most urbanized region of Myanmar, with around 70 percent of its population living in the Yangon city area. Despite being Myanmar's smallest state by land mass, its population density is 716.3 people per square kilometer, and it is almost four times as high as Mandalay, Ayeyarwady Region and Mon State.

According to Myanmar Population and Housing Census (2017), the urban area of Dagon Myothit (East) Township has town population number with 156,187 people and village tracts population number 9441 people. 94.3 percentage of people live in urban area. Population density of Dagon Myothit (East) Township is about 1819 persons per square kilometer. There are slightly more females than males with 95 males per 100 females in Dagon Myothit (East) Township.

Based on the field survey, the total population of the studied area is 6,224 and it is the 4 percent of total population of the Dagon Myothit Township. Among them, Lay Daunt Kan Village/ Ward is the most populated. The total male population is 3,069 and the female is 3,155. According to the field survey data, there are slightly more females than males with 97 males per 100 females in studied area. The total population of the studied villages is presented in the following Table.

<Table 5.46> Number of households and population of studied villages

No	Village	Village Tract	Township	Number of Households	Population		
					Males	Females	Total
1	Kyu Chaung	Malit	Dagon Myothit (East)	522	989	998	1987
2	Kyar Ni Kan	Malit	Dagon Myothit (East)	234	430	482	912
3	Lay Daunt Kan	Lay Daunt Kan	Dagon Myothit (East)	872	1,650	1,675	3,325
Total				1,682	3,069	3,155	6,224

Source: Field survey, July 2022, SEM

b) Gender

According to 2014 Myanmar Population and Housing Census, the gender status of Dagon Myothit (East) Township in 2019, there are slightly more females than males with 95 males per 100 females. Gender is almost equally distributed. Within the studied area, there are more female with 50.69 % than male with 49.30 % and there are slightly more females than males with 97 males per 100 females in studied area. It is observed that gender is almost equally distributed.

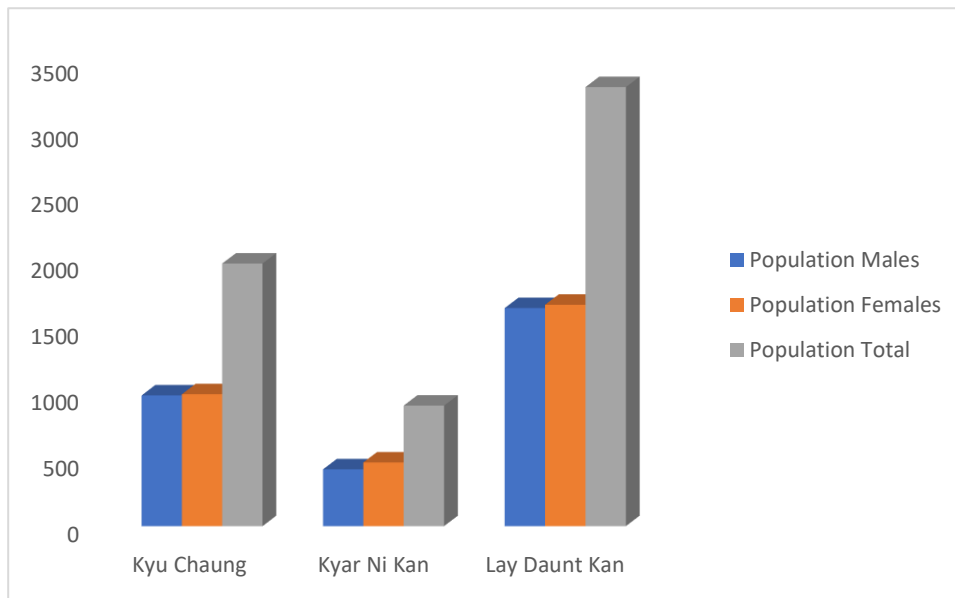


Figure 5.37 Population Structure and Gender Ratio

c) Religion

Myanmar (Burma) is a multi-religious country and Buddhism is the faith professed by the great majority of people, followed by Christianity, Islam, Hinduism, Animism, and all other faiths. All are equally entitled to freely profess and practice their religion without discrimination. According to Myanmar Population and Housing Census, most of the Burmese population identify as Buddhist (89.8 %). However, there are also significant minorities of Christians (6.3 %) and Islam (2.3%), as well as some Animists (0.8%) and Hindus (0.5%). In Yangon Region, Buddhists constitute 91 per cent of the total population of Division, followed by Christians who make up 3.2 per cent, Hindus at 1 per cent, Islam at 4.7 per cent, Animists at 0.8 per cent, other religion at 0.3 per cent and other religion at 0.1 per cent.

According to the data from Township Administration Department, the breakdown by religious composition of the enumerated population is 97 percent Buddhist, 1.4 percent Christian, 0.8 percent Hindu and 0.8 Islam. Buddhism is dominant in the studied area. As per survey result, 99.2 per cent of the respondents are Buddhists.

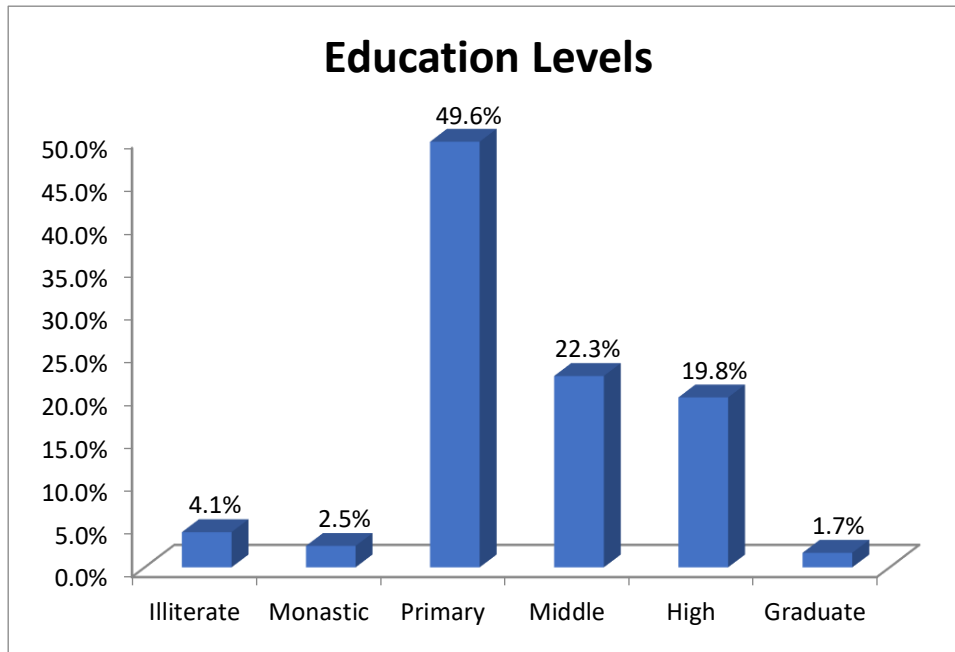
d) Education

According to the statistical data of Myanmar Population and Housing Census (2014), the literacy rate of those aged 15 and over in Dagon Myothit (East) Township is 96.2 per cent. It is lower than the literacy rate of Yangon Region (96.6%) and higher than the Union (89.5%). Female literacy rate is 94.8 per cent and for the males it is 97.8 per cent. The literacy rate for youth aged 15-24 is 97.4 per cent with 97.2 per cent for females and 97.7 per cent for males.

Some 7.8 per cent of the population aged 25 and over have never been to school. Of the rural population aged 25 and over, 16.4 per cent have never been to school. There are 6.7 per cent of males aged 25 and over who have never attended school as against 8.9 per cent for females. Among those aged 25 and over, 15.1 per cent has completed primary school (grade 5) and only 14.8 per cent has completed university/college education.

According to the baseline survey results, the literacy rate of the studied area is 95.9 per cent and it is slightly lower than the rate of township and regional level. 4.1 per cent of the total population within

the studied area have never been to school. In contrast, the highest percentage of respondents are at the primary level education and 49.6 percent has completed primary school. 22.3 per cent has finished middle school and 19.8 per cent has completed high school. There are some 1.7 per cent of total population who completed university/ college education. The following figure presents the education level of the respondents.



Source: Field survey, July 2022, SEM

Figure 5.38 Education Level

e) Communities

According to GAD, majority of local people are Burmese, followed by Rakhine and Chin in Dagon Myothit East Township. Buddhism is the major religion and Christian, Hindu and Muslim are also observed. According to the data from Myanmar Population and Housing Census (2014), in Dagon Myothit (East) Township, the proportion of employed persons working in the industry of “Manufacturing” is the highest with 16.3 per cent. The second highest industry is “Construction” at 15.7 per cent.

According to the socio-economic survey result, most of the people in the studied area are Burmese and Buddhism. The occupation in local community is diverse, whereas most village dwellers are engaged in the industries. The economic activities of local community include small business owners, casual labors, private staff, government staff, traders, construction worker, skilled worker, fishermen and farmers etc. Among them the proportion of employed persons working as casual labor is the highest with 16.5 per cent. The second largest is private staff at 14 per cent and the third largest is traders at 9.1 per cent.

f) Vulnerable groups

Vulnerable groups are the ones who are susceptible to the harmful impacts of a potential risk induced by the proposed project. It is important to consider vulnerable groups in impact assessment. According to the data from Myanmar Population and Housing Census (2014), township level physical and mental disable people are 5.5 per cent of total population. According to the field data, 4.5 per cent of the total household in the studied area are found as vulnerable. Different types of vulnerable groups

such as people who are chronic or critical diseases, who are mentally disabled, who are over 60 years old without adult working household member, who are physically disabled and the female household head with juvenile child and who are orphan are observed within the studied area. Among these groups, the one which is the female household head with juvenile child is mostly observed with 1.3 % of the total households and is followed by the one which is physically disabled with 0.9% and the one which is chronic or critical diseases with 0.8 %.

g) Ethnic minorities

The Republic of the Union of Myanmar which comprises eight major national ethnic races with 135 ethnic groups is a multi-ethnic country. The major national races are Kachin, Kayah, Kayin, Chin, Mon, Burma, Rakhine and Shan. According to township profile of GAD, the major ethnicity lived in Dagon Myothit (East) Township is Burmese (146,018 persons and 92.88 % of total population). The second most ethnicity is Rakhine (3,991 persons and 2.54 % of total population) and third is Kayin (1,637 persons and 1.54 % of total population). In the studied area, the residential people are mostly Burmese.

h) Political and social organizations

According to the General Administrative Department, political organizations such as Union Solidarity and Development Party, National League for Democracy, National Unity Party, National Progressive Party and Myanmar Farmers Development Party are observed in the Dagon Myothit (East) Township. There is no INGO in the Township. However, social organizations like Women's Affairs Association, Maternal and Child Welfare Association, War Veterans Organization, Red Cross Society and Auxiliary Fire Brigade are found in the Dagon Myothit (East) Township.

At township level, there are 24 community-based organizations (CBO). Within the studied area, there are two social organizations such as Myittar Yaung Zin in Kyu Chaung Village and PhyuSin Myittar in Lay Daunt Kan Village/Ward.

5.4.3 Economic Profile

Yangon Region and Yangon City (the former capital) function as Myanmar's urban economic center, with the country's future being closely linked to that of this area. Yangon can be understood as the industrial hub and manufacturing workshop of Myanmar. Dagon Myothit (East) Township is situated within the Yangon Region. Its economic condition is not completely developed however, nowadays it has been gradually improving. Not only Dagon Myothit (East) Township is situated beside the No. (2) Highway but also Dagon University and Industrial zone are existed within this township, its transportation is excellent. Industrial products like goods, foods and garments are mainly manufactured since industrial zone is located within the Dagon Myothit (East) Township. Although rice and green bean are cultivated in the township, they are not primary income sources. As per the survey result of the field study, the income of the studied area is mainly dependent on the existence of the industrial zones.

a) Employment

According to 'Top Five Investment Potential Sectors for States and Regions' issued by Directorate of Investment and Company Administration (DICA), it is stated that around 64% of the population of Yangon are working age and are able to meet labor demands. According to the data of Myanmar Population and Housing Census report (2014), Labor force participation rate for the population aged 15-64 in Dagon Myothit (East) Township is 61.9 per cent. In Dagon Myothit (East) Township, the proportion of employed persons working in the industry of "Manufacturing" is the highest with 16.3 per cent. The second highest industry is "Construction" at 15.7 per cent.

In the studied area, local people work as government staff, skilled workers, construction workers, casual labors and private staff. Among them, casual labor is the highest proportion with 16.5 % of the respondents and is followed by private staff with 14%. Since Dagon Myothit (East) is surrounded by many industrial zones such as Inn Da Gaw industrial zone in Hlegu Township, South Dagon industrial zone in Dagon Myothit (South) Township and Zay Gabar in Mindalardon Township, most of the people work at the surrounding industrial zones as industrial workers and it is the most popular and easily accessible job for local people.

b) Household income

According to the statistical data of Dagon Myothit (East) Township General Administrative Department (2019), Individual income of Dagon Myothit (East) Township in 2015-16 fiscal year is 923,840 Kyats, 2016-17 fiscal year is 1,022,605 Kyats and 2017-18 fiscal year is 1,047,600 Kyats.

Based on the data of socio-economic survey, the percentage of the household earned the income between 100,000 and 300,000 are the highest. Within the studied area, minimum average income is between 10,000-100,000 while the maximum is above 1,000,000.

c) Cost of living

As per the socio-economic survey data, the expenditure of 74 per cent of household is between 100,000 and 300,000 and it is the highest. Minimum average income is between 10,000-100,000 while the maximum is between 900,000-1,000,000. According to the survey result, 83 per cent of household do not have debt and the income and expenditure are in the balance.

d) Local Businesses

According to the Township GAD data, the majority of the population engage in industrial works since Dagon Myothit (East) is industrial township and is surrounded by many industrial zones.

According to the survey result, local people work as casual labors, private staff, and business traders in the studied area. In addition, some of the people operate small businesses like mini stores, maintenance workshops, teashops, and restaurants for their living. Only a few people engage in agricultural and livestock farming.





Source: Field survey, July 2022, SEM

Figure 5.39 Local Businesses

e) Agriculture

Myanmar is an agricultural country, and the agriculture sector is the backbone of its economy. According to FAO, the agriculture sector contributes to 37.8 percent of gross domestic product (GDP), accounts for 25 to 30 percent of total export earnings and employs 70 percent of the labor force. Based on Township Data from General Administrative Office (2018), the most popular cash crops in Dagon Myothit (East) Township are paddy and green bean are grown. According to the data collected at the field survey, only a few people engaged in agricultural activities and paddy and green bean are also cultivated as cash crops. It is harvesting all year round depending on the type of planted crops.

f) Livestock (Fishery and aquaculture)

Livestock also plays key role in Myanmar's economy with the purpose of enhancing food security and providing employment especially in rural area. According to township data issued by GAD, there are meat production and dairy production from breeding of chicken, cattle, pig, duck and goat. On the other hand, there is fish farming within the township and 13 fishponds are developed on 324 acre of land.

However, only 8.3 % of the total respondents engage the animal husbandry within the studied area. They keep chicken, cattle, pig, duck, and goat are bred for household consumption and business purposes. About 15 Acre of fish farming activities operating together with chicken poultry are existed within the studied area. Moreover, there are 2 respondents who engage in fishing activities for household consumption and business. They usually go fishing at the farmland and along Nge Moe Yeik Creek and the most common fish they caught are sported snakehead, catfish, Nga Pa Naw and Nga Pyay Ma.

g) Industry

According to 'Top Five Investment Potential Sectors for States and Regions' reported by DICA, Yangon has a total of 29 industrial zones, with a modernized deep seaport facility and an associated Special Economic Zone being developed at Thilawa. Yangon can be understood as the industrial hub and manufacturing workshop of Myanmar.

According to Township Data from General Administrative Office (2019), Dagon Myothit (East) Township is industrial township since there are one industrial zone which is composed of 109 factories, 19 private factories, 86 workshops and 53 domestic businesses. Industrial products like

electronic goods, plastic goods, finished wood, food and garments are manufactured. Within the studied area, there is a garment factory

h) Tourism

There are many tourist sites within Yangon such as Shwedagon Pagoda, Kandawgyi and Colonial Buildings in Downtown area etc. However, tourism sector is not developed in Dagon Myothit (East) Township since there is no tourism activities or tourist site in Dagon Myothit (East) Township. There are hotels in the township but there are 2 motels and 10 guest houses in Dagon Myothit (East). On the other hand, there is neither tourist site nor tourist attraction in the studied area.

5.4.4 Health Profile

The common diseases of the community, health care facilities of the surrounding area and health behaviors are presented in this section.

a) Community Health

According to the township data, diarrhea, TB, dysentery and hepatitis are the most occurrence diseases in township. Within the studied area, diseases like hypertension, seasonal flu and heart attack are mostly observed according to the survey data.

When people get sick, they normally go to the nearest clinic and rural health centers. If the case is serious, they usually go to Thingangyun Hospital or Yangon Hospital and take the treatment. 91 per cent of the total respondents go to doctor when they are ill. According to survey, smoking, chewing betel and drinking alcohol are found to the respondents. Chewing betel is the most common behavior.

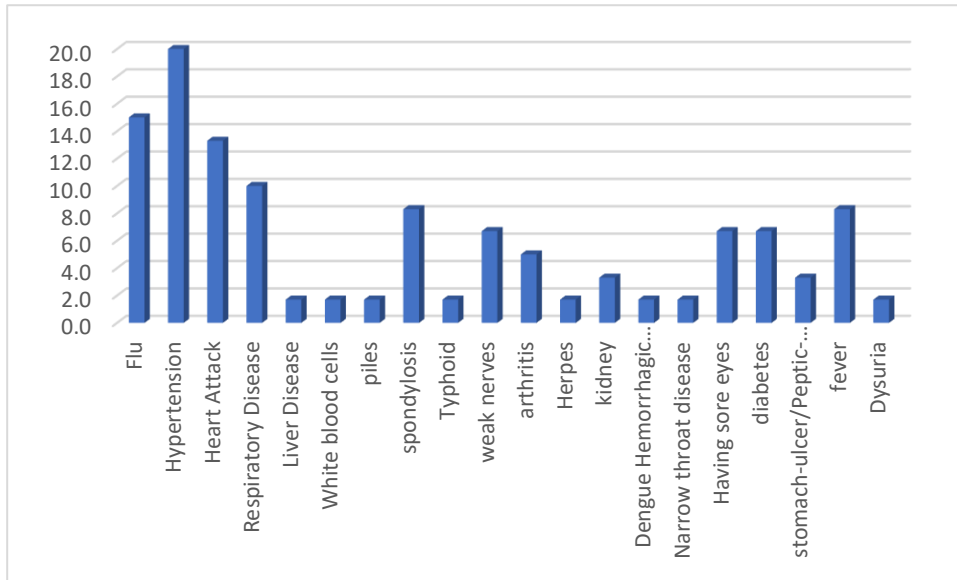
b) Morbidity and Mortality

According to Township Data from General Administrative Office (2019), the most common diseases are diarrhea and dysentery. Within the studied area, diseases like seasonal flu, hypertension, heart attack are mostly observed according to the survey data.

<Table 5-47> Local Common Diseases (Township Level)

No	Type of Diseases									
	Malaria		Diarrhea		TB		Dysentery		Hepatitis	
	Occurrence	Death	Occurrence	Death	Occurrence	Death	Occurrence	Death	Occurrence	Death
1	-	-	232	-	-	-	54	-	-	-

Source: Township data from General Administrative Office, 2019



Source: Field survey, July 2022, SEM

Figure 5.40 Different kinds of Diseases within the Studied Area

c) Access to Health Services

The fundamental need for socio-economic development is health care of people. As basic infrastructure of township, there are 1 mental health hospital (25 bed) and 1 township hospital (16 bed). Moreover, 25 private clinics, 4 Rural Health Care Centers and 4 Sub- Rural Health Care Center are existed in the township. In general, 2 doctors, 13 nurses and 1 health assistants provide health care services of Dagon Myothit (East) Township. Whin the studied area, there is a Sub- Rural Health Care Center called Kyu Chaung Sub- Rural Health Care Center. According to the local community, it is not available all the time and there is a specific day when the nurse from Shan Tae Gyi Rural Health Care Center come and give medical services to the local people in Kyu Chaung and Kyar Ni Kan. Mostly, people from three studied area usually go to clinic in Lay Daunt Kan when they are sick. There is a Sub- Rural Health Care Center called Lay Daunt Kan Sub- Rural Health Care Center located on No. (2) Main Road. For the serious case, they go and get the health care services from regional hospital like Thin Gan Gyun Hospital or Yangon Hospital.



Source: Field survey, July 2022, SEM

Figure 5.41 Health Care Facilities within the Studied Area

d) Communicable diseases

According to the township profile 2019, occurrence of sexually transmitted diseases like HIV and AIDS are found in Township. According to the survey result, sexually transmitted disease like herpes is observed although its percentage is very low in comparison with other diseases. In addition, HIV occurrence of 3 households in Lay Daunt Kan Village is observed according to the in-depth interview with village heads.

<Table 5.48> Occurrence of sexually transmitted diseases (AIDS/HIV) within studied villages

	From 2018 April to September		2018-2019	
	Occurrence	Death	Occurrence	Death
Township	210	-	210	-
Studied Area	3	-	3	-

Source: Source: Township data from General Administrative Office, 2019 & Field survey, July 2022, SEM

e) Access to Water Supply

In Dagon Myothit (East) Township, 87.2 per cent of households use improved sources of drinking water (tap water/piped, tube well, borehole, protected well/spring and bottled water/water purifier). In rural areas, 93.6 per cent of the households use water from unimproved sources for drinking water. Within the studied area, most of the resident use tube wells, pond and rainwater for the water use. There is no access of tap water/piped water for the studied area.

5.4.5 Land use

According to the township profile prepared by General Administrative Department, urban land is the highest proportion at 64 per cent and the area of land use types. Figure 5.42 shows land use map of the part of the Dagon Myothit (East) township including the project area. The agriculture mainly paddy, scattered small trees, swampy area, water body and buildup area are the main land use of the area. The cement plant and associated facilities will require total of 49.9 acres land area. For the proposed cement grinding plant, the required land has been purchased from the company which transferred farmland to other use.

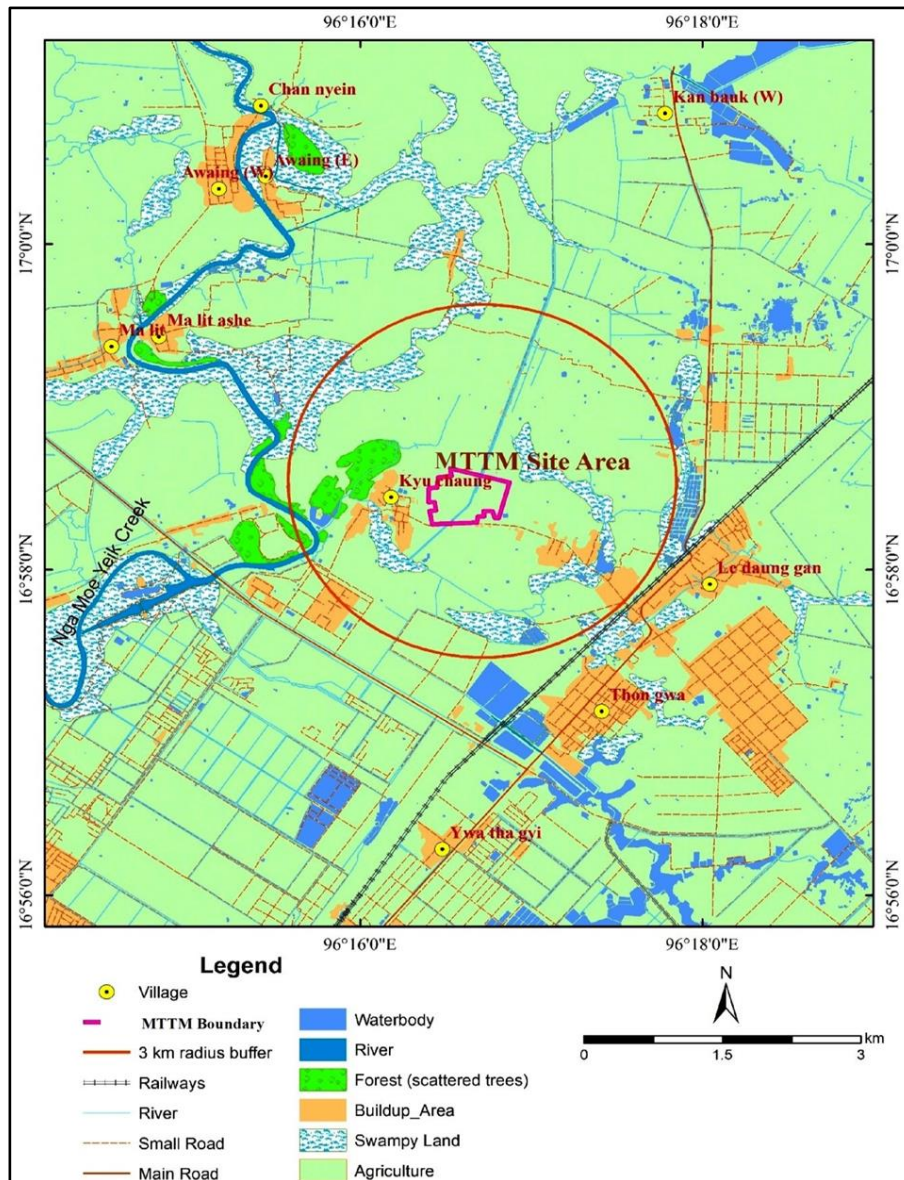


Figure 5.42 Land use map of the project area and surrounding

5.4.6 Infrastructure Facilities

Infrastructure is the set of facilities and systems serving both urban and rural area including services and facilities necessary for the public living in there. Basic infrastructure of Dagon Myothit (East) township is presented as follows.

a) Water Use and Water Supply

At present only 46 percent of Yangon’s population is serviced with piped water supply. There is still a large proportion of the city’s population being denied of clean water supply. In recent years, demand for water supply is based on two sources; they are surface water and ground water resources. In Dagon Myothit (East) Township, Tube wells are major sources not only for domestic water but also for drinking water and 70.9 % and 38.7% respectively.

Within the studied area, most of the resident use tube wells, pond and rainwater for the water use. There is no reservoir piped water/ tapped water for the studied area. For the drinking water, people

must rely on the purified drinking water and tube well by using water treatment methods like boiling and using filters.



Source: Field survey, July 2022, SEM

Figure 5.43 Water Usage and Water Supply within the Study Area

b) Health Care Facilities

The fundamental need for socio-economic development is Health care of people. In accordance with township GAD data (2019), as basic infrastructure of township, there are 1 mental health hospital (25 bed) and 1 township hospital (16 bed). Moreover, 48 private clinics, 4 Rural Health Care Centers and 4 Sub- Rural Health Care Center are existed in the township. In general, 2 doctors, 13 nurses and 1 health assistants provide health care services of Dagon Myothit (East) Township. Within the studied area, there are two Sub- Rural Health Care Center called Le Daunt Kan Sub- Rural Health Care Center and Kyu Chaung Sub- Rural Health Care Center. Moreover, there is a private clinic which becomes another option for health care service center of the studied villages when the health care facilities of the Sub- Rural Health Care Center are not accessed.

c) School

For higher education two universities are in the township namely, Dagon University in the southern area. In comparison with other townships, Dagon Myothit (East) township provides education service in higher level due to the existence of Dagon University. However, the ratio of students eligible for university is relatively low.

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in higher level due to the existence of Dagon University. However, the ratio of students eligible for university is relatively low.

There are 1 University, 5 basic education high schools (BEHS), 1 affiliated high schools, 3 basic education middle schools (BEMS) , 1 affiliated middle schools, 6 post primary schools , 15 primary schools and 11 monastic schools in basic education sector of the township.

In the studied area, there is a post-primary school in Kyu Chaung Village. For the secondary education, most of the students go basic education high school in Lay Daunt Kan (South Dagon Township) located on the other side of No (2) Main Road. There are 2 monastic schools in the Kyar Ni Kan and Kyu Chaung Village and one charity monastic school named Mahar New which gives free tuition services for the different levels of students.

<Table 5.49> Education Structure in the studied villages

Village	Type of Schools	Number of School	Number of Teacher	Number of Student
Kyu Chaung	Post-primary School	1	5	129
	Oat Pho Monastic school	1	4	100
Kyar Ni Gan	Kyar Ni Gan Monastic school	1	4	110
	Mahar Nwe Charity schools	1	4	45

Source: SEM Field Survey July (2022)



Source: Field survey, July 2022, SEM

Figure 5.44 Education Facilities within the Study Area

d) Transportation

Concerning with transportation, the roads are upgraded throughout the year with the purpose of smooth transportation of goods since East Dagon Industrial Zone is located in the study area and there are many other industries in it. The transportation of the studied area is fair. Within the studied area, it is observed that asphalt road concrete road, dirt road and gravel roads are used for transportation. The road condition of main roads is quite good. However, village roads are not in good condition.

As per the data of Census (2014), in Dagon Myothit (East) Township, 66.5 per cent of the households have bicycle as a means of transport and it is the highest proportion, followed by 10.5 per cent of households having motorcycle/ moped. Analysis by urban/rural residence, the majority of the households mainly use bicycle as a means of transport.

Within the studied area, people use motorbike to go within the township and use bicycle to go within and around the villages. People use car, motorbike, or shuttle buses to go to downtown or other townships. Based on the survey results, 87.6 % of respondents use motorbike for transportation. The other 9.9 % of respondents use car for transportation.



Source: Field survey, January 2022, SEM

Figure 5.45 Road Condition within the Study Area

e) Electricity

According to the data from Myanmar Population and Housing Census (2014), in Dagon Myothit (East) Township, 70.4 per cent of the households use electricity for lighting. This proportion in electricity usage is high in comparison with other townships in Yangon Region. The percentage of households that use electricity in Yangon Region is 69.3 per cent. In rural areas, 36.7 per cent of the households mainly use battery for lighting.

There is national grid for the access of electricity in rural area. At the studied area, 93.4 per cent of households use electricity for lighting and it is higher than township level proportion. The percentage

of households that use candle for lighting is 3.3 per cent and it is the same percentage of household use solar for lighting. On the other hand, 88.4 per cent of respondents use electricity for cooking.



Source: Field survey, July 2022, SEM

Figure 5.46 Electricity access within the Study Area

f) Energy Sources

According to Township Data from General Administrative Office (2019), there are petrol station and LNG station for energy sector of the township transportation. At the township level, electricity plays the main role for the lighting and cooking. Battery and candle are the other sources of lighting as well as charcoal and firewood are the second and third common energy sources for cooking.

According to the survey result of the studied area, electricity is the main source for both lighting and cooking. Candle and solar are also used for lighting and the secondary source for cooking is firewood.



Source: Field survey, July 2022, SEM

Figure 5.47 Energy Sources of the Study Area

5.5 Cultural Component

5.5.1 Archaeology

According to the GAD data, there is no archaeological site within the township. Similarly, there is no information about archeological site within the studied area. However, the project proponent will inform the respective government department when they find some significant archeological staff within the project site.

5.5.2 Temples, Monuments

In Dagon Myothit (East) Township, 130 monasteries and 19 nunneries are existed. There are 3 monasteries named Katharyama Monastery, Damma Saytana Wipathana Monastery and Naung Kaung Monastery and 1 orphan charity monastery named Maha Nwer are located near the project area and existed along the access road to the project site. Among them Katharyama Monastery is one of the well-known monasteries. Moreover, there are two pagodas located at Kyu Chaung village and one pagoda at Kyar Ni Gan Village. Mya Thein Tan pagoda and one stupa are located at Kyu Chaung Village and Thetbaynyu Pagoda is located at Kyar Ni Gan village. The nearest pagodas of the studied village are located at 0.6 km, 0.7 km and 1 km from the project site.



Source: Field survey, July 2022, SEM

Figure 5.48 Temples and Monuments within studied area

5.6 Visual Components

The visual components of Dagon Myothit (East) Township differs from urbanized area of Yangon City which is full of buildings, skyscrapers and crowded people. It is composed of plantation, grassland, dispersed housings, and industries. Man-made buildings and natural settings are existed in balance. Similarly, the studied area is composed of plantation, grassland, shrubland and dispersed housings.

5.6.1 Aesthetic

As mentioned above, natural environment and man-made environment are existed together in Dagon Myothit (East) Township. There is no significant places with aesthetic value within the studied area. There is no impact on aesthetic of the existing environment since factories are already existed.

5.6.2 Landscape

Dagon Myothit (East) Township located above 5-10 meter above mean sea level is a flat plain region with many agricultural land. Nga Moe Yeik Creek flowing from north to south is located at the west of the project site. Major visual components of Dagon Myothit (East) Township mainly consist of plain and agricultural land, creek and some natural vegetation. There is no significant landmark near the project site. Landscape of Dagon Myothit (East) Township is shown in the Figure 5.49.



Figure 5.49 Landscape of Dagon Myothit (East) Township

5.6.3 Cultural Landmarks

A cultural landmark is a building, place, or monument of outstanding historical or cultural significance for the people identified by authorizing department like Department of Archeology and National Museum. Within and around the studied area there is no significant cultural landmarks.

6. IMPACT & RISK ASSESSMENT AND MITIGATION MEASURES

6.1 Method and Approach to Impact Assessment and Mitigation Measure

The predicted impacts have been evaluated as per Environmental Impact Assessment Procedure and Environmental Conservation Rule (ECR) that have already issued by MONREC. The impacts have been evaluated in respect to their nature of impact (i.e. direct or indirect), spatial nature (i.e. local or widespread), temporal nature (i.e. long term or short term), and likelihood of occurrence.

Finally, the consequences of these impacts have been categorized into a qualitative scale defined by world scenarios for each category. The following sections describe all the potential impacts (stage wise) on physical environment, physical resources (water resources, land resources, agricultural resources, and ecosystem resources) and socioeconomic environment of the surrounding.

In order to prepare the impact assessment, assessment team has referred the information provided by the project developer and as well as all possible secondary data information, also from field through site observation, primary data collection and public consultation with the combination of professional judgments.

The impact assessment was done according to the following methodology.

Magnitude is a measure of the degree of change in a measurement or analysis (e.g. the concentration of a metal in water compared to the water quality guideline value for the metal) and is classified as non/negligible, low, moderate or high. The categorization of the impact magnitude may be based on a set of criteria (e.g. health risk levels, ecological concepts and/or professional judgment) pertinent to each of the discipline areas and key questions analyzed. The specialist study must attempt to quantify the magnitude and outline the rationale used. Appropriate, widely recognized standards are used as a measure of the level of impact.

Duration refers to the length of time over which an environmental impact may occur: i.e. transient (less than 1 year), short-term (0 to 5 years), medium-term (5 to 15 years), long-term (greater than 15 years with impact ceasing after closure of the project) or permanent.

Scale/Geographic extent refers to the area that could be affected by the impact and is classified as site, local, regional, national or international.

Probability of occurrence is a description of the probability of the impact actually occurring as improbable (less than 5% chance), low probability (5% to 40% chance), medium probability (40% to 60% chance), highly probable (most likely, 60% to 90% chance) or definite (impact will definitely occur).

Impact significance was rated by the specialists using the scoring system shown in the box below.

Scoring System for Assessment of Significance

Magnitude		Duration		Scale		Probability	
10	Very High	5	Parmanent	5	International	5	Definite
8	High	4	Long -term	4	National	4	High Probable
6	Moderate	3	Medium - term	3	Regional	3	Medium Probability

4	Low	2	Short-term	2	Local	2	Low Probability
2	Minor	1	Transient	1	Site Only	1	Improbable
1	None						

Source: Reference to IAIA assessment Method

After ranking these factors for each impact, the significance of the two aspects, occurrence, and severity, was assessed using the following formula:

$$SP \text{ (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$$

The maximum value is 100 significance points (SP). The potential environmental impacts were then rated as of **High (SP > 75)**, **Moderate (SP 30 – 75)** or **Low (SP < 30) significance**, both with and without mitigation measures on the following basis:

SP > 75	Indicate high environmental significance	Where it would influence the decision regardless of any possible mitigation. An impact which could influence the decision about whether or not to proceed with the project.
SP 30-75	Indicate moderate environmental significance	Where it could have an influence on the decision unless it is mitigated. An impact or benefit which is sufficiently important to require management. Of moderate significance - could influence the decision about the project if left unmanaged
SP < 30	Indicate Low environmental significant	Where it will not have an influence on the decision. Impacts with little real effect and which should not have an influence on or required modification of the project design or alternative mitigation.
+	Positive Impact	An impact that is likely to result in positive consequences/ effects.

6.2 Method and Approach for Social Impact Assessment

Social impact assessment identifies and assesses the potential impacts on the existing socio-economic environment arising from Project-related activities. Information within Project Description and the baseline socio-economic characteristics have been used to assist the evaluation of the potential impacts and their significance. Social impacts will be considered on the interaction between the project activities and receptors in project's social area of influence. Project activities include the followings:

- Construction Stage
 - Land preparation and earthwork
 - Construction Activities
 - Transportation of Material and Workers
- Operation Stage
 - Loading and unloading of raw material
 - Grinding
 - Packing

The villages (local community) located within the area of influence that may be impacted or influenced by the Project (as a result of their proximity to the Project site and/ or Project associated infrastructure) are:

- 1) Kyu Chaung (Malit village tracts)
- 2) Kyar Ni Kan (Malit village tracts)
- 3) Lay Daunt Kan (Lay Daunt Kan village tracts)

The objective of a Social Impact Assessment (SIA) is to assess the possible social impacts that may be brought about by a development project, to understand, manage and control changes, to formulate, implement mitigation measures to minimize adverse social impacts or prevent from extension. In this chapter, the anticipated impacts induced from the project on the social environment (i.e., local community) will be focused as the main receptor. The assessment of socio-economic impacts has been undertaken with respect to the receptors across natural capital, human capital, social capital, economic capital, and physical capital to have a significant interaction with the activities linked to the project across its lifecycle. For beneficial impacts, the beneficial nature of the impact has been noted and the context of the potential benefit will be discussed.

6.3 Assessment of Impacts on Key Environmental Components during Construction Phase

6.3.1 Physical Components

a) Impact on Air Quality

During the construction activities, emissions of air pollutants at the cement grinding plant site are mainly associated to transportation (i.e., vehicle movement), site clearance activities, internal site road and installation of the grinding plant. In construction activities, the main types of air emissions are combustion and exhaust emissions generated from the construction equipment, generators and vehicles. The second type of air emissions is fugitive dust generated by excavation works.

The impact assessment is summarized in the following Table.

Impact	During construction activities, there will be directly impacts on air quality due to vehicle movement, constructions and site clearance activities.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	During the operation phase, the impact of the air at cement grinding plant is considered as moderate.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	Vehicle emissions and dust are temporarily concentrated during the construction period.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	Emissions and dust will occur mainly at the construction site.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential impact on air quality is low probability because mitigation measures are technically feasible.					
Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (6+2+1) \times 2$ $= 18$					
	The impact significant is low.					

Mitigation Measures

- Restricting the speed of trucks and other vehicles accessing the project site to 40km/hr.
- Water spraying on construction site.
- Provision and enforcement of appropriate PPE to workers.
- Develop and implement an air quality monitoring plan to ensure compliance with the limits set under NEQG.

b) Impact on Noise and Vibration

During the construction phase, noise and vibration will be generated by using heavy equipment and machinery such as dump truck, loader, tower crane, back-hole, and dozer for site preparation/clearance and earthworks. During different activities of construction phase, the noise and vibration can be generated from:

- Site clearing activities including clearing the land of vegetation, fencing the project boundary and site leveling;
- Internal road construction;
- Construction activities (construct conveyor line, silo, cement mill, etc.) at cement grinding plant site;
- Generator, vibrating machine, etc., and collision noise impact during the loading and unloading of materials and mobile equipment or machinery used in building construction such as cranes, concrete mixing and pile driving equipment.

The impact assessment is summarized in the following Table.

Impact	During construction activities, noise and vibration will be generated by using heavy equipment and machinery.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	During the construction phase, the impact on noise and vibration is moderate.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	The potential impact of noise and vibration resulting from the construction activities will be only in construction phase.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	The impact of noise and vibration will be at site only in construction phase.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential impact of noise and vibration is low probability because mitigation measures are technically feasible and effective.					
Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (6+2+1) \times 2$ $= 18$					
	The impact significant is low.					

Mitigation Measures

- To select adequate equipment (fit with noise mufflers);
- To minimize machinery and equipment unused conditions with engines in action;
- To maintain machinery and equipment in good conditions;
- To erect temporary noise barriers facing receptors;
- To maintain an active community consultation and positive relations with local residents that will assist in alleviating concerns that might arise and resolve any potential noise complaints;
- To restrict the construction activities that will generate disturbing sounds to normal working hours.
- To post warning signs within the vicinity of the impact and all personnel shall be provided with personal protective equipment. For example, workers operating equipment that generates noise should be equipped with the appropriate noise protection gear; and etc.

c) Impact on Water Quality

The construction activities and installation of cement grinding plant may not cause any changes in the surface water and ground water quality and potential. In this project, water usage for construction purposes are dust suppression, vehicle washing down and domestic water. The domestic water is mainly used for washing and drinking in the cement grinding plant. The construction water and domestic water will be taken from the groundwater. There is a well drilled at the project site. The total water requirement during the construction period is 200 m³/day. This kind of water consumption may affect the groundwater level although there is no significant contamination in groundwater.

The potential impact on water quality during construction are considered as following items.

- Water consumption for construction purpose and domestic water for construction workers;
- Sewage and sanitary water from worker's camp.

The impact assessment is summarized in the following Table.

Impact	During construction phase, water consumption for construction water and domestic water may affect groundwater levels. And the impact on water quality is sewage from worker' camp.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	The amount of water used in construction purpose and domestic use are 200 m ³ /day and within the construction period only. The groundwater availability of the project area is high because of the abundance of rivers and streams. Therefore, the potential impact on water consumption is minor. The impact on the water quality is minor because wastewater (sewage, etc.) will not be discharged directly into the environment.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	The potential impact will be during the construction.					
Scale	International	National	Regional	Local	Site	

	5	4	3	2	1
	The impact on water quality is expected to be site only and water consumption is local.				
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1
	The impact on water consumption and water quality is low probability because construction water is used only during the construction phase.				
Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (2+2+2) \times 2$ $= 12$				
	The impact significant is low.				

Mitigation Measures

- Water consumption must be reduced as much as possible, especially it is a natural resource.
- Wastewater generated from offices, canteens, and worker accommodation is treated by septic sewage system. Wastewater treatment unit will be provided for treating wastewater from canteens.
- Temporary drainage system will be provided for collecting drain water from construction activity and rain to sediment pond and reuse inside construction area.
- Create a special storage for fuel and lubricants/oil. The storage is a closed building and it is protected from rain water.

d) Impact on Solid Waste

The construction phase will be carried out through different activities as civil, mechanical, electrical installation operations. The following solid materials will likely to be generated either as waste or for temporary storage pending their use for reinstatement:

- topsoil;
- subsurface soil;
- concrete

Top soil and subsoil that is then re-used for reinstatement should be stored at suitable locations that do not result in nuisance to the general public.

In addition to inert materials, a certain amount of biodegradable waste (e.g., vegetation, tree roots, etc.) will also be a by-product of the project activities.

Domestic waste will be generated by the workers at the construction camp. It may comprise non-hazardous materials including for example paper, food residues, used containers (bottles, can, etc.), broken furniture and packaging, and sanitary effluent.

The impact assessment is summarized in the following Table.

Impact	Solid waste will be generated from construction site waste and domestic waste during construction phase.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	Waste streams generated during construction could be managed through proper collection of waste, the principles of waste minimization, reuse and recycling and disposal of. So, the impact magnitude will be minor.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	The potential impact of construction waste will only be at the construction stage.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	During the construction phase, the impact of the solid waste at cement grinding plant is considered on site.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential impact of solid waste will be low probability because mitigation measures are technically feasible and effective.					
Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (2+2+1) \times 2$ $= 10$					
	The impact significant is low.					

Mitigation Measures

- All types of waste generated during the construction phase should be inventoried and scheduled;
- Waste will be sorted into a number of waste streams (groups of waste requiring common handling methods, i.e., re-use, decontamination/processing, authorized disposal, etc.);
- No uncontrolled disposal of waste will be carried out during the construction phase, as all waste streams will be directed to proper treatment;
- Disposal of waste and hazardous materials will be coordinated with township development committee;
- Incineration of combustible waste and construction debris is prohibited; and
- Construction site will be periodically cleaned.

6.3.2 Biological Components

The construction activities include site preparation and geotechnical site investigation. The following items are considered as a potential impact on Flora, Fauna & Biodiversity during construction phase.

Excavation of the ground, which may cause violation of flora and fauna on local basis, will be performed during the construction of the cement grinding plant and associated facilities. Mostly, the project activities will be performed within the project boundary. Thus, in general, all the impacts during the construction works will be temporary, reversible, and susceptible to moderation by means of adequate and good working practices.

Method of Assessment

The impact on Flora, Fauna & Biodiversity caused by the construction activity is identified qualitatively. The impact forecast for flora, fauna, and biodiversity was conducted as follows:

- The current status of vegetation in the project area was examined and then the impact on vegetation was evaluated by referring to the construction plan for the project development;
- The loss of important species and/or their habitats was determined by overlaying the project area on the habitats of important species; and
- The impact on biodiversity and ecosystem in the project area was evaluated in consideration of biodiversity and ecosystem of the larger region.

The cement grinding plant area is mainly covered by shrub land, Grass land and Agricultural land and some plantation. The vegetation of the area is low-rich natural environmental vegetation and the same types of vegetation are distributed in the surrounding area of the project site. The observed vegetation covers in the cement grinding plant compound are shown as follows.

Biodiversity (Flora and Fauna) Species and Their Habitats

The summary of fauna and flora survey showed that 47 plant species, 4 species of Mammals, 9 species of reptiles and amphibian, 43 species of Birds, 9 species of Butterflies, 4 species of Dragonfly were recorded in project foot print area. In this survey area, one threatened species of bird, were recorded as Near Threatened (NT) according to the IUCN Red List of threatened species (2022-3.1). There were no globally threatened species of reptiles and amphibian, butterfly, and dragonfly according to the IUCN Red. List of threatened species (2022-3.1). One bird species were endemic and other species were no endemic.

The economically important fauna species were not observed. However, the loss of important species due to the project development would be evaluated carefully with the consideration of their habitats and specific living behavior.

The project foot print area (both cement grinding plant compound) is located near the village communities' area and the areas have been already cleared for agricultural purpose and transportation purpose therefore there is no important wildlife in the project footprint area. Some birds, insects, mammals, reptiles, and amphibian were only living in the area

Assessment of Impact

Assessment of the impact is conducted using simple analytical method that is descriptive and qualitative. The impact assessment is summarized in the following Table and Based on baseline data condition; habitat loss of fauna is caused by site clearance.

Impact	During the construction phase, removal of vegetation clearance of the land, mainly terrestrial fauna will have to move to surrounding area and take up new territories. And then the habitat of fauna species living in the area will be modified.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	The cement grinding plant area is mainly covered by shrub land, grass land and some plantation. The vegetation of the area is low-rich natural environmental vegetation, and the same types of vegetation are distributed in the surrounding area of the project site. Considering cause of the magnitude of impact to each habitat discussed above, the overall magnitude impact was low of insect and other fauna species, during site clearance, noise may disturb on feeding, breeding, migration pattern.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	Re-vegetation has been established to ameliorate the negative effects of clearing remnant vegetation and to provide new habitat for fauna.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	The Impact is expected to be site only.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	Probability of the impact is Low probability.					
Impact Significant	SP (significance points) = (magnitude + duration + scale) x probability $= (4+3+1) \times 2$ $= 16$					
	The impact significant is Low but mitigation measure will be technically feasible.					

Mitigation Measure of Construction Phase

The impact of Flora/ Fauna & Biodiversity from construction activity is the key concern. However, there are mitigation measures for reducing the impact of biodiversity as following. These measures are technically possible to conduct by contractor.

Do not clear vegetation too far advance of construction. Also avoid unnecessary clearing of land and cutting of trees along both side of the access road to the factory.

- Avoid unnecessary clearing of land and cutting of vegetation. The construction should be progressive, that is implemented as soon as a portion of the site is ready for construction.

- Avoid disturbing old growth forest area, thus preventing impacts to the wildlife species dependent on the unique of ecosystem.
- Prohibit hunting or trapping of wild animals, even small ones including rodents and birds.
- Non constructed area will be rehabilitated and vegetated as soon as land clearing and land preparation has been completed.
- Effective planting of trees and grass should be started as soon as the construction works are completed. Refuge area (nesting, resting, breeding, and feeding) should be defined for small animals such as birds and rodents.
- Local species should be prioritized in rehabilitation and vegetation program.
- Worker's training on wildlife through induction, posters.
- Apply no hunting and no poaching policy inside the project area.
- Follow the law and rule against logging outside the approve construction area and against wildlife hunting and poaching will be imposed on project staff, workers and all contractors and personnel engaged in or associated with the Project, with penalties levied for anyone caught carrying an using animal snares and traps, including fines and dismissal and prosecution under the Forest Law, 1992 and protection of Wildlife and Wild plant and Conservation of Natural Area Law 1994.

6.3.3 Social Components

As already mentioned before, impacts on social components will be considered on the interaction between the development activities and receptors in project's social area of influence. Construction phase is the initial phase of the project development, and the duration is 24 months. Project will need high volume of workers for the construction works. Since construction phase is the period of high demand of job openings with temporary employment, the numbers of employees will be dramatically high. Therefore, the local labor employment is affected to the social components within the social area of influence.

Social concerns and conflicts: According to the series of consultation meetings, the residents are expecting better job opportunities that suit their skills and education. There may have possibility of occurrence of conflicts between the residents and project proponent with regards to hiring local labor workforce and hiring business services. Moreover, there is a concern in respect of local security due to the appointment of day labors for the construction works.

Mitigation and Enhancement Measures

In accordance with construction phase, duration is short term and job opportunities are limited. But local people may have expectations to be employed and there will be competition among the locals. To avoid the disputes through employment and to enhance the project benefits, the project will implement the following mitigation measures:

- To have clear stipulation of using local labor in accordance with the needs of the project
- To identify the range of skill required for the labor force and conduct a gap analysis against skills availability
- To ensure that the project site responsible liaise officer closely coordinate with local village leaders and local government authorities to agree on appropriate procedures for recruitment and hiring
- To track and monitor concerns associated with project employment or workforce recruitment
- Careful management to be practiced about the expectation of local people in regard to the employment to avoid any disputes

- All required services for the plant should be sourced by the local supplier of business services within local area, providing a wide range of business and employment opportunities. This is referred to as indirect employment.

6.3.4 Economic Components

Construction phase is the very first phase of the project and it is the preparation stage. Moreover, the duration is short, and it lasts only 24 months. Therefore, project activities are limited and the effects on the economic components cannot be much.

1) Employment

As mentioned above, the project requires the basic level semi-skill and non-skilled works at the construction phase and will provide job opportunities to the local people and people in project social area of influence. Since construction phase is the period of high demand of job openings with temporary employment, the numbers of employees will be dramatically high. Under the supervision of skilled workers, day labor employment can be happened to the local community.

2) Local Economy

There is some probability that the workforce will patronize local retail services, such as food outlets during lunch or coffee time, which would be beneficial to the economy at the local scale. On the project site, it is certain that some materials required for the project use could be locally available and due to the easy accessibility, there might be greater consumption for local market and increase business opportunity for local business. It will be a positive economic impact on the local community.

3) Transportation

Due to the transportation of the construction material and worker, there will have potential traffic increase on the existing road where the local community use for their transportation. The volume of vehicles carrying construction materials will be high during the construction period. Proper traffic management plan is to be adopted without interfering the existing transportation system of local people.

6.3.5 Health and Safety

Construction of factory and facilities will be carried out at the development stage. All the activities are carried out within the project site. Project site is separated but the nearest villages are 0.7 km away from the project site.

▪ *Health and Safety of the local community*

Construction period is temporary, and all the activities are carried out within the project site, there is not any significant impact on health profile of the local community.

However, noise and dust pollution from the construction activities, as well as the heavy construction traffic, may affect the communities residing close to the construction areas of the project site and main access roads.

The construction of the plant may lead to a rapid encroachment and migrant populations. However, using the high percentage of local workers will largely reduce the health risk during construction period. In some respects, development projects can improve the well-being of populations around the area (e.g. new infrastructure, better access to health care). Other communicable diseases may appear or increase in incidence owing to the influx of migrants to the area. Sexually-transmitted infections and HIV/AIDS are a particular problem.

▪ ***Health and Safety of the workforce at the project site***

During working hours, accidents can be occurred to the workforce of the project site. At the construction stage, the workforce at the project site should be follow the guidelines and instructions mentioned in Occupational Health and Safety. The project has to ensure that the site labors conduct the project activities in accordance with the occupational health and safety policies.

Mitigation and Enhancement Measures

To avoid accidents and communicable diseases and enhance the health and safety of local communities, the project proponent should perform the followings:

- To prepare proper management plan for noise and dust pollution and traffic volume induced by construction activities.
- To utilize high percentage of the local workers for construction activities.
- To have effective occupational health and safety policies
- To have a health and safety officer at the construction site
- To ensure that the workers at the project site follow each instruction mentioned in health and safety guidelines
- To make rules and restrictions to avoid criminal cases in the local area committed by the project workers.

6.3.6 Cultural Components

Since there is no building, place, or monument of outstanding historical or cultural significance for the people identified by authorizing department like Department of Archeology within and around the studied area, there is not any impact on cultural components due to the construction activities. However, if any cultural objects are observed while conducting construction activities, the project proponent will inform to the Department of Archaeology and cooperate.

6.3.7 Visual Components

Project located township, Dagon Myothit (East) township is an industrial township in which one industrial zone is located and numerous factories and workshops are already existed. Therefore, there is no impact on visual component of the existing environment due to the construction activities since factories are already existed and the activities will be conducted within the project boundary.

6.4 Assessment of Impacts on Key Environmental Components during Operation Phase

6.4.1 Physical Components

a) Impact on Air Quality

In this cement project, the clinkers will be combined with gypsum in the right proportion to produce cement. Therefore, air pollution from a cement mill during operation is mainly due to the emission of particulates matter. Cement operation involve unloading, storage, grinding, and packing processes. A small amount of gas emissions will be generated by the transport vehicles in the cement operation. Particulate Matter (PM) is mostly dispersed by the wind during operation. The main sources of particulate matter in the cement grinding process can be subdivided as follow:

- Particulate matter will be generated from raw materials (clinker and gypsum) such as the raw materials unloading, storage, and automated belt conveyor transportation.
- Cement particulates matter will be released from the process of the cement grinding, storage, packing and transportation.

The impact assessment is summarized in the following Table.

Impact	During the operation phase, particulate matter will be generated from the process of loading and unloading, storage, automated belt conveyor transportation, grinding, and packaging.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	Emission of particulate matter will have low impact to the surrounding environment.					
Impact Duration	Permanent 5	Long - term 4	Medium - term 3	Short - term 2	Transient 1	
	Potential impacts to air quality will occur throughout the operation phase and can therefore be described as long term in nature.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	Particulate matter is dispersed only in and around the project area.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential impact on air quality due to emission of particulate matter will be low probability because mitigation measures are technically feasible.					
Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (4+4+2) \times 2$ $= 20$					
	The impact significant is low.					

Mitigation Measures

The followings are the main mitigation measures in the operation phase.

- Use of enclosed storage structures to minimize fugitive dust emissions.
- Install of dust collectors
- Use of enclosed conveyors with well designed, extraction and filtration equipment on conveyor transfer points to prevent the emission of PM.
- Provision and enforcement of appropriate PPE to workers

Emission Source	Pollutants	Mitigation Measures
Conveyor Line	PM	Pulse bag dust collector (LPF-32-4)
Cement Grinding Mill	PM	Filter Bag Dust Collector (LPM 2 x 13 D)
Packing Silo	PM	Dust Collector (LPM 8 C)
Clinker Silo	PM	Filter Bag Dust Collector (LPF 96)

b) Impact on Noise and Vibration

During the operation, cement grinding plant include raw material unloading, storage, mixing, grinding, intermediate and final product handling and transportation. The main sources of noise and vibrations in cement grinding plant are grinding process, mills, chutes and hoppers, exhaust fans, and blowers.

Environment noise level, that is acceptable rating level for noise (NEQG Standard) is around 55 dB during day time and 45 dB at night. Internationally accepted noise level in the work place should not exceed 85-90 dB, (EU), that is within 8 hours. The noise pollution can cause hearing loss and affected the mental and physical health in many ways. Each of the workers can take many steps to protect themselves from the harmful effects of noise pollution.

Impact	Noise and vibration are one of the impacts of cement grinding operation. The main sources of noise and vibrations in cement grinding plant are grinding process, mills, chutes and hoppers, exhaust fans, and blowers.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	The potential impact of noise and vibration will have moderate impact to the surrounding environment.					
Impact Duration	Permanent 5	Long - term 4	Medium - term 3	Short - term 2	Transient 1	
	The operation activities will occur throughout the lifetime of the project. It can be considered as long term.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	These impacts from operational activities are in and around the project site.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential impact of noise emission due to the operation activities of cement grinding plant will be low probability because mitigation measures are technically feasible.					

Impact Significant	$\text{SP (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (6+4+2) \times 2$ $= 24$
	The impact significant is low.

Mitigation Measures

The following mitigation measures will be implemented to prevent and minimize the level of noise and vibration in the coal mine operation.

- Use of silencers for fans,
- Room enclosures for grinding mill operators,
- Installation of noise barriers around noise-emitting equipment,
- Conduct ambient noise monitoring at appropriate locations periodically during the operational phase to ensure compliance with applicable NEQG standards.
- If noise cannot be reduced to acceptable levels, personal hearing protection

c) Impact on Water Quality

As the cement grinding plant will use drying technology, the water demand is only for domestic use. Therefore, the production does not cause water pollution. Domestic water is for employees (i.e., drinking and sanitation). The domestic water will use 600,000 gallons per year.

The following Table provides water consumption during operation of cement grinding plant.

No.	Using water for the project	Regular Operation Period
1	For industrial (process) purposes	50m ³ /day
2	For drinking purposes	10m ³ /day
3	Others, specify	6m ³ /day
	Total requirement	66m³/day

The following potential impacts on water quality will be predicted during operation phase.

- Water consumption for domestic activities.
- Domestic wastewater discharge generated from the workforce at office and staff dormitory.
- The domestic sewage is mainly generated from the living washing water and the fecal sewage.

The impact assessment is summarized in the following Table.

Impact	During the operation, the impact on water quality are water consumption and domestic wastewater and sewage. The domestic wastewater and sewage will be generated from office and staff dormitory.					
	Very High	High	Moderate	Low	Minor	None

	10	8	6	4	2	1
Impact Magnitude	During operation period, the impact on water consumption is minor. Because the cement grinding plant will use drying technology, the water demand is only for domestic use. Therefore, the production does not cause water pollution.					
Impact Duration	Permanent 5	Long - term 4	Medium - term 3	Short - term 2	Transient 1	
	The potential impact can be considered as long term.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	The impact on water quality is expected to be site only and water consumption is local.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The impact on water consumption and contamination groundwater quality low probability because the mitigations for these impacts are technically feasible.					
Impact Significant	$SP \text{ (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (2+4+2) \times 2$ $= 16$					
	The impact significant is low.					

Mitigation Measures

The mitigation measures of reducing the impact to the water quality is considered as followings.

- Water consumption must be reduced as much as possible, especially it is a natural resource.
- Minimize amount of water used during cleaning (for example, by using high-pressure, low-flow nozzles)
- Wastewater from offices, canteens, and staff accommodation must be discharged by constructing a water retention tank and utilizing a sedimentation system.
- Sewage must be collected by pit system and then disposed of by municipal sewage trucks.

d) Impact on Solid Waste

The generation of waste during operational period is anticipated to be gradually reduced. Waste may be generated from domestic activities. The domestic garbage will be generated in the office and living areas including the peels, plastic packaging, kitchen waste, and waste generated.

The impact assessment is summarized in the following Table.

Impact	The generation of solid waste will be contaminated into groundwater or soil caused by an improper waste management; and potential negative impact on community health.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	The generation of waste at the cement grinding plant will decrease during operation period, with domestic waste being the most likely to be disposed of.					
Impact Duration	Permanent 5	Long –term 4	Medium-term 3	Short-term 2	Transient 1	
	The potential adverse impacts resulting from the generation of waste during the operation phase is long term.					
Scale	International 5	National 4	Regional 3	Local 2	Site 1	
	The potential adverse impacts resulting from the generation of waste during the operation phase will be site only.					
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1	
	The potential adverse impacts will be low probability because mitigation measures are technically feasible and effective.					
Impact Significant	$SP \text{ (significance points)} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$ $= (2+4+1) \times 2$ $= 14$					
	The impact significant is low.					

Mitigation Measures

- Suitable temporary disposal sites shall be identified with capacities for disposal for general and hazardous waste prior to the operation phase.
- Waste shall be separated on site and waste storage areas shall be roofed and bounded to prevent potential cross-contamination.
- All waste from temporary dump site shall be transported with the management of township development committee.

6.4.2 Biological Components

During the operational phase of the project, smaller fauna such as many reptiles would be affected by noise from operation of power plant, but it is envisaged that this impact will be negligible given that the majority of the species would have already migrated away from the area. During operation phase of the project, impacts on Flora/Fauna & Biodiversity will be minimal.

Area of Influence

The area examined to forecast the impact on Biodiversity (Flora& Fauna) was set in and around the project area (2 km radius from center of the project area)

Methodology

The impact on Flora/Fauna & Biodiversity from operation activity of the project is identified qualitatively.

Identified Impact

During Operation phase, traffic disturbance may potentially deter faunal species from moving through or inhabiting the area. During operational phase, direct ecological impact resulting from the operation phase of the project is the loss of vegetation and habitat associated with site clearance. The impact on the surrounding ecology during the operation of the project will mainly occur on the vegetation clearance and Deforestation and loss or disturbance of the habitat.

The habitat and project area are currently plantation and shrub land, orchard farm land and grass land. According the IUCN Red List threatened species (2022-ver 3.1), Theses area was no threatened flora species.

Aquatic Species were found in this area, but these area was no threatened species (IUCN 2022). It is important to note that the proposed development will have no impact on any Aquatic ecosystem in the area.

Fauna species is habitat loss on Site clearance in shrub land breeding of Butterflies and Bird Species. At the time of site clearance, Fauna species especially Bird, Butterflies and Mammal and reptile species migrant other plantation area. There are one Sensitive species of Bird, Grey -headed Ibis which are listed as near threatened Species on IUCN Red List 2022 - ver 3.1). Receptor sensitivity is Considered Low. Because these Grey -headed Ibis is winter visitor in Myanmar. This species migrant in another place. Therefore, Impact significant of terrestrial fauna is Minor.

Assessment of the impact is conducted using simple analytical method that is descriptive and qualitative. The impact assessment is summarized in the following Table.

Impact	During the operation phase, impacts on local vegetation and fauna from the operation phase are direct ecological impact resulting from the operation phase of the project is the loss of vegetation and habitat associated with site clearance.					
Impact Magnitude	Very High 10	High 8	Moderate 6	Low 4	Minor 2	None 1
	The majority of the species would have already migrated away from the area. All Considering cause of the magnitude of impact to each habitat discussed above, the overall magnitude impact was low.					

Impact Duration	Permanent 5	Long - term 4	Medium - term 3	Short - term 2	Transient 1
	Operation of cement grinding plant will be at least 30 years.				
Scale	International 5	National 4	Regional 3	Local 2	Site 1
	The Impact is expected to be site only.				
Probabilities	Definite 5	High Probability 4	Medium probability 3	Low probability 2	Improbable 1
	The habitat and fauna species are low rich and they have already moved to adaptable place nearby the project area.				
Impact Significant	SP (significance points) = (magnitude + duration + scale) x probability $= (4+4+1) \times 2$ $= 18$				
	The impact significant is low.				

As conclusion, it is evaluated that flora/ fauna & biodiversity during operation would be well controlled and managed and would not cause any significant impacts on flora/ fauna & biodiversity.

Mitigation Measure of Operation Phase (Flora& Fauna)

- Specific Trap chosen to avoid capture of non-target species.
- Pollution prevention measure to ensure protection of the local water environment.
- Robust cleaning of works vehicles at sources in order to prevent spread of non-native plant species.
- Avoid sensitive plant species during access roads, and structure sitting to minimize impacts to individual plants and or / population.
- No disturbance to vegetation outside marked area.
- Hunting wild animal will be strictly prohibited to apply for all staff.

6.4.3 Social Components

During the operational phase, it has the high opportunity to employ local people in all levels of full-skilled, semi-skilled, and unskilled and technicians. In this regard, company shall develop local hiring plan. Here local people refer to the people living in the affected areas or entire project area of influence.

This project is anticipated to source the operative force on local basis and has the potential to increase the educational and technical qualification of local work forces through onsite technical transferring and in-house training programs.

Social concerns and conflicts: According to the series of consultation meetings, the residents are expecting better job opportunities that suit their skills and education. There may have possibility of occurrence of conflicts between the residents and project proponent in respect of hiring local labor

workforce and hiring business services. In addition, the local people have concerns about the dust emission, odor emission and the community health due to the operation activities and as per the result of the interview survey.

Mitigation and Enhancement Measures

To avoid concerns on the project activities, the project proponent should conduct the followings:

- To follow the guidelines and instructions of pollution controls
- To conduct the operation activities in accordance with instructions suggested by the respective government departments and guidelines mentioned in the EIA report
- To have liaison officer to consult the concerns between the ones who complaint and the project proponent
- To have proper grievance mechanisms to solve concerns

To minimize the conflicts, the following measures are suggested.

- The project proponent has to solve the complaints in timely manner.
- The liaison officer has to receive the complaints and make sure what the problem is and negotiate between project proponent and the ones who complaints.
- For the labor workforce, the site responsible persons ensure the labors to follow the instructions mentioned in occupational health and safety policies. Besides, the project proponent should have stipulations of rules and regulations for the labors to avoid conflicts within the project site

6.4.4 Economic Components

1) Employment

There is high opportunity to employ local people in all levels of workforce such as skilled labor and unskilled labor. Regarding to this, project developer will prepare local hiring action plan. According to the operation plan, about 811 workers are needed to operate the plant. Among them, 84 per cent of the total workforce will be local labor for office operation such as HR and admin, finance and office staff and plant operation such as supervisors, workers, and general workers and 16 per cent will be foreign labor for management and technical sector. As per the employment plan, the local labor employment is affected to the social components within the social area of influence. Here local people refer to the people living in the affected areas or entire project area of influence. Conflicts may occur in the case of recruitment. To avoid the disputes through employment and to enhance the project benefits, the project will implement the following mitigation measures:

- To identify the range of skill required for the labor force and conduct a gap analysis against skills availability
- To notify local people of job openings through local advertising, information center, project notice boards to place in office or road junctions of each village
- To develop and implement effective local hiring action plan and policy coordinating with the local authorities.
- Careful management to be practiced about the expectation of local people regarding the employment to avoid any disputes
- To undertake regular review of labor requirement and skill demands ensuring that training strategies meet the needs of project

- To initiate training and job skill development programs
- To ensure that all contractors understand the company's expectation of favor local content in hiring employees in considering the establishment of a contractual agreement with contractors

2) Household Income

For the project operation, local labor employment will be undertaken by the project site. Therefore, the households which have the persons working at the project site can get monthly income from the project. It is likely to occur long term income stability to the hired employees assuring the economic security to its family members. It is considered as a significant benefit to the local community.

3) local Business

During the operation phase, there will be positive impacts on the local community due to the 24-hour operation system with shifts. The local economic will be developed due to the demand to fulfill the basic needs of workforces. Hence, there will be business opportunities for the small businesses like restaurants and retail stores along the accessed road and around the project site. There will also be great opportunities for the grocery store since canteens for workforce and workers accommodation need basic goods and they will patronize the local shops.

4) Traffic (Transportation) during operation phase

Due to the transportation of the raw materials and distributed product, there will have potential traffic increase on the existing road where the local community use for their transportation. The volume of vehicles carrying raw materials and finishing product will be high during the operation period. Proper traffic management plan is to be adopted and local road improvement scheme is to be developed without interfering the existing transportation system of local people.

6.4.5 Health and Safety

At the operational level, occupational health and safety is the most important fact to pay attention to by the project. With the good guidance of project management, the workers need to follow the instructions and cooperate with the actions mentioned in the policy. For community health and safety, operation workers are separated at the project site. Accommodation, food and health facilities are provided at the site. Therefore, there is not significant impacts on existing health facilities and safety of the local community.

Other communicable diseases may appear or increase in incidence owing to the influx of migrants to the area. Sexually transmitted infections and HIV/AIDS are a particular problem.

Mitigation and Enhancement Measures

To avoid accidents and communicable diseases and enhance the health and safety of workers and local communities, the project proponent should perform the followings:

- To recruit the workers with medical recommendation letters including medical history record
- To provide medical check-up for operation workers
- To have effective occupational health and safety policies
- To have a health and safety officer
- To ensure that the workers at the project site follow each instruction mentioned in health and safety guidelines
- To have security guards in the site
- To cooperate with public police force and local community-based security.

- To make rules and restrictions to avoid criminal cases in the local area committed by the project workers.

6.4.6 Cultural Components

Since there is no building, place, or monument of outstanding historical or cultural significance for the people identified by authorizing department like Department of Archeology within and around the studied area, there is not any impact on cultural components due to the operation activities. However, if any cultural objects are observed while conducting operation activities, the project proponent will inform to the Department of Archaeology and cooperate.

6.4.7 Visual Components

Project located township, Dagon Myothit (East) township is an industrial township in which one industrial zone is located and many factories and workshops are existed. Therefore, there is no impact on visual component of the existing environment due to the operation activities since factories are already existed and all the activities and facilities will be existed within the project boundary.

6.5 Assessment of Impacts on Key Environmental Components during Decommissioning Phase

No detailed assessment of environmental impacts associated with decommissioning can be made at present. The project is tentatively scheduled to operate for 30 years and so only general principles can be established at the present time.

In broad terms, the process of decommissioning is likely to give rise to impacts similar to those experienced in the construction phase. The methods and techniques selected are expected to be in accordance with national and international standards prevailing at the time of decommissioning.

Decommissioning will require the following activities:

- Removal of all surface equipment and units.
- Potential removal of hard standing and surface cover.
- Cement grinding plant will develop closure plan during the later stages and maintain the plan throughout the life of the development. The plan should include arrangements for decommissioning the grinding plant in a manner which avoids any pollution and return to an acceptable state. In addition, any decommissioning plan should take into account the social and economic impacts and include mitigation measures where necessary.
- The Cement grinding plant of closure plan will need to be reviewed and updated in the light of experience with implementing the ecological mitigation and compensation measures.

Overall, decommissioning activities are transitory, and are likely to be similar in magnitude to construction impacts.

6.6 Risk Assessment Method and Approach

The risk assessment was done according to the following methodology. Ranking or prioritizing hazards is one way to help determine which risk is the most serious and thus which to control first. Priority is usually accounting into the employee exposure and the potential for incident, injury, or illness. Ranking hazards requires the knowledge of the workplace activities, urgency of situations, and most importantly, objective judgement. The identification of all health and safety hazards (and potential hazards) at a cement grinding plant involve compiling all sources of potential harm, injury or adverse health effects to workers that exist at that workplace. In establishing a comprehensive list of hazards, all processes and work activities that occur or are about to occur should be considered. Once a complete list of health and safety hazards has been established for a cement grinding plant, a level of risk needs to be assigned to each hazard on the list.

Severity ratings represent:

- High: major fracture, poisoning, significant loss of blood, serious head injury, or fatal disease
- Medium: sprain, strain, localized burn, dermatitis, asthma, injury requiring days off work
- Low: an injury that requires first aid only; short-term pain, irritation, or dizziness

Probability ratings represent:

- High: likely to be experienced once or twice a year by an individual
- Medium: may be experienced once every five years by an individual
- Low: may occur once during a working lifetime

Risk Matrix

<i>Probability</i>	High			
	Medium			
	Low			
		Low	Medium	High

Severity

Risk Rating

<i>Description</i>	<i>Color Code</i>
Immediately Dangerous	
High risk	
Medium risk	
Low risk	
Very low risk	

Source: Canadian Center for Occupational Health and Safety

These risk ratings correspond to recommended actions such as:

- Immediately dangerous: stop the process and implement controls
- High risk: investigate the process and implement controls immediately
- Medium risk: keep the process going; however, a control plan must be developed and should be implemented as soon as possible
- Low risk: keep the process going, but monitor regularly. A control plan should also be investigated
- Very low risk: keep monitoring the process

6.6.1 Natural Hazards and Disaster Risk

According to the records of the previous considerably high magnitude earthquakes in Myanmar, Yangon has experienced low to medium seismicity. The seismicity of the area and some soils in Yangon City are highly susceptible to liquefaction, it is very important to have at least a general idea as to where liquefaction might occur. According to probabilistic seismic hazard map of Yangon City, the city is generally located in the zone of peak ground acceleration, PGA 0.29 - 0.5 g. The project site is located in the eastern part of Yangon city, which is near to the western part of the Sagaing Fault. The right-lateral strike-slip Sagaing Fault is located 40km from eastern Yangon and threatens to create biggest earthquake. According to the general administration department (2017) of Dagon Myothit (East) Township, during the rainy season, there is only flooding in the areas near the Nga Moe Yeik Creek and sometimes there are storms, and no natural disasters were found in the project area.

Earth Management

- When earthquake hits, all persons shall be encouraged to run out in the open areas designated as Assembly Points.
- All the electrical supplies should be disconnected by the electrical department
- All key personnel shall reach limestone mine immediately and carry out designated responsibilities.
- Steps detailed in Emergency preparedness are to be carried out.
- As soon as earthquake tremor stops – site responsibilities person shall;
- Check all areas to ensure that all fires and doused.
- Check all areas for persons trapped inside.
- Search and Rescue Operation shall be launched with help of workers, if there is obvious damage to building.

6.6.2 Risk Assessment in Cement Grinding Plant

a) Hazard Identification

Identification of hazards in the proposed project is of primary significance in the analysis, quantification and cost-effective control of accidents. A classical definition of hazard states that hazard is in fact the characteristic of cement grinding plant process that presents potential for an accident. Hence all the components of a cement grinding plant process need to be thoroughly examined to assess their potential for initiating or propagating an unplanned event/sequence of events which can be termed as an accident.

Identification of various hazards, maximum credible accident analysis, and consequence analysis are address, which gives a broad identification of risks involved.

The major hazardous anticipated in the proposed project are illustrate below.

1. General workplace health and safety (Occupational Health and Safety)
 - Exposed to dusty environment
 - Noise and Vibration
2. Physical Hazard
 - Typically related to slips, trips, and falls;
 - Contact with falling /moving objects;
 - Lifting / over-exertion
3. Chemical Hazard
 - Potential for illness or injury due to single acute exposure or chronic repetitive exposure to toxic, corrosive, sensitizing or oxidative substances
4. Community Health and Safety
 - Communicable Diseases

b) Risk Analysis

Analyze and evaluate the risk associated with that hazard (risk analysis, and risk evaluation) of the proposed project. This is following by consequence analysis to quantify these hazards. Physical and Health Hazards in cement grinding plant can be broadly classify into the following categories:

Hazard	Risk Analysis
<p><i>General workplace health and safety</i></p> <ul style="list-style-type: none"> ▪ <i>Exposed to dusty environment</i> ▪ <i>Noise and Vibration</i> 	<p>Exposure to fine particulates is associated with work in most of the dust-generating stages of cement grinding plant (raw material handling, and clinker / cement grinding).</p> <p>Exposure to active silica dust, when present in the raw materials, is a relevant potential hazard in the cement grinding plant.</p> <p>Workers with long term exposure to fine particulate dust are at risk for benign pneumoconiosis, emphysema, bronchitis, and fibrosis. Long-term exposure to silica dust may cause silicosis.</p> <p>Exhaust fans and grinding mills are the main sources of noise and vibrations in cement grinding plant.</p> <p>Noise- exposed workers are more likely hearing impairment, hypertension, ischemic heart disease, annoyance, sleep disturbance.</p>
<p><i>Physical Hazard</i></p> <ul style="list-style-type: none"> ▪ <i>Typically related to slips, trips, and falls;</i> ▪ <i>Contact with falling /moving objects;</i> ▪ <i>Lifting / over-exertion</i> 	<p>Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity.</p> <p>Other injuries may occur due to contact with, or capture in, moving machinery (e.g. dump trucks, front loaders, forklifts).</p> <p>Activities related to maintenance of equipment, including crushers, mills, mill separators, fans, coolers, and belt conveyors, represent a significant source of exposure to physical hazards.</p> <p>Accidents caused by mobile cranes and falls from heights occur on the plant during transportation of crushed raw material.</p> <p>Falls from height are occurring during maintenance of the conveyor belts.</p>

	Accidents and falls from heights occur on the plant during maintenance of the parts of the crusher and cleaning of the hopper and its parts.
Chemical Hazard	Cement also contains hexavalent chromium (chromate) and causes dermatitis. It can abrade the skin and cause irritant contact dermatitis. Chromium may contribute to allergic contact dermatitis among workers handling cement.
Community Health and Safety	The nature of cement grinding plant projects requires proactive and sustained interventions to minimize the incidence and transmission of communicable diseases caused by the influx of migrant workers, associated extended family members and other service workers at the site. Long haul transport activities may serve as disease conduits particularly for sexually transmitted infections. At the cement grinding plant site, good international industry practice for solid waste management, surface water drainage, and sanitary wastewater management are usually effective in reducing vector borne and water related communicable diseases.

c) Risk Assessment

No	Hazard Identification	Severity	Probability	Risk Rating	
1	General workplace health and safety	Exposed to dusty environment	Medium	Low	Low Risk
		Noise and Vibration	Medium	Low	Low Risk
2	Physical Hazard	Typically related to slips, trips, and falls;	High	Low	Medium Risk
		Contact with falling /moving objects;	Low	Low	Low Risk
		Lifting / over-exertion	Low	Low	Low Risk
3	Chemical Hazard	Potential for illness or injury due to single acute exposure or chronic repetitive exposure to toxic, corrosive, sensitizing or oxidative substances	Low	High	Medium Risk
4	Community Health and Safety	Communicable Diseases	Low	Low	Low Risk

d) Risk Management

General workplace health and safety

- Use of dust extraction and recycling systems to remove dust from work areas, especially in grinding mills;
- Air dust suction will be provided in cement-bagging areas
- Reduction of noise to acceptable occupational exposure levels.
- Ensuring that large equipment (e.g. backhoe excavators, dumpers, wheel loader, crawler-drills, and other automated equipment that requires an operator) is equipped with a soundproof cab.
- Use of PPE, as appropriate (e.g. masks and respirators) to address residual exposures following adoption of the above-referenced process and engineering controls;
- Implementation of specific personnel training on worksite health and safety.

Physical Hazard

- Working on equipment with moving parts will personally ensure the equipment is de-energized, isolated and locked/tagged out;
- Working from a position with the potential risk for a fall from height will use fall protection;
- Danger areas are to be clearly marked with suitable safety signs indicating that access is restricted to essential personnel wearing hard hats while the work is in progress; and
- Any person doing flame welding, cutting, or brazing in the proximity of any flammable material will obtain PPE;
- Safety helmets to be used to protect workers below against falling material;
- In case of any accident immediate and proper medical care shall be provided at the plant site.

Chemical Hazard

- To protect skin from cement and cement mixtures, workers should wear: alkali-resistant gloves and coveralls with long sleeves and full-length trousers
- Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE

Community Health and Safety

Worker living quarters that are designed and maintained to prevent over-crowding can reduce the transmission of communicable respiratory diseases that may transfer to local communities.

In Cement Grinding plant operations should define and understand the potential effect of HIV / AIDS, and design an appropriate management response, including use of:

- Strategies to manage the impact of diseases through assessment, surveillance, actions plans, and monitoring;
- A workplace program to prevent new HIV infections and provide care and support for infected and affected employees;
- Outreach activities within the community, sector, and / or broader society.

Typical measures undertaken to reduce communicable disease incidence involve:

- Preventing illness among workers and their families and in local communities by:
- Undertaking health awareness and education initiatives
- Training health workers in disease treatment
- Providing treatment through standard case management in on-site or community health care facilities (e.g. immunization programs)

7. CUMULATIVE IMPACT ASSESSMENT

7.1 Methodology and Approach

The cumulative impact assessment is assessing the cumulative impacts of operation of the proposed cement grinding plant in accordance with environmental impact assessment procedure and prepare management actions to be implemented by the proponent and other related parties to minimize cumulative impacts.

Selection of spatial and temporal boundaries: The spatial boundary selected was the outermost extent of proposed cement grinding and associated facilities. The temporal boundary of the assessment was construction and operation phase of the proposed cement grinding plant project.

Selection of valued environmental components (VECs): Based on the EIA, four VECs were selected to evaluate cumulative impacts of cement grinding plant project. These were air quality, surface water quality, noise, and biodiversity environment.

Due to time and scope limitations, no primary data collection was undertaken. Data used in the cumulative impact assessment was solely from secondary sources, compiled from the existing environmental impact assessments for proposed cement grinding plant project.

7.2 Assessment of Cumulative Impacts

7.2.1 Existing and future private and public projects and developments

Cement Grinding Plant of Myanmar Than Taw Myat Co., Ltd is located in the Dagon Myothit (East) Township, situated in the east of Yangon Region and it is also situated about 2km north-west of the Le Daung Gan Railway Station. Cement Grinding Plant produces an average of 5000 tons per day (TPD) cement. The North-East of the cement grinding plant lies Yangon AMATA Smart and Eco City Project and south-west of the cement grinding plant lies Concrete Batching Plant.

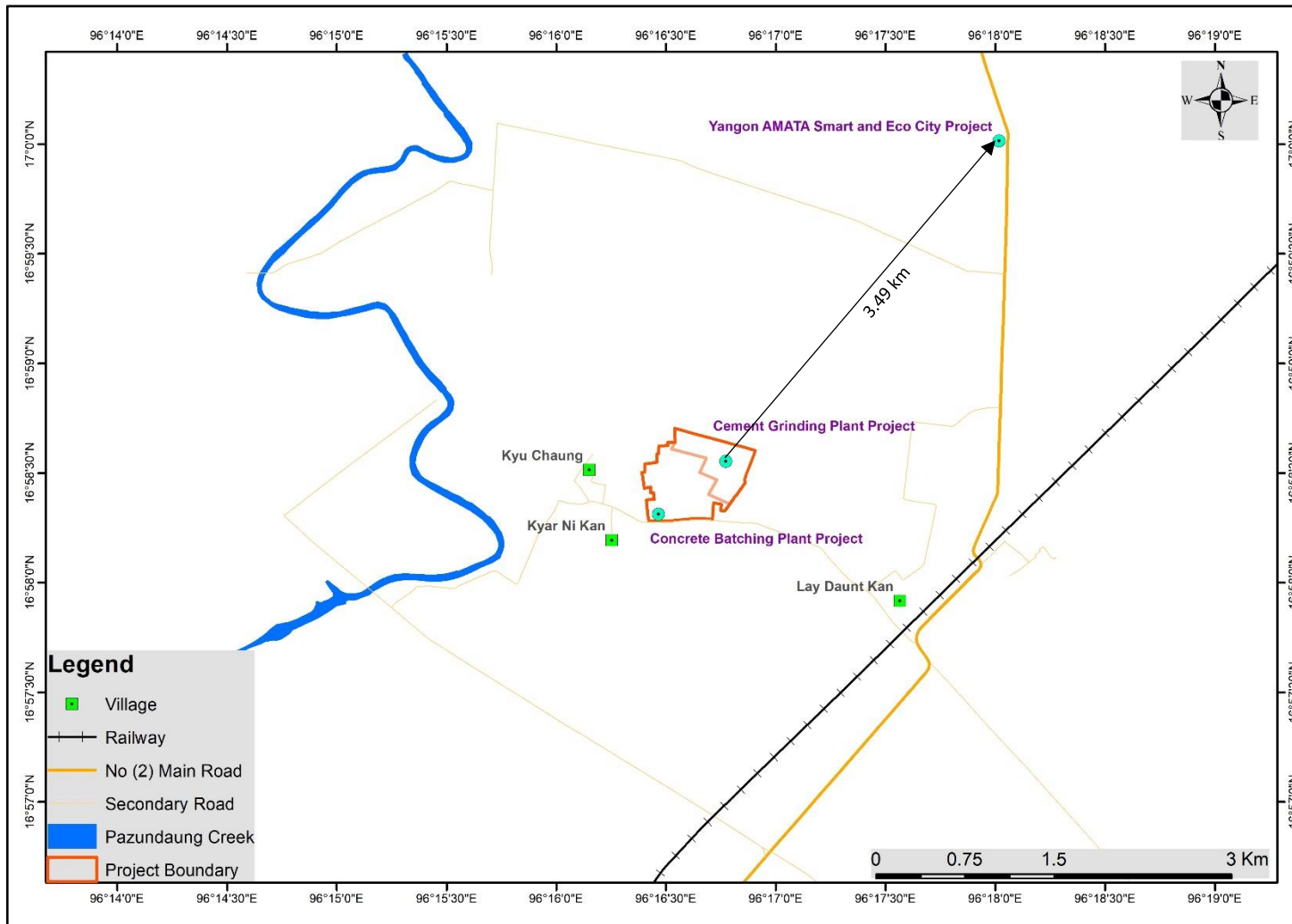


Figure 7.1 Surrounding Project from Cement Grinding Plant



7.2.2 Evaluation of Cumulative Impacts and Management Actions

Valued Environmental Component (VEC)	Existing condition and trend of VEC	Cumulative Impacts expected from the proposed project	Significance of Cumulative Impacts	Management/Mitigation Actions for Cumulative Impacts
Air Quality	According to the survey results, the average 24-hour period for PM _{2.5} , PM ₁₀ , Ozone, NO ₂ , and SO ₂ concentrations are within the Myanmar National Environmental Quality (Emission) Guidelines.	Potential Impacts to air quality arising from construction of the proposed cement grinding plant EIAs was predicted to be low and emission was well within the national standards. Considering the relatively cement grinding process are tube mill using, conveyor line with covering and due to the adoption of the proposed mitigation measures will allow reducing the impacts to an acceptable level, the air impact during the operation phase at the cement grinding plant is considered as low.	Cumulative impacts on air quality resulting from construction and operations of the proposed project is estimated to be insignificance. The contribution of the other existing projects to cumulative effects on air quality cannot adequately be assessed from existing information.	Stakeholder consultation and strictly follow to EMP. Monitoring of air quality around the proposed project during operation activities.
Noise	Noise level results are within the guidelines during the survey period.	Considering the relatively cement grinding process will be set up with silencers or noise-proof walls in the heavy equipment & machinery and baseline monitoring results, noise, and vibration impact during the operation phase at the cement grinding plant is considered as low.	Cumulative impacts on noise and vibration resulting from operations of the proposed project is estimated to be insignificance.	Stakeholder consultation and strictly follow to EMP. Avoid repeat action with other noise generation activities and working at nighttime in the construction period.



<p>Water Quality</p>	<p>According to baseline data, water quality results are within the guideline.</p>	<p>Considering the water quality, the relatively cement grinding process are using dry process (mainly milled and mixed of raw material), and proposed mitigation measures, water quality in the operation phase of the cement grinding plant is considered as low.</p>	<p>Cumulative impacts on water quality expected from the proposed cement grinding plant project is insignificance. Conclusions cannot be made on the cumulative effects of water quality from the other existing projects.</p>	<p>Ensure that EMP measures for preventing water quality impacts during operation.</p>
<p>Biodiversity</p>	<p>The area has for a long time been devoid of significant gain due to its developed nature, mixed shrub & grass land and agricultural land as paddy field.</p>	<p>The project area is not a special area in terms of biodiversity and ecosystem and proposed mitigation measures, biological component is considered as low.</p>	<p>No cumulative impacts on biodiversity component are expected from the proposed cement grinding plant project.</p>	<p>Stakeholder consultation and implementation of proper restoration and rehabilitation.</p>

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Introduction

Myanmar Than Taw Myat Co., Ltd has committed to fully protection of the environment in the proposed project area with developing and implementation of environmental management plan which will act as an adequate tool to mitigate the potential adverse impact and enhance the beneficial impacts associated with the project during the operation phase. This environmental management plan shall be treated as a dynamic and live document. Reviewing, revising, and updating are subject to do as deem necessary in line with the variation of proposed activities described in this document ensuring it remains appropriate to on-going aspects of project.

The purpose of the Environmental Management Plan (EMP) is to ensure that the mitigation and monitoring measures are identified, and the conditions of consent are adhered to during construction and operation phases of the project. This will ensure the project is constructed in accordance with the relevant applicable planning conditions; legal requirements and environmental standards.

The objectives of the EMP are;

- To identify current environmental conditions, potential adverse impacts from the planned activities and outlines mitigation measures required to reduce the likely negative effects on the physical, natural and social environment
- To compare the potential environmental changes of construction and operation activities
- To ensure compliance with current legislation
- To minimize any potential environmental impacts during construction and operation phases
- To provide stakeholder's requirements
- To keep sustainable development

8.2 Brief Project Description

Myanmar Than Taw Myat cement grinding plant is located in the Dagon Myothit (East) Township, Yangon Region and produces an average of 5000 tons per day (TPD) cement. The proposed development entails utilizing clinker and other raw materials (e.g. gypsum, and additives) which will be imported from Myanmar Than Taw Myat Cement Plant (Kyaukse Township) Mandalay in Myanmar. This material would be milled and mixed in certain combinations to form different grades of cement for the construction industry.

The present project is manufacturing of cement and the followings are the main process including raw materials that will be used.

Production Technology	: cement grinding plant by using tube-mill (instead of vertical mill)
Production Process	: clinker to cement
Raw Materials	: clinker and gypsum
Raw Materials source	: transport from MTTM Cement Plant (Kyaukse) to MTTM (Yangon) Cement Grinding Plant

8.3 Role and Responsibilities for Implementation of EMP

Being owner of this document, Myanmar Than Taw Myat Co., Ltd will hold ultimate responsibility and shall fully exercise in developing, reviewing, updating and effective implementing of this document. If the measures set up in it does not meet or follow accordingly, company will redefine as necessary until full satisfaction is achieved.

Finding from the continuous monitoring of environmental management plan is subject to be reviewed periodically and as deemed necessary by management. Based on the result, management shall be able to take necessary remedial actions and to enforce to adopt adequate performance strategy toward the continual improvement of the environmental management system.

The EMP provide a guide on project impacts that will need monitoring both for corrective action and learning purposes. Implementation of the EMP will primarily be the responsibility of the General Manager assisted by the Environmental Manager and the Safety and Health Manager. However, site specific management interventions will be the responsibility of each respective Head of Department and specific individuals identified in the EMP for each specific intervention who will ensure that all the staff under their supervision work towards realization of the objectives set out in the management plan.

8.4 Environmental and Social Management Subplans

8.4.1 Air Quality Management Plan

Objectives	To reduce dust emissions in all aspects of the cement grinding plant process, cement production line will be equipped with dust collector, pulse bag dust collector and filter bag dust collector which with efficient dust collection												
Implementation Schedule	During construction, operation, and closure phase												
Management Action	<ul style="list-style-type: none"> ▪ Advance machines, equipment and methods are utilized to minimize air pollutions, such as covering machines, watering accessible road and installing dust collecting system i.e., dust collector, pulse bag dust collector and filter bag dust collector. ▪ Tree plantations are provided along the boundary of Cement Plant. This green belt can minimize dust dispersion generated from on-site transportation. ▪ Water spraying the road used for transportation activities. <p>Conveyor Line Conveyor line will be covered to reduce fugitive dust emissions during transport. Pulse bag dust collector 5 number are installed on conveyor line to regulate particulate matter emissions.</p> <table border="1"> <thead> <tr> <th colspan="2">Specification of Pulse bag dust collector (LPF-32-4)</th> </tr> </thead> <tbody> <tr> <td>Resistance of the equipment</td> <td>1470 ~ 1770 Pa</td> </tr> <tr> <td>Allow inlet dust content</td> <td>≤ 200 gm/m³</td> </tr> <tr> <td>Treated inlet air</td> <td>8900m³/h</td> </tr> <tr> <td>Filtering area</td> <td>124m²</td> </tr> <tr> <td>Filtering wind speed</td> <td>1.0 2.0 m/min</td> </tr> </tbody> </table>	Specification of Pulse bag dust collector (LPF-32-4)		Resistance of the equipment	1470 ~ 1770 Pa	Allow inlet dust content	≤ 200 gm/m ³	Treated inlet air	8900m ³ /h	Filtering area	124m ²	Filtering wind speed	1.0 2.0 m/min
Specification of Pulse bag dust collector (LPF-32-4)													
Resistance of the equipment	1470 ~ 1770 Pa												
Allow inlet dust content	≤ 200 gm/m ³												
Treated inlet air	8900m ³ /h												
Filtering area	124m ²												
Filtering wind speed	1.0 2.0 m/min												

	Outlet dust content	$\leq 20 \text{ mg/Nm}^3$
<p>Clinker Silo In order to reduce particulate emissions, 35 number of filter bag dust collector has been installed in the clinker silo.</p>		
<p>Specification of Filter Bag Dust Collector (LPF 96)</p>		
Capacity	22000 m ³ /h	
Total Filtering Area	384 m ²	
Active Filtering Area	288 m ²	
Filtering Wind Speed	$\leq 1.2 \text{ m/min}$	
Filter Pocket Glass Fiber Membrane	Filter Glass	
Inlet dust Content	200 g/Nm ³	
Outlet Dust Content	$\leq 30 \text{ mg/Nm}^3$	
Pressure Drop across filter	$< 1470 \sim 1770 \text{ Pa}$	
Pulse Air Consume	1.2 Nm ³ /min	
Pulse Air Pressure	0.5 ~ 0.7 MPa	
<p>Cement Grinding Mill Filter Bag Dust Collector 9 number is equipped the cement grinding mill to reduce particulate emissions.</p>		
<p>Specification of Filter Bag Dust Collector (LPM 2 x 13 D)</p>		
Capacity	240000 m ³ /h	
Total Filtering Area	4210 m ²	
Number of Bag Filter	3328	
Filter bag size	Diameter 130 x 3100 mm	
Filtering Gas Temperature	100°C, Max: 120°C	
Filtering Wind Speed	0.99 m/min	
Internal Air Pressure	-9000 Pa	
Inlet dust Content	$< 1000 \text{ g/Nm}^3$	
Outlet Dust Content	$\leq 30 \text{ mg/Nm}^3$	

	Resistance Loss	1500 – 1700 Pa
	Pulse Air Consumption	13 Nm ³ /min
	Pulse Air Pressure	0.4 ~ 0.6 MPa
	<p>Packing Silo</p> <p>Dust collector 6 number is installed in the packing silo to reduce emissions of particulates.</p>	
	<p>Specification of Dust Collector (LPM 8 C)</p>	
	Capacity	42000 m ³ /h
	Total Filtering Area	780 m ²
	Number of Bag Filter	768 Nos
	Filtering Wind Speed	1.03 m/min
	Filter bag size	Diameter 130 x 2500 mm
	Inlet Temperature	100°C, Max: 120°C
	Inlet dust Content	<200 g/Nm ³
	Outlet Dust Content	≤ 30 m/m ³
	Resistance Loss	1470 – 1770 Pa
	Pulse Air Consumption	2.4 Nm ³ /min
	Pulse Air Pressure	0.4 ~ 0.6 MPa
Responsibilities	Monitoring by HSE section of Myanmar Than Taw Myat cement grinding plant and/or Third Party	

8.4.2 Noise and Vibration Management Plan

Objectives	To control and limit the levels of vibration and noise at workplaces and other sensitive receptors nearby the project area
Implementation Schedule	During construction, operation, and closure phase
Management Action	<ul style="list-style-type: none"> ▪ The machinery generating high level of noise is installed in the enclosed building to avoid disturbance in adjacent areas. ▪ Machinery and equipment are periodically inspected and maintained in good operational conditions.

	<ul style="list-style-type: none"> ▪ Over 80 dB(A) of noise intensity in a specific area is identified and warning signs are posted there. ▪ Noise-generating machinery and equipment must be undertaken regular maintenance to improve efficiency. ▪ Workers exposed to prolonged noise shall be suitably provided with personal protective equipment such as earmuffs or earplugs. ▪ Ambient noise level monitoring will be conducted at suitable location at periodic intervals during the operation phase to meet the relevant NEQG standards.
Responsibilities	Monitoring by HSE section of Myanmar Than Taw Myat cement grinding plant and/or Third Party

8.4.3 Water Quality Management Plan

Objectives	To reduce the impact on water quality and to determine whether additional management practices need to be implemented in order to enhance and/or protect water quality
Implementation Schedule	During construction, operation, and closure phase
Management Action	<p>The cement grinding plant will use drying technology, the water demand is only for domestic use. Therefore, the production does not cause water pollution.</p> <p>Water Consumption</p> <ul style="list-style-type: none"> ▪ Water demand must be as reduced as possible because water is a natural resource. ▪ When cleaning, as little water as possible must be used (for example, by using high-pressure, low-flow nozzles) <p>Wastewater Treatment</p> <ul style="list-style-type: none"> ▪ Wastewater generated from offices, canteens, and staff accommodation must be treated by sedimentation system. ▪ After using the sedimentation system, the water that will be employed by the staff must be discharged. ▪ A sedimentation pond (30 feet x 30 feet x 10 feet) must be constructed within the project area. <p>Sewage Treatment</p> <ul style="list-style-type: none"> ▪ Sewage must be collected by pit system. ▪ Sewage will be disposed of by municipal sewage trucks.
Responsibilities	Monitoring by HSE section of Myanmar Than Taw Myat cement grinding plant and/or Third Party

8.4.4 Solid Waste Management Plan

Objectives	To implement integrated solid waste management in a way that protects the human health and the environment
Implementation Schedule	During construction, operation, and closure phase
Management Action	<p>Domestic Waste</p> <ul style="list-style-type: none"> ▪ Recyclable waste e.g., plastic, wood scrap, metal scrap, paper etc. should reused/recycled as much as possible. ▪ Placing containers for collection of solid wastes and garbage at office and residence. ▪ Maintaining hygienic conditions in canteens and toilets. ▪ Non-recyclable wastes will be transported to a Township Development Committee approved landfill site.
Responsibilities	Monitoring by HSE section of Myanmar Than Taw Myat cement grinding plant and/or Third Party

8.4.5 Flora and Fauna Management Plan

Objectives	To avoid and minimize impacts to flora and fauna habitat feature within the vicinity of project area.
Implementation Schedule	During Grinding cement plant construction and operation phase.
Management Action	<ul style="list-style-type: none"> ▪ Construction and domestic waste will be appropriately stored and disposed of the avoid attracting native and alien species to the construction area. ▪ Prohibit hunting or trapping of wild animals, even small ones including rodents and birds. ▪ Preservation of excavated topsoil for future site restoration procedure particularly in highly disturbed area. ▪ Minimize vegetation clearance and habitat disturbance by demarcating the clearing boundaries in the project site. ▪ Works areas in temporarily affected areas shall be reinstated with tree/ shrub / grass upon completion of the works. ▪ Environmental awareness training to be given to all workers for the preservation of local species.
Responsibilities	Monitoring by HSE section of Myanmar Than Taw Myat cement grinding plant and / or Third Party.

8.4.6 Community Engagement and Development Plan

(a) Grievance Mechanism Management

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will communicate this procedure to its external stakeholders to raise awareness and offer transparency of how stakeholders can voice their grievances. Various channels for external stakeholders to vocalize their grievances formally include:

Telephone:	Stakeholder can call Myanmar Than Taw Myat Office on (0977733096/ 09428017514) and request to speak to a stakeholder contact officer.
Email:	Grievances can be sent to (thantawmyat@gmail.com).
Face to Face:	Stakeholders can voice their grievance to any Myanmar Than Taw Myat employee who will then escalate using the correct process.
Complaint Box:	Grievance box shall keep at the entrance of the factory as the stakeholders can complain about their grievance at this box.

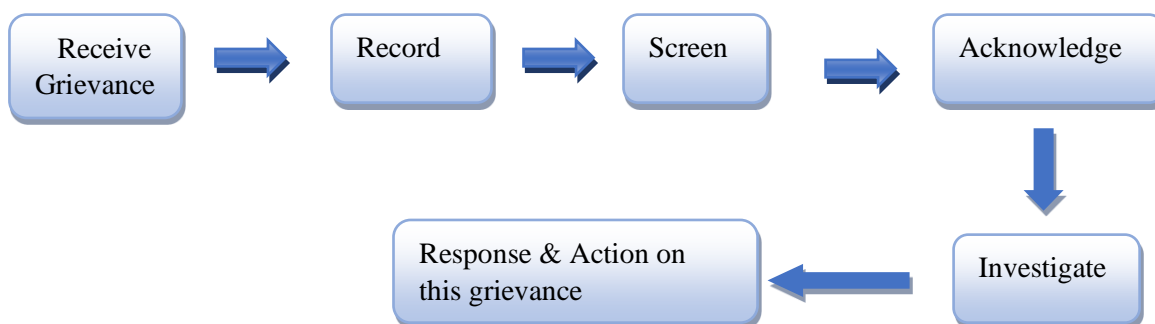


Figure 8.1 Grievance Mechanism

(b) Employment Plan

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will give priority to residents starting with those closest to the cement grinding plant in offering employment opportunities. Employment will only be offered to outsiders if the required skills and experience could not be found locally. Further, the company will provide equal opportunities to both males and females provided they meet the education and skills/experience criteria.

(c) Local Economic Development

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will prioritize local contractors and suppliers of goods and services provided when they meet the quality requirements at a cost not exceeding a comparative advantage. It will be undertaken with a view of supporting local economic development. Information about the way to conduct business with Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will equally publicized to help local contractors and suppliers.

(d) Corporate Social Responsibility (CSR) Program

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) will conduct the cement production process with the guidance of the Myanmar Investment Commission (MIC) and Ministry of Natural Resources and Environmental Conservation (MONREC). It can benefit on job opportunities and local

employment, production, and distribution of the cement products as the efficient use of resources and the improvement of the local infrastructure.

Therefore, the company is conducting the CSR programs like donation and provision with the lead of the authorized organizations to the purpose of the local development. In order to implement this program, the budget will be saved at the AYA Bank with the specified account for that. Furthermore, Myanmar Than Taw Myat Co., Ltd. plan and reserve two percent (2%) of yearly net profit of the project for cooperate social responsibility (CSR) (during operation period). 30% of the reserved CSR budget will be used for education sector, other 30% will be used in the health care for local people, labors and their families, 20% for local transportation development (construction of road and bridges) and the rest for social welfare and environmental conservation process following the guidelines of the government authorities.

8.4.7 Occupational Health and Safety Management Plan

Myanmar Than Taw Myat Co., Ltd (Cement Grinding Plant) organized the Health and Safety Committee to be implemented the Occupational Health and Safety Management Plan according to the instruction of the Factory and General Labor Laws Inspection Department (FGLLID). There are nine members to leading the Health and Safety Committee. They are-

1. General Manager (Administration)	Chairman
2. Deputy Manager (Planning)	Vice Chairman
3. Manager (Production)	Member
4. Executive (Mechanical)	Member
5. Executive (Electrical)	Member
6. Manager (General Management/HR)	Member
7. Supervisor (Security)	Member
8. Deputy Manager (General Management/HR)	Secretary
9. Assistant Manager (General Management/HR)	Joint Secretary

Objectives and Responsibilities;

- To achieve good practices in occupational area by implementing and improving safety activities
- To improve health and safety measures
- Select appropriate employees and provide relevant occupational health and safety training
- Check, review and monitor that the procedures for occupational and cumulative areas are implemented and practiced or not and provide advice and instruction
- Communicate and report the injury report to the relevant person to take action for investigation, to prevent not to happen again and to provide safety inspection
- Practice prevention activities with air, water assessment team to prevent environmental impact
- Contact emergency preparedness and response team in case of emergency
- Urge to implement and follow good practices for occupational safety

a) Personal Protective Equipment

Myanmar Than Taw Myat Co., Ltd provides the PPEs to the employees who are working hazardous areas. The PPEs provided by the company are Safety Hard Hat, Safety Boots, Safety Goggles, Safety Belt and Harness, Dust Mask, Earmuff, Apron& Hand Gloves, and these PPEs should be worn according to the work requirements to prevent the accident occurs. Moreover, the training and awareness safety program will be delivered to the employees for their occupational health and safety.

b) Health Care Facilities

Myanmar Than Taw Myat Co., Ltd will be fully aware of the pre-existing health condition on cement grinding plant. Myanmar Than Taw Myat Co., Ltd will ensure that its employees are medically fit and healthy and undergone pre-employment medical examination and ensure that adequate health levels are maintained with due consideration to the project area conditions.

Myanmar Than Taw Myat Co., Ltd will;

- Ensure through periodic medical check-ups and monitoring to detect diseases occurrence that workers are physically and mentally capable for their job position. Report will be included in the HSE Monthly Report.
- Ensure that workers can have treatment from small injuries and illness. In addition, Myanmar Than Taw Myat Co., Ltd will have a system to diagnose epidemic risks at their early stage of development and undertake necessary actions in accordance with the advice of the designated hospital or local authority.
- Provide education and training to workers on the relevant health hazards, safe work practices and proper use of PPE.
- Medical personnel will provide medical services to the staff and advise personnel on health-related issues and promote high standards of health in order to maximize their presence at work and optimize their performance.

c) First Aid Provision / Medical Facilities

Medical facility will be fully equipped to treat illness and non-serious injuries which can normally be expected to occur in worksite. For treatment of these cases, licensed personnel will be mobilized. Other serious injuries in case of lost time accidents, injured personnel will be evacuated to the designated hospital for proper medical treatment.

First aid supplies will be stocked in the types and quantities. An additional number of first-aid boxes/kits will be provided and maintained in various work locations in order to render immediate first aid treatment as necessary to cover the whole worksite. First Aid Facilities and suitably trained personnel within its working areas. The ratio of First aiders to workers is 1:50 when the peak workforces.

Medical Facilities will have suitable signs displayed to indicate their existence. These facilities will normally be managed by trained medical staff. The medical facilities will be properly maintained and inspected on a frequent basis by members of the HSE Management Section. Myanmar Than Taw Myat Co., Ltd will arrange First Aid Training courses to be conducted by approved training institution to ensure that adequate numbers of trained first aider are available.

d) Environmental Training

Myanmar Than Taw Myat Co., Ltd shall;

- All personnel and in particular new personnel or personnel transferred to new assignment are given proper environmental training relevant to their duties.
- All managers and supervisory personnel are trained in environmental management system.
- Responsible for identifying environmental training which may be required for the performance of the work and ensure that such training is provided for the personnel concerned to mitigate adverse environmental impact.

Environmental training will include the following:

- Project HSE policy and objectives
- Overview of the provisions of the site-specific EMP

- Significant environmental aspects identified
- Emergency preparedness and response plan / drill
- Noise control plan
- Waste control plan
- Current applicable environmental laws and regulations
- Importance of good housekeeping
- Good practices in dealing with potential pollutants
- Personal responsibilities and liabilities
- PPE

All training information, records and certificates will be properly documented, kept, and made available for verification.

8.4.8 Community Health and Safety

If occupational disease is found in the workers or there are outbreaks of infectious disease, public health department, Dagon Myothit (East) Township, Yangon Region will be notified, and the project will cooperate in accordance with the instructions.

Beside the performances of this report for other health impacts on the project workers and the public around the project site, if it is necessary, health programs will be carried out by contacting with Public Health Department and instructions will be followed.

8.4.9 Emergency Response Plans

The purpose of Emergency Response is to ensure that all potential emergency situations that might arise during the Project are properly identified, reported and dealt with in a safe and effective manner.

Emergency Response Plan covers but not limited to:

1. Nomination of persons responsible for managing an emergency situation;
2. Definition of roles/responsibilities in Emergency Response Team; (ERT)
3. The identification of event which could give rise to major events involving fire, major oil spill or other loss off containment; and other events which may require the evacuation or escape of personnel.
4. Procedures for reporting, communicating and response action in an emergency;
5. Provision of necessary emergency equipment in adequate quantities to handle all foreseeable emergency scenarios. Includes monitoring, testing and maintenance of alarm systems and early warning devices;
6. Periodic testing of response procedures
7. Provision of qualified Rescue and medical response personnel
8. Training requirements

Emergency Cases

Emergencies that might develop during operation include:

1. Fire (involving fuels, and other materials);
2. Personnel injuries (e.g. vehicle slipping on road, landslide, and accidental, etc.);
3. Construction activities (e.g. fall of material, manual and mechanical handling, use of hand tools, use of hazardous substances, etc.);
4. Medical cases.

Means of Communication

The primary means of communication shall be:

1. Telephone;
2. Mobile (only in authorized area);

Emergency Response Team and External emergency service contacts such as the Fire Services Department of Dagon Myothit (East) Township, and township hospitals.

Contact Numbers for Emergency Response

NAME & DESIGNATION	
<i>Internal Contact</i>	
General Manager	Myanmar Than Taw Myat Co., Ltd
Environmental Officer	
Site HSE Manager/ Representative	
<i>External Emergency Contact</i>	
Fire Service Department	09455121461
Doctor, Township Hospital	012585195
Police Station	012585187

Emergency Response Action

In the event of emergency and on hearing the alarm:

1. Do not panic;
2. Stop work, and leave the area immediately to the designated assembly points;
3. Do not re-enter the building to save property;
4. Shut off power or machines if safe to do so;
5. Ensure you are counted at the assembly point;
6. Return to work only if instructed by emergency response team.

8.5 Environmental Quality Monitoring Requirements

Successful implementation of Environmental Monitoring Plan (EMP) depends on regular monitoring, documenting, and reporting. Myanmar Than Taw Myat Co., Ltd should have provision of Health, Safety and Environmental department for monitoring the EMP implementation during operation phase of the project.

The environmental monitoring officer should monitor the EMP implementation and submit a quarterly report to the concerned department. Additionally, another yearly monitoring report with quarterly monitoring data should be submitted to the Environmental Conservation Department for renewing the **Environmental Clearance Certificate**. The detail monitoring plan has been presented in Table 8.1.

<Table 8.1> Monitoring Plan of Cement Grinding Plant

Potential Impact	Parameter to be Monitored	Location of Data Collection	Frequency	Responsibility
Inspection of mitigation compliance	Monitoring EMP implementation	Project Area	Weekly	HSE Section of Myanmar Than Taw Myat cement grinding plant
Air quality	NO ₂ , O ₃ , PM _{2.5} , PM ₁₀ , SO ₂	2 point (Location describe in Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Noise	Sound level (dBA)	2 point (Location describe in Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Vibration	Vibration level (dB)	2 point (Location describe in Figure 8.2)	Two times per year	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Surface Water Quality	Laboratory analysis parameters BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus In situ parameters pH, DO, EC, TDS, water temperature, flow rate, Turbidity	Project Area (1 point) At Thon Gwa Chaung, 1.62km from project area (1 point)	2 times (dry & wet Season)	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Ground Water Quality	Laboratory analysis parameters BOD, COD, TSS, Oil & Grease, Total Coliform Bacteria, Total Nitrogen and Total Phosphorus In situ parameters pH, DO, EC, TDS, water temperature, flow rate, Turbidity	Project Area (1 point)	2 times (dry & wet Season)	Third party and HSE Section of Myanmar Than Taw Myat cement grinding plant
Soil	pH, Cadmium, Copper, Zinc, Manganese, Lead,	Around the project area (2 Points, Location describe in Figure 8.2)	Yearly	Third party and HSE Section of Myanmar

	Arsenic, Iron, Chromium, Mercury, Nickel			Than Taw Myat cement grinding plant
Terrestrial Biodiversity	General Condition of the floral cover	Greenspace Area	Yearly	HSE Section of Myanmar Than Taw Myat cement grinding plant
Health and Safety	Proper use of PPE, presence of safety sign, first aid kits and fire-fighting devices	Project Area	Continuously	HSE Section of Myanmar Than Taw Myat cement grinding plant
Socio - Economic	Complaint Logs	Communities	Monthly	HSE Section of Myanmar Than Taw Myat cement grinding plant
	Employment Record	Project Office	Continuously	HSE Section of Myanmar Than Taw Myat cement grinding plant

<Table 8.2> Coordinates of Monitoring Points

Sampling Point	Coordinates	
	Lat	Long
AQNV-1	16°58'25.00"N	96°16'16.00"E
AQNV-2	16°58'08.00"N	96°17'14.00"E
SW-1	16°58'17.20"N	96°15'49.93"E
SW-2	16°58'34.74"N	96°16'42.31"E
GW-1	16°58'24.10"N	96°16'43.70"E
S-1	16°58'23.81"N	96° 16'27.23"E
S-2	21°38'14.20"N	97° 4'36.59"E

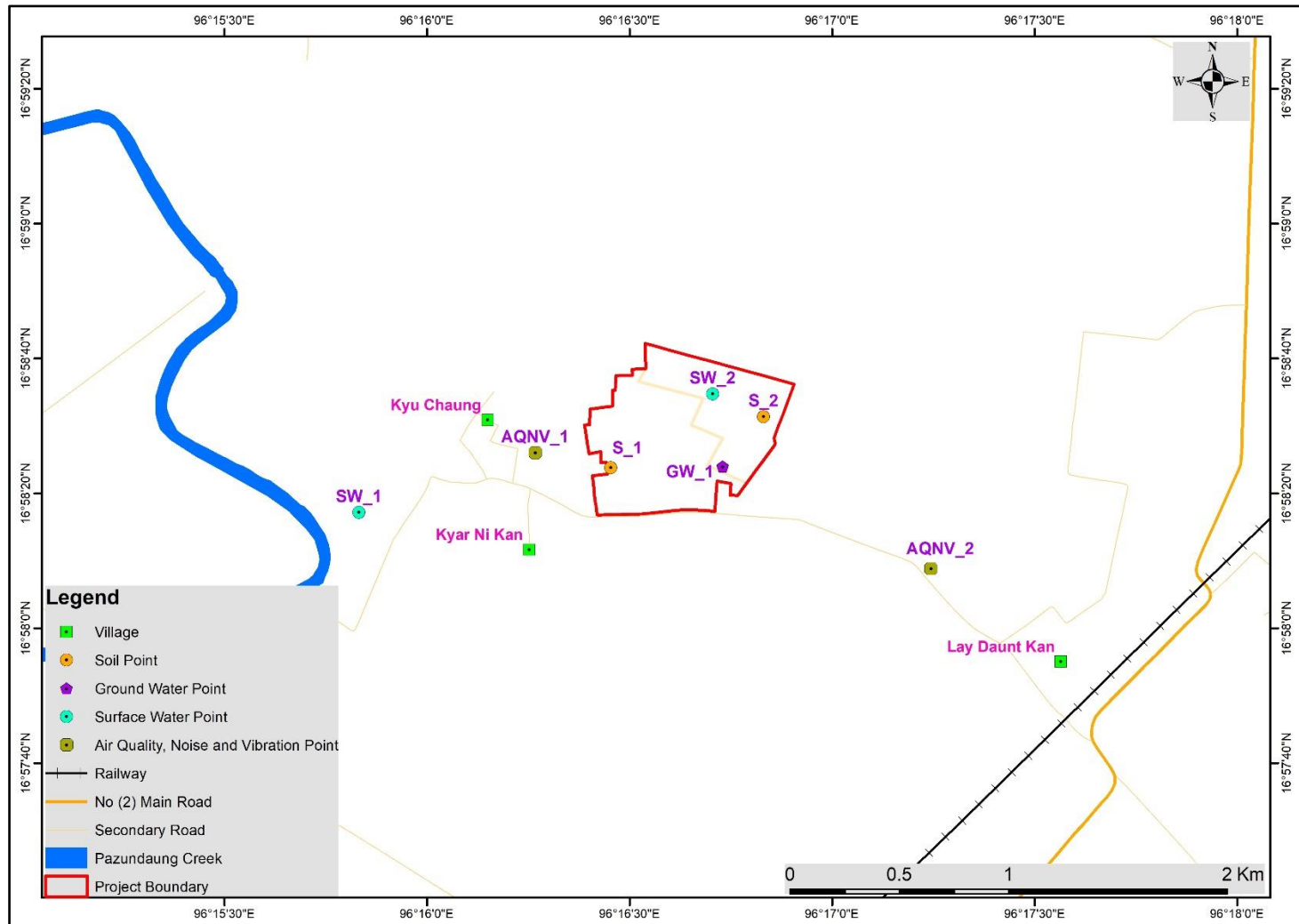


Figure 8.2 Location of Monitoring Point

8.6 Compliance Monitoring

Compliance monitoring is the prudent element of Environmental Monitoring Plan that ensures effective implementation of the Environmental Management Plan, compliance of all project related activities with relevant environmental rules and regulations and safety procedure.

Monitoring of the compliance may be carried out by the Environmental Personnel of the Project Management Unit but should be audited yearly by the external auditor. The monitoring activities and results should be well documented and followed by the standard monitoring checklist.

The principle approach of the step by step monitoring involves:

- Walkthrough inspection: quick survey of the activities, operations, equipment, and facilities
- Through inspection: visual observation activities, operation, equipment and facilities and review of related documents, previous records, reports, etc.
- Interview of relevant personnel: interviewing of related employees, key personnel, etc.
- Consultation with local people: consultation with local people to understand community perception on the project related activities and to identify social issues related with the project.

The inspection, observation, consultation, and reporting should be followed by an organized checklist. The checklist of the monitoring should be developed during preparation of Environmental and Social Action Plan at the stage of detail design of the project. The target areas of monitoring are:

- Compliance of project related activities with national and international (if required) environmental rules and regulation as described in Section 3 during operation phases.
- Compliance of the project related activities with the suggested EMP during operation phases.
- Compliance of the Environmental Monitoring Activities with suggested Environmental Monitoring Plan.
- Record each of incidents

The compliance monitoring report along with the checklist should be indexed and annexed with the monthly and annual monitoring report. A format of compliance monitoring checklist shall be prepared during detail design stage. **It may be required to submit the annual monitoring report to Department of Environmental Conservation for renewing of the Environmental Clearance Certificate each year.**

8.7 EMP and Monitoring Cost

Myanmar Than Taw Myat Co., Ltd has earmarked budget for implementation of the Environmental Management Plan for controlling pollution and improving the socio-economic status of the area. The amounts may be increased in future as per the actual requirements from time to time. ***If estimated cost is not sufficient in the implementation of Environmental Management and Monitoring Plans, budget will be set up again.*** The proposed capital expenditure and recurring costs/ annum under various heads for Environmental Management are summarized in below Table 8.3.

<Table 8.3> Estimated Environmental Management Plan and Monitoring Cost (Annual)

Item	Cost (MMK)
Mitigation Cost for Air Quality	6,000,000
Mitigation Cost for Noise & Vibration	6,000,000
Mitigation Cost for Water Quality	9,000,000
Mitigation Cost for Soil	3,000,000
Mitigation Cost for Flora and Fauna	4,800,000
Mitigation Cost for Community Engagement and Management	2,400,000
Mitigation Cost for Occupational Health and Safety	7,200,000
Mitigation Cost for Community Health and Safety	2,400,000
Total	40,800,000

9. PUBLIC CONSULTATION AND DISCLOSURE

9.1 Public Consultation and Disclosure

According to Environmental Impact Assessment Procedure, Chapter 5, **Section 50**, the project proponent shall ensure public consultation / participation process and disclose information about the proposed project to the public and civil society as part of the Scoping of EIA study. As part of EIA investigation, it is also mentioned in **Section 61**, Chapter 5 of Environmental Impact Assessment Procedure that the project proponent should undertake consultation process involving project affected persons, authorities, community-based organizations and civil society and disclosure of all relevant information about the proposed project. Consultations should be carried out on a continuous basis starting as early as possible in the EIA process.

Involving the public in the EIA preparation is fundamental to increasing the understanding on how the project may affect or improve their living conditions and acceptance of the project. It is also a way to identify and act upon impacts and issues that are not immediately obvious to the EIA preparation team. So, public participation plays a crucial role not only in the earlier stage of project preparation process but also EIA investigation stage to build a trusting relationship and make useful recommendations.

In order to fulfill the market demand of more construction projects in Yangon, Myanmar Than Taw Myat Co., Ltd. (MTTM) is planning to develop cement grinding plant in Dagon Myothit (East) Township in Yangon. For the development of cement grinding plant project, Myanmar Than Taw Myat Co., Ltd. (MTTM) conducted public consultation and disclosure process in scoping phase, the early stage of EIA process with the help of third party, Sustainable Environment Myanmar Co., Ltd (SEM) on 24th, January 2020. At the EIA investigation phase, Myanmar Than Taw Myat Co., Ltd. (MTTM) undertook public consultation and disclosure process with the cooperation of third party, Sustainable Environment Myanmar Co., Ltd (SEM) on 26th July 2022.

9.1.1 Stakeholder Identification

The first step in stakeholder engagement process is to identify the Project Stakeholders. Stakeholders are persons or groups who have a direct or indirect stake in a project/organization because they are directly or indirectly affected by a project as well as those who may have interests in and/ or the ability to influence a project's outcomes, either positively or negatively. Stakeholder Identification and analysis process is based on;

- Understanding the project and its components as well as the setting of the Study Area
- Understanding the impacts of the project including its nature, extend, spatial boundary and period

Main stakeholders and project affected groups are preliminary to identify at the project's scoping phase. The stakeholders include the Project Affected People (PAP), local communities, local government authorities, CBOs, civil society and business associations in the affected localities.

The proposed project is located in Dagon Myothit (East) Township and three villages namely Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village are identified in project AOI. Kyar Ni Kan Village situated 0.7 km far from project site, Kyu Chaung Village existed in 0.8 km far from project site and Lay Daunt Kan Ward situated 1.8 km far from project site are identified as the key project affected area and local people in Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village which are mainly affected by the project activities and project and are considered as project affected people (PAP). Village heads, 100 household leaders and representatives of those villages are also involved. Besides, other areas that have impacts which may be affected on roads, transportation and

ambient air quality are included. Other places which may have concerned with the project in somehow will be considered.

The following is the preliminary identified stakeholder for the present Project.

- 1) Locals and Village Heads
- 2) Township General Administrative Departments
- 3) Environmental Conservation Department
- 4) Electricity Supply Cooperation
- 5) YCDC (Dagon Myothit (East))
- 6) Department of Road
- 7) Fire Force Department
- 8) Department of Public Health and Medical Services
- 9) Project Affected Person around the project area

9.1.2 Purpose of Consultation

Public participation is the involvement of all parties who potentially have an interest in a development or project, or may be affected by it, directly or indirectly. The process ensures an open, participatory approach to the study, the purpose of which is to ensure that all the impacts are identified and that the decision-making process is undertaken in an informed, transparent, and accountable manner.

The objectives of public participation in an EIA are to provide sufficient and accessible information to stakeholders in an objective manner to assist them to:

During the Scoping Phase:

- ✚ Raise issues of concern and suggestions for enhanced benefits;
- ✚ Verify that their issues have been recorded;
- ✚ Assist in commenting on feasible alternatives; and
- ✚ Contribute relevant local information and knowledge to the environmental assessment.

During the EIA Investigation Phase:

- ✚ Contribute relevant local information and knowledge to the environmental assessment;
- ✚ Verify that their issues have been considered in the environmental investigations; and
- ✚ Comment on the findings of the environmental assessment.

9.1.3 Methodology and Approach

Rigorous identification of project stakeholder is an essential part in preparing for the consultation process. As preliminary identification, relevant main stakeholders to the project and project affected groups were identified based on

- ✚ Preliminary understanding of the project and its components as well as the present setting of the study area
- ✚ Understanding the impacts of the project including its nature, extend, spatial boundary and period
- ✚ Review and knowledge of similar projects in specific area (Dagon Myothit (East) Township)

Government authorities, other interested organizations like NGOs and INGOs and local public are included as the stakeholders in the consultation meeting. Public Consultation Plan is made through pre-engagement activity with potential project stakeholders to confirm the meeting style and their availability to attend. Subsequently, the identified persons and groups were informed to participate in consultation meeting through collaboration of General Administrative Department. Public Consultation

Meeting should be two-way dialogue, so it is tailored to ensure obtaining public participation using A&Q session. Then, their opinions, concerns and presented issues are recorded. The proposed project information is disclosed through local media, consultation meetings and putting the documents of project information and feedback forms at the respected villages.

At EIA investigation stage, consultations with concerned government organizations including General Administrative Departments (Dagon Myothit (East) and Environmental Conservation Department (Yangon Region) were primarily conducted to obtain required permission for engagement activities at the township level and get access to data and information of local communities in the Area of Influence. Then village level consultations and social surveys are undertaken to inform project information, to obtain understanding about the project and its activities, to discuss potential impacts and mitigation measures, to get concerns/opinions of the villagers and to acquire the environmental and social baseline data of study area. Public Consultation Meeting is designed to ensure obtaining public participation by using A&Q session. Then, their opinions and concerns are recorded. Subsequently, all relevant information of the project and its potential impacts were disclosed again to the project affected persons and civil society through stakeholder engagement activities such as FGD and KII.

Tools and Technique

At the public consultation meetings, the following meeting materials and techniques are used for the effectiveness of meeting.

No	Tool/ Technique	Objective
1	Power Point Presentation	❖ To give comprehensive and adequate project information included Project Proponent information (Myanmar Than Taw Myat Co., Ltd.), project activities, potential impacts and mitigation measures, and detailed contact for suggestion and grievance.
2	Presentation Handouts	❖ To disclose about the project information for other who could not attend the meeting.
3	Maps and Photos	❖ To visualize the location demonstrated in presentation for discussion
4	Focus Group Discussion	❖ To obtain the thoughts, opinions, concerns, and condition of a particular group who have same background
5	Key Informant Interview	❖ To acquire comprehensive understanding of the study area

9.1.4 Stakeholder Engagement Plan

The following Table shows the stakeholder engagement plan of the consultation meetings with the relevant stakeholders during EIA investigation.

Category	Description of Process	Objective	Method/ Approach	Material
Pre-engagement with Township Level Stakeholder	<ul style="list-style-type: none"> ➤ Formal Visit to Township GAD in order for the approval of Public Consultation Meeting ➤ Formal Visit to Township level respective government offices related to project for the invitation of public consultation meeting 	<ul style="list-style-type: none"> ➤ To get the approval of meeting ➤ To present the stage of the project ➤ To get the advice, concern, and guideline for the meeting during COVID-19 situation. ➤ To find the best method of meeting in compliance with COVID-19 instruction 	<ul style="list-style-type: none"> ➤ Formal Meeting as per description of COVID-19 instruction ➤ Informal telephone call for follow up and negotiation process 	<ul style="list-style-type: none"> ➤ Power Point Presentation
Pre-engagement with Village Level Stakeholder	<ul style="list-style-type: none"> ➤ Formal Visit to Village head office in order for the approval of Public Consultation Meeting 	<ul style="list-style-type: none"> ➤ To get the approval of meeting ➤ To present the stage of the project ➤ To get the advice, concern and guideline for the meeting during COVID-19 situation. ➤ To find the best method of meeting in compliance with COVID-19 instruction 	<ul style="list-style-type: none"> ➤ Formal Meeting as per description of COVID-19 instruction ➤ Informal telephone call for follow up and negotiation process 	<ul style="list-style-type: none"> ➤ Power Point Presentation
Public Consultation Meeting with Township Level Stakeholder	<ul style="list-style-type: none"> ➤ Township Level Meeting with Township GAD, Respective township level government Departments 	<ul style="list-style-type: none"> ➤ To report the ESIA stage findings and issues raised during scoping stage ➤ To present the EIA process and environmental and social impacts on the surrounding environment ➤ To obtain the views, concerns, advice, opinions and suggestion from township level government departments for draft EIA report. 	<ul style="list-style-type: none"> ➤ Formal Meeting as per description of COVID-19 instruction 	<ul style="list-style-type: none"> ➤ Power Point Presentation ➤ Handouts and Leaflets
Public Consultation Meeting with Village Level Stakeholder	<ul style="list-style-type: none"> ➤ Village Level Meeting with PAP 	<ul style="list-style-type: none"> ➤ To report the ESIA stage findings and issues arisen during scoping stage. ➤ To present the EIA process and environmental and social impacts on the 	<ul style="list-style-type: none"> ➤ Formal Meeting as per description of COVID-19 instruction 	<ul style="list-style-type: none"> ➤ Power Point Presentation ➤ Handouts and Leaflets



		<p>surrounding environment ensuring that the local community fully understand the project induced impacts on them.</p> <ul style="list-style-type: none"> ➤ To explain how the issues and concerns raised during scoping are considered and managed. ➤ To obtain the views, concerns and advice from local people for draft EIA report. ➤ To get the grievances and complaints from the local people for Environmental and Social Management Plan (ESMP) 	<ul style="list-style-type: none"> ➤ Distribution of feedback form on the presentation and the proposed project to assure the attendee's understanding and to obtain the people's opinions who do not want to speak out. 	<ul style="list-style-type: none"> ➤ Feedback form
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9.2 Public Consultation during Scoping Stage

Myanmar Than Taw Myat Company Limited carried out consultation meeting for Cement Grinding plant 5000 t/d in Dagon Myothit (East) Township. Government sectors like Dagon Myothit (East) Township General Administrative Department, Township Development Committee, Township Electric Power Corporation (EPC), Environmental Conservation Department (ECD), Township Police Station, Township Road Management Department and Township Fire force were separately consulted and got their opinions for the proposed project from December 2019 to January 2020.

Village Level meeting was held in village administrative office of Kyar Ni Kan (Ma Lit Village Tract) on 24th January 2020. Local people in Kya Ni Gan Village, Kyu Chaung Village and Lay Daunt Kan Village attended the consultation meeting. Village heads in respected villages, 100 household leaders, representatives of the villages and elder persons participated the consultation meeting as local public. There were 20 participants in total: 14 participants from local community and 6 participants from companies. Project information, production process, infrastructure, land use and implementation process and Environmental Impact Assessments that must be undertaken are presented by a social consultant from Sustainable Environment Myanmar Co., Ltd, third-party organization. Concerns, opinions, suggestions, and recommendations are collected at the meeting. Local public, project proponent and third party actively participated the meeting. Project proponent discussed about the issues upon the project and project activities and third party expressed the works of Environmental Impact Assessments. All the opinions, concerns and suggestions in the meetings were recorded. Discussion, suggestions, and recommendation were performed effectively. Presentation handouts are distributed at the meeting and the consultants from third party and the project proponents explained about the project in Myanmar Language that everyone can easily understand. Meeting duration was based on the comments and suggestions and attendants could participate without worrying time limitation.

9.2.1 Summary of Public Consultation Meetings at Scoping Stage

Myanmar Than Taw Myat Company limited undertook stakeholder engagement meetings (Township level and village level) with respective government offices separately based on their availability cooperated with third party organization, SEM. The summary of engagement meetings is shown in Table 9-1. More detailed information of engagement meetings is provided in Appendix 3.

<Table 9.1> Summary of stakeholder engagement meetings at scoping stage

No	Date	Time	Meeting Venue	Meeting Attendee	Main Concern	Follow-up Actions
1	4.12.2019	4:00	MTTM Office, Dagon Myothit (East)	<ul style="list-style-type: none"> ➤ Lay Daunt Kan Ward Administrator ➤ SEM ➤ MTTM 	<ul style="list-style-type: none"> ➤ Noise pollution due to road construction activity 	<ul style="list-style-type: none"> ➤ Site Officer will manage to avoid noise pollution during construction of the road.
2	5.12.2019	9:00	Kyar Ni Kan Village (Ma Lit Village Tract)	<ul style="list-style-type: none"> ➤ Village head (Ma Lit Village Tract) ➤ SEM ➤ MTTM 	<ul style="list-style-type: none"> ➤ Giving information about the activity in advance and getting approval 	<ul style="list-style-type: none"> ➤ Project's communication officer and third party will manage for giving timely information about the project activities and for getting approval cooperated with the local community leaders.
3	5.12.2019	12:30	YCDC, Dagon Myothit (East)	<ul style="list-style-type: none"> ➤ Chairman of Township YCDC ➤ SEM ➤ MTTM 	<ul style="list-style-type: none"> ➤ No comments or concerns 	<ul style="list-style-type: none"> ➤
4	6.12.2019	10:30	Electricity Supply Cooperation, Dagon Myothit (East)	<ul style="list-style-type: none"> ➤ Township Engineer ➤ SEM ➤ MTTM 	<ul style="list-style-type: none"> ➤ Installation of power supply for the operation of the plant and work allocation. ➤ Preparation of public consultation meeting and FAQ. 	<ul style="list-style-type: none"> ➤ Project owner will cooperate with township Electricity Supply Cooperation in installation of electricity of plant in construction phase
5	6.12.2019	12:30	ECD (Yangon Region)	<ul style="list-style-type: none"> ➤ EIA Sector Officers <ul style="list-style-type: none"> - U Khin Maung Zaw (Assistant Director) - Daw Myat Su Mon (Deputy Staff Officer) - Daw Kyawt Kaykhine 	<ul style="list-style-type: none"> ➤ Undertaking and following up Third Party Confirmation in order to align with the EIA procedure. 	<ul style="list-style-type: none"> ➤ Project owner will follow up the EIA process in order to align with the EIA procedure.

				(Deputy Staff Officer) ➤ SEM ➤ MTTM		
6	10.12.2019	10:30	Police Station	➤ Deputy Police Station Officer ➤ SEM ➤ MTTM	➤ Problems in the initial stage of the project	➤ Project owner will manage the problem solving as soon as an issue rise. ➤ Project developer will establish the conflict registration system with registration book including date, time of the conflict and date and time of follow up action.
7	10.12.2019	11:30	Township GAD	➤ Township Administrator (East Dagon) ➤ SEM ➤ MTTM	➤ Conducting Public Consultation meetings to explain the people the impacts of the project. ➤ Health and safety of nearest receptors and workers at the worksite. ➤ Air Quality Analysis and Air Pollution	➤ Project developer and third party will conduct public consultation with participation of local people and give sufficient project information like potential impacts and mitigation measures. ➤ Project developer will manage the operation of project giving priority to health and safety not only for nearest receptors but also for workers and to maintain appropriate air quality for surrounding environment by strictly following the environmental management plan included in the EIA report.
8	13.1.2020	2:45	Fire Service Department (East Dagon)	➤ U Naing Wai Htike (Deputy Chief Officer) ➤ SEM ➤ MTTM	➤ Safety of the plant and accessing fire safety certificate for the plant at the head office of Fire Service Department.	➤ After construction phase, project developer will cooperate with the Township Fire Service Department for the fire safety of the plant and to get safety certificate.
9	13.1.2020	5:45	Road Management Department	➤ U Than Win (SAE) ➤ SEM ➤ MTTM	➤ Suggestion for the developer to engage with private company for the use of road	➤ Project Developer will fully charge the cost for the use of road.

9.2.2 Results of Consultation during Project Scoping

The public consultation meeting was conducted as per the advice of Township General Administration Department. Date, time, and venue were decided through the discussions with village leaders and Administrative Officer mentioned above, considering the convenience for the villagers.

According to the consultation meeting held on 24th, January 2020, some issues and suggestions were raised during discussions at the meeting and the responses of project developer are presented in the following Table.

<Table 9.2> Summary for issues and suggestion of the stakeholders and response of the project developer at scoping stage

Issues and Suggestion	Response
❖ Possibility of accidents due to high traffic volume of project site vehicles	❖ Project Developer will strictly follow the speed of the vehicles described in the Environmental Management Plan.
❖ Health impact on local people because of particles and gaseous emission from the plant,	❖ Project Developer will strictly follow the National Environmental Quality (Emission) Guideline in order to reduce the health impact on the nearest receptors.
❖ Disturbance on receptors like elder people and monk due to noise emission from construction of the road and operating of generator	❖ Project Developer will maintain the vehicle and machine used in road construction and will avoid operating the generator at night in order to reduce the noise pollution.
❖ Potential noise emission from the operation of plant	❖ The noise control measures will be used in cement grinding plant to mitigate the noise impact during operation.
❖ Lack of transparency	❖ Project Developer will manage to give the project information sufficiently and timely.
❖ Impacts on animal farming due to discharge of waste water from project site, and animal reproduction due to vibration of machines from the project site	❖ Water treatment system will be included in the plant to order to avoid the direct discharge of waste water to the surrounding environment. The Project developer will follow the Environmental Management Plan for vibration.
❖ Possibility of air pollution due to emission of plant to residential area and social problem of workers	❖ The Project developer will follow the National Environmental Quality (Emission) Guideline and Environmental Management Plan to manage air pollution and will also follow Health and Safety Plan included in ESIA report to avoid the social problem of workers.

The invitation letter, list of participants, Minute of Meetings, photo record and presentation materials are attached in Appendix 3.

9.3 Public Consultation during EIA Investigation Stage

At the EIA stage, Myanmar Than Taw Myat Company Limited undertook consultation meeting for Cement Grinding plant 5000 t/d in Dagon Myothit (East) Township. Government sectors like Dagon Myothit (East) Township General Administrative Department and Environmental Conservation Department (ECD) were separately consulted and got their opinions for the proposed project in July 2022.

Village Level meeting was held in village administrative office of Kyar Ni Kan (Ma Lit Village Tract) on 26th July 2022. Local people in Kyar Ni Kan Village, Kyu Chaung Village and Lay Daunt Kan Village attended the consultation meeting. Village heads in respected villages, 100 household leaders, representatives of the villages and elder persons participated the consultation meeting as local community. There were 38 participants in total: 32 participants from local community and 6 participants from companies. Project information, production process, infrastructure, land use and baseline data collection, potential impacts and mitigation measures and future processes are presented by a social consultant from Sustainable Environment Myanmar Co., Ltd, third-party organization. Concerns, opinions, suggestions and recommendations are collected at the meeting. Local public, project proponent and third party actively participated the meeting. Project proponent discussed about the issues upon the project and project activities and third party expressed the works of Environmental Impact Assessments. All the opinions, concerns and suggestions in the meetings were recorded. Discussion, suggestions, and recommendation were performed effectively. Presentation handouts are distributed at the meeting and the consultants from third party and the project proponents explained about the project in Myanmar Language that everyone can easily understand. Meeting duration was based on the comments and suggestions and attendants could participate without worrying time limitation.

9.3.1 Summary of Public Consultation Meetings at EIA Investigation Stage

Myanmar Than Taw Myat Company limited conducted stakeholder engagement meetings (Township level and village level) with respective government offices separately based on their availability with the coordination of third-party organization, SEM. The summary of engagement meetings is shown in Table 9-3. More detailed information of engagement meetings is provided in Appendix 3.

<Table 9.3> Summary of stakeholder engagement meetings at EIA stage

No	Date	Time	Meeting Venue	Meeting Attendee	Main Concern	Follow-up Actions
Pre-Engagement Meeting (Village Level)						
1	6.7.2022	8:00	➤ Lay Daunt Kan Village head's house, Dagon Myothit (East)	➤ Lay Daunt Kan Village Head ➤ SEM ➤ MTTM	➤ No concern.	
2	6.7.2022	9:00	➤ Malit Ward Office, Dagon Myothit (East)	➤ Malit Village Tract Administrator ➤ SEM ➤ MTTM	➤ Security of the survey team. ➤ Job Opportunity for the villagers	➤ Meeting date was chosen to held on the proper date. ➤ Effective and well-planned recruitment-plan was prepared.
Engagement Level (Township Level)						
3	22.7.2022	9:00	➤ GAD, Dagon Myothit (East)	➤ GAD Officer ➤ SEM ➤ MTTM	➤ Security	➤ All the field activities were be informed to GAD and survey team would follow local restriction.
4	28.7.2022	2:30	➤ Yangon Regional ECD	➤ MTTM ➤ SEM ➤ Environmental Conservation Department ➤ U Aung Myo Naing (AD) ➤ U Pyae Phyo Aung (Deputy Head of Section) ➤ Daw Nyein Nyein San (Deputy Head of Section)	➤ Noise pollution due to project operation. ➤ Preparing practicable mitigation measures ➤ Creating Job opportunity for local community ➤ Reforestation ➤ Land Title	➤ Noise impact will be mitigated by using silencers for fans, enclosing for grinding mill operators, installation of noise barriers around noise-emitting equipment and conducting periodical ambient noise monitoring at appropriate locations. ➤ Third Party Consultant will prepare Environmental Management Plan (EMP) and mitigation measures with the coordination of Project Proponent. ➤ Proper and practicable Occupational Health and Safety Management Plan will be prepared. ➤ Project proponent will develop and implement effective local hiring action plan and policy coordinating with the local authorities. ➤ Reforestation will be undertaken under the guidance of Department of Forest.



				<p>➤ Daw Khin Nyat Nyaw (Assist Head of Section)</p>		<p>➤ The cement plant and associated facilities will require total of 49.9 acres land area. For the proposed cement grinding plant, the required land has been purchased from the company which transferred farmland to other use.</p>
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9.3.2 Results of Consultation during EIA Stage

The public consultation meeting was conducted as per the advice of Township General Administration Department. Date, time and venue were decided through the discussions with village leaders and Administrative Officer mentioned above, considering the convenience for the villagers.

According to the consultation meeting held on 26th, July 2022, some issues and suggestions were raised during discussions at the meeting and the responses of project developer are presented in the following table.

<Table 9.4> Summary for issues and suggestion of the stakeholders and response of the project developer at EIA stage

Issues and Suggestion	Response
❖ Job Opportunities and business opportunities for local community	❖ MTTM will prepare local labor hiring plan for the local community.
❖ Wastewater discharge	❖ The project site will discharge wastewater from offices, canteens, and staff accommodation by constructing a water retention tank and utilizing a sedimentation system.
❖ Influx of labor and security of local community	❖ The project proponent will prepare the effective occupational health and safety policies.
❖ Having fire suppression pond for villages	❖ The project proponent will support to have fire suppression pond for fire safety of the village.
❖ Poor communication	❖ The project will have liaison officer to receive and solve the complaints of the local people on the project activities and to follow up the complaints.
❖ Establishment of general committee organized with company and local community for job offering for local security	❖ The project proponent will ensure that the project site responsible liaison officer closely coordinate with local village leaders and local government authorities to agree on appropriate procedures for recruitment and hiring

The list of participants, Minute of Meetings, photo record and presentation materials are attached in Appendix 3.

9.4 Project Disclosure

Disclosure is a formal-sounding term for making information accessible to interested and affected parties. Communicating such information that is understandable to the stakeholders is an important step in the process of stakeholder engagement. Myanmar Than Taw Myat Co., Ltd conducted consultation process for Cement Grinding plant 5000 t/d in Dagon Myothit (East) Township with the help of Environmental Consultant Firm, Sustainable Environment Myanmar Co., Ltd. Consultation process was carried out with relevant main stakeholders to the project including project's affected groups and

government authorities. Disclosure process was carried out in terms of consultation meeting activities and delivering document of project summary at respective villages.

The EIA procedure of Myanmar (2015) adopted by the Ministry of Natural Resources and Environmental Conservation states the following requirements for public consultation and disclosure with the aim of communicating with local people, organizations and project affected people while explaining the projects or coordinating diverse interests in the project at each stage of implementation.

The project disclosure will be conducted 3 times;

1. During Scoping Report Preparation

The disclosure was complied with Article 50, EIA Procedure, 2015. Myanmar Than Taw Myat disclosed information about the proposed Project to the public and civil society through Public Consultation meeting on 24th, January 2020 and distributing project summary.

2. During ESIA Report Preparation

The disclosure was complied with Article 50, EIA Procedure, 2015. Myanmar Than Taw Myat disclosed all relevant information about the proposed Project and its likely adverse impacts to the public and civil society by Public Consultation on 26th July 2022, FGD and KII with local community and distributing project summary at the respective villages' administrative office as shown in figure 9-2 and 9-3.

3. **After submission of ESIA Report to ECD**

The disclosure will be complied with Article 65, EIA Procedure, 2015.

9.4.1 Project Disclosure at Scoping Stage

Disclosure process was carried out in terms of consultation meeting activities, media publication like pamphlet and signboard. Stakeholders were informed about consultation meeting with invitation letter one week in advance. Presentation handouts were distributed at the meeting. Project information about proposed project was disclosed to the civil society by posting signboard in front of the project site prominently in the last week of March 2020.

Notices about document of project summary were put on the wall of the village administrative offices. It is declared in the notice that everyone can give feedbacks and suggestions by reading the document of project summary. It was put at the village administrative offices for two weeks (1.7.2021-14.7.2021) and document of summary are translated in Myanmar Language in order to understand the project information easily. Everyone can read about the project and give feedbacks on the project.



Figure 9.1 Project disclosure at the proposed project site

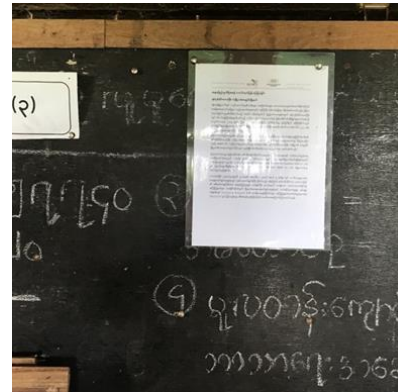
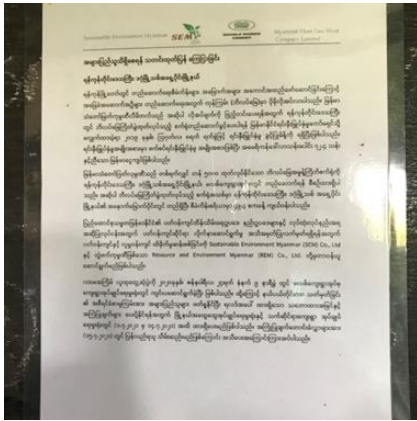


Figure9.2 Notice at the village administrative office during Scoping Stage

9.4.2 Project Disclosure at EIA Stage

At ESIA stage, stakeholders were informed about consultation meeting in advance with the collaboration of General Administrative Department. PowerPoint presentation was used at the meeting. Handouts of power point slides were left for those who could not attend the meeting.

Notices about document of project summary were put on the wall of the village administrative offices. It is declared in the notice that everyone can give feedbacks and suggestions by reading the document of project summary. It was put at the village administrative offices for two weeks (25.11.2022-8.12.2022) and document of summary are translated in Myanmar Language in order to understand the project information easily. Everyone can read about the project and give feedbacks on the project.

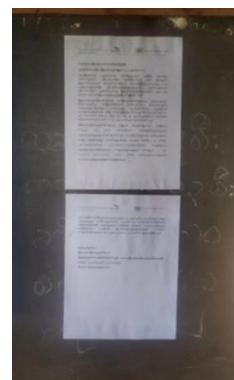


Figure9.3 Notice at the village administrative office during EIA Stage

9.5 Future Consultation and Disclosure

Future additional engagement meetings will be undertaken with relevant authorities and government organizations on the outcomes of the EIA. Consultation meeting with different stakeholders will be conducted throughout the project lifecycle based on the necessity of the situation. Consultation meeting structure and content will be different based on the requirement.

After final ESIA has been completed and submitted to ECD, the project proponent will disclose the Executive Summary of the EIA report in Myanmar Language at the township General Administrative Department (GAD) in Dagon Myothit (East) and village administrative offices of project related villages for local community.

10. CONCLUSION AND RECOMMENDATION

10.1 Conclusion

Myanmar Than Taw Myat Co., Ltd. applied investment permission to Myanmar Investment Commission for the development of Cement Grinding Plant in Yangon. Myanmar Than Taw Myat Company has received an investment permit on 8th August 2019 issued by Myanmar Investment Commission (MIC). Myanmar Than Taw Myat cement grinding plant is located in the Dagon Myothit (East) Township, Yangon Region and it is also situated about 2km north-west of the Lay Daunt Kan Railway Station. The proposed project will involve the installation and commissioning of cement Grinding Plant producing an average of 5000 tons per day (TPD) cement. The proposed development entails utilizing clinker and other raw materials (e.g. gypsum, and additives). This material would be milled and mixed in certain combinations to form different grades of cement for the construction industry.

An EIA report for Cement Grinding Plant has been prepared for the Project in accordance with Myanmar EIA Procedures 2015. The EIA identified potential impacts through a systematic scoping process whereby the activities associated with the Project have been considered with respect to their potential to interact with environmental and social resources or receptors. Interactions which may generate potentially significant environmental and social impacts have been further assessed in the EIA, with appropriate mitigation and enhancement measures recommended for alleviating potential negative impacts or enhancing potential positive impacts from the Project.

The EMP provide a mechanism for a systematic and well - coordinated implementation of the proposed management interventions for management of all environmental, health and safety concerns associated with operation of the cement grinding plant. Management and staff at Myanmar Than Taw Myat Co., Ltd. cement grinding plant is committed and keen to follow through and ensure efficient implementation of the same. With careful planning and implementation of all the proposed interventions it is most unlikely that the project will continue to generate unacceptable impacts.

It is concluded in the EIA that with proper implementation of the recommended mitigation measure and social impacts causing by the operation of the Project would be no larger than low significance.

10.2 Recommendation

- Findings and suggestion of EIA study in project planning, design and operation should be considered and implemented with strong monitoring.
- Environmental Management Plan and Monitoring Program and, Hazard and Safety Management Plan should be implemented at every suggested step of project.
- Establishing Institutional arrangement with proper logistic and training for Environment, Health and Safety in Environmental Protection Agency of the project.

Implementing this project will also have the positive effects such as providing employment to local people. In addition, the Myanmar Than Taw Myat Co., Ltd. CSR initiatives will have a positive indicator for the regional environments to improve socioeconomic and health status.

10.3 List of Commitments

A consolidated summary list of environmental and social impacts and mitigation measures commitments that Myanmar Than Taw Myat Co., Ltd. will be expected to adopt in order to manage and mitigate potential impacts associated with the project development is provided below in Table 10.1.

<Table 10.1> Project Key Commitments

Component	Commitment	Source
Policy, Legal and Institutional Framework	Myanmar Than Taw Myat Co., Ltd. will follow Relevant Legislations Related to EIA and Environmental Management of the Project.	ESIA Report, Sector 3, Section 3.5 - Relevant Legislations Related to EIA and Environmental Management of the Project
Policy, Legal and Institutional Framework	Myanmar Than Taw Myat Co., Ltd. will follow National Environmental Quality Standards for the air emission, and noise levels, etc.	ESIA Report, Sector 3, Section 3.6- Environmental Quality Standards
Policy, Legal and Institutional Framework	Myanmar Than Taw Myat Co., Ltd. will follow International Finance Corporation's Performance Standard.	ESIA Report, Sector 3, Section 3.8- International Guidelines
Environmental and Social Management Plan	Myanmar Than Taw Myat Co., Ltd. will develop Management Plan and Monitoring Plan for cement grinding plant.	ESIA Report, Sector 8, Environmental and social Management Plan
EIA Report of Cement Grinding Plant	<p>Myanmar Than Taw Myat Co., Ltd. will</p> <ul style="list-style-type: none"> ▪ Strictly carry out the relevant local standards and guidelines in areas of environmental protection, labor safety, and industrial hygiene etc., <p>The project team has blend in the local society and carry out its social responsibility, expand and maintain its relations with social organizations and neighboring villagers.</p>	Overall Commitment

Appendix - 1
MIC Permission Letter



Form (3)

P000119

THE REPUBLIC OF THE UNION OF MYANMAR

Myanmar Investment Commission

PERMITPermit No. 178/2019Dated 8 August 2019

This permit is issued by the Myanmar Investment Commission in accordance with Section 25 (c) of the Myanmar Investment Law.

- (1) Investor Name U SAI MYO THANT
- (2) Citizenship MYANMAR
- (3) Residential Address NO. 310, 7 FLOOR, ANAWYAHTAR STREET, WARD NO.1, LANMADAW TOWNSHIP, YANGON
- (4) Name and Address of Principal Organization YUNNAN JIANGSHENG INVESTMENT CO., LTD., ROOM (13585), 13 F, BLDG 2, YUNNAN PIONEERING PARK FOR RETURNED OVERSEAS SCHOLAR, 80 CHUNMAN AVENUE, INFORMATION INDUSTRIAL BASE, KUNMING ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, YUNNAN PROVINCE, THE PEOPLE'S REPUBLIC OF CHINA
- (5) Place of Incorporation THE PEOPLE'S REPUBLIC OF CHINA
- (6) Type of Business MANUFACTURING AND MARKETING OF CEMENT FROM SEMI-PRODUCT (CLINKER)
- (7) Place(s) of Investment Project PLOT NO. 6/A, MYAY TAING BLOCK NO. MALIC, DAGON MYOTHIT (EAST) TOWNSHIP, YANGON REGION
- (8) Foreign Capital Amount US\$ 50.680 MILLION
- (9) Period for Foreign Capital to be brought in WITHIN TWO YEARS FROM THE DATE OF ISSUANCE OF MIC PERMIT
- (10) Total Amount of Capital (Kyat) EQUIVALENT IN KYAT OF US\$ 72.400 MILLION (INCLUDING US\$ 50.680 MILLION)
- (11) Construction/Preparation Period 2 YEARS
- (12) Validity of Permit 30 YEARS
- (13) Form of Investment JOINT VENTURE
- (14) Name of Company Incorporated in Myanmar MYANMAR THAN TAW MYAT COMPANY LIMITED



Thaung Tun
(Thaung Tun)
Chairperson



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်
ခွင့်ပြုမိန့်

ခွင့်ပြုမိန့်အမှတ် ၁၇၈/၂၀၁၉ ၂၀၁၉ ခုနှစ် ဩဂုတ်လ ၈ ရက်
မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်သည် မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုဥပဒေ ပုဒ်မ-၂၅ (ဂ) အရ
ဤခွင့်ပြုမိန့်ကိုထုတ်ပေးလိုက်သည် -

- (၁) ရင်းနှီးမြှုပ်နှံသူ/ကမကထပြုသူအမည် ဦးစိုင်းမျိုးသန့်
- (၂) နိုင်ငံသား မြန်မာ
- (၃) နေရပ်လိပ်စာ အမှတ် ၃၁၀၊ ၇ လွှာ၊ အနော်ရထာလမ်း၊ ၁ ရပ်ကွက်၊ လမ်းမတော်မြို့နယ်၊ ရန်ကုန်မြို့
- (၄) ပင်မအဖွဲ့အစည်းအမည်နှင့် လိပ်စာ YUNNAN JIANGSHENG INVESTMENT CO., LTD., ROOM (13585), 13 F, BLDG 2, YUNNAN PIONEERING PARK FOR RETURNED OVERSEAS SCHOLAR, 80 CHUNMAN AVENUE, INFORMATION INDUSTRIAL BASE, KUNMING ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, YUNNAN PROVINCE, THE PEOPLE'S REPUBLIC OF CHINA
- (၅) ဖွဲ့စည်းရာအရပ် THE PEOPLE'S REPUBLIC OF CHINA
- (၆) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား ပြည်တွင်းမှ Clinker ကုန်ကြမ်းများ အသုံးပြု၍ ဘိလပ်မြေထုတ်လုပ်ရောင်းချခြင်းလုပ်ငန်း
- (၇) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) မြေကွက်အမှတ်- ၆/က၊ မြေတိုင်းရပ်ကွက်အမှတ် - မလစ်၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး
- (၈) နိုင်ငံခြားမတည်ငွေရင်း ပမာဏ အမေရိကန်ဒေါ်လာ ၅၀.၆၈၀ သန်း
- (၉) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ ခွင့်ပြုမိန့်ရရှိသည့်နေ့မှ (၂) နှစ် အတွင်း
- (၁၀) စုစုပေါင်း မတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၇၂.၄၀၀ သန်း နှင့်ညီမျှသော မြန်မာကျပ်ငွေ (အမေရိကန်ဒေါ်လာ ၅၀.၆၈၀ သန်းအပါအဝင်)
- (၁၁) တည်ဆောက်မှုကာလ ၂ နှစ်
- (၁၂) ရင်းနှီးမြှုပ်နှံမှုခွင့်ပြုသည့်သက်တမ်း ၃၀ နှစ်
- (၁၃) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ဖက်စပ်နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု
- (၁၄) မြန်မာနိုင်ငံတွင် ဖွဲ့စည်းမည့် ကုမ္ပဏီအမည်
MYANMAR THAN TAW MYAT COMPANY LIMITED

(သောင်းထွန်း)
ဥက္ကဋ္ဌ



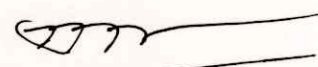
ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်

၂၀၁၉ ခုနှစ်၊ ဩဂုတ်လ ၈ ရက်စွဲပါ ခွင့်ပြုမိန့်အမှတ် (၁၇၈/၂၀၁၉) တွင် ပြင်ဆင်ချက်

၂၀၂၂ ခုနှစ်၊ အောက်တိုဘာလ ၂၁ ရက်နေ့တွင် ကျင်းပပြုလုပ်ခဲ့သော မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မရှင်၏ (၄/၂၀၂၂) ကြိမ်မြောက်အစည်းအဝေး ဆုံးဖြတ်ချက်အရ ပြည်တွင်းမှ Clinker ကုန်ကြမ်းများအသုံးပြု၍ ဘိလပ်မြေထုတ်လုပ်ရောင်းချခြင်းလုပ်ငန်း ဆောင်ရွက်လျက် ရှိသော Myanmar Than Taw Myat Company Limited ၏ တည်ဆောက်မှုကာလကို ဒုတိယ အကြိမ်အဖြစ် နောက်ထပ် ၁ နှစ် ထပ်မံတိုးမြှင့်ပြင်ဆင်လိုက်သည်။

(၁၁) တည်ဆောက်မှုကာလ ၂ နှစ် + ၁ နှစ် + ၁ နှစ် (၈-၈-၂၀၂၂ မှ ၇-၈-၂၀၂၃ ထိ)


ဥက္ကဋ္ဌ(အရှေ့) (သန့်စင်လွင်၊ အတွင်းရေးမှူး)

ရက်စွဲ၊ ၂၀၂၂ ခုနှစ်၊ အောက်တိုဘာလ ၂၁ ရက်
နေရာ၊ ရန်ကုန်မြို့



THE REPUBLIC OF THE UNION OF MYANMAR

Myanmar Investment Commission

Amendment on Permit No. 178/2019 dated 8th August, 2019

The Myanmar Investment Commission, at its meeting 4/2022 held on 21st October 2022, approved the construction period of Myanmar Than Taw Myat Company Limited which is carrying out manufacturing and marketing of cement from semi-product (clinker) be extended to 1 year as the second time.

(11) **Construction/Preparation Period** 2 YEARS + 1 YEAR + 1 YEAR

(W.E.F 8-8-2022 to 7-8-2023)

Thant Sin Lwin

for Chairman

(Thant Sin Lwin, Secretary)

TL

S

Date: ၇၇ October 2022

Location: Yangon



Appendix - 2

**Transitional Consultant Registration of
SEM and REM**



REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 10025

Date 15 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

- (a) Name of Organization Sustainable Environment Myanmar Co., Ltd.
(အဖွဲ့အစည်းအမည်)
- (b) Name of the representative in the organization U Zaw Naing Oo
(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်)
- (c) Citizenship of the representative in the organization Myanmar
(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား)
- (d) Identity Card /Passport Number of the representative person in the organization 12/ Ma Ya Ka (Naing) 036672
(အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်)
- (e) Address of organization B-503, Delta Plaza Compound, Shwegondaing Road, Bahan.
(ဆက်သွယ်ရန်လိပ်စာ) services@sustainablemyanmar.com, 09 976886587
- (f) Type of Consultancy Organization
(အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား)
- (g) Duration of validity 31 March 2018
(သက်တမ်းကုန်ဆုံးရက်)

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း
The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၈) ရက်နေ့မှ (၃၁-၃-၂၀၁၉) ရက်နေ့အထိ တစ်နှစ်သက်တမ်း တိုးမြှင့်သည်။
Soe Naing
17.10.2017
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Handwritten signature in blue ink.

Director General

Environmental Conservation Department

Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Air Pollution Control
2. Ecology and Biodiversity
3. Facilitation of Meeting
4. Geology and Soil
5. Ground Water and Hydrology
6. Land Use
7. Meteorology, Modeling for Air Quality
8. Noise and Vibration
9. Risk Assessment and Hazard Management
10. Socio-Economy
11. Water Pollution Control
12. Waste Management
13. Administration

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)
ဤလက်မှတ်အား (၁-၁-၂၀၂၁) ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား (၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လ သက်တမ်း တိုးမြှင့်သည်။

Soe Naing H. 6. 2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား (၁-၇-၂၀၂၁) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား (၁-၁-၂၀၂၀) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ် သက်တမ်း တိုးမြှင့်သည်။

Soe Naing 12.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား (၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ် သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)



REPUBLIC OF THE UNION OF MYANMAR

Ministry of Natural Resources and Environmental Conservation

CERTIFICATE FOR TRANSITIONAL CONSULTANT REGISTRATION

(ကြားကာလအကြံပေးလုပ်ကိုင်သူမှတ်ပုံတင်ခြင်းအထောက်အထားလက်မှတ်)



No. 0002 Date 10 JUL 2017

The Ministry of Natural Resources and Environmental Conservation, hereby, issues this certificate to the organization under Environmental Impact Assessment Procedure, Notification No. 616/2015.

(ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း၊ အမိန့်ကြော်ငြာစာအမှတ်၊ ၆၁၆/၂၀၁၅ အရ သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာနသည် ဤအထောက်အထားလက်မှတ်ကို အဖွဲ့အစည်းအား ထုတ်ပေးလိုက်သည်။)

- (a) Name of Organization (အဖွဲ့အစည်းအမည်) Resources & Environment Myanmar Co.,Ltd.
- (b) Name of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ အမည်) U Win Naing Tun
- (c) Citizenship of the representative in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ နိုင်ငံသား) Myanmar
- (d) Identity Card /Passport Number of the representative person in the organization (အဖွဲ့အစည်းကိုယ်စားလှယ်၏ မှတ်ပုံတင်/ နိုင်ငံကူးလက်မှတ် အမှတ်) 14/Ah Ga Pa (N) 039780
- (e) Address of organization (ဆက်သွယ်ရန်လိပ်စာ) No. 702, Building B, Delta Plaza Compound, Shwegondaing Road, Bahan Township. service@gmail.com , 09 73013448
- (f) Type of Consultancy (အကြံပေးလုပ်ကိုင်မှုအမျိုးအစား) Organization
- (g) Duration of validity (သက်တမ်းကုန်ဆုံးရက်) 31 March 2018

EXTENSION
 သက်တမ်းတိုးချိန်ဖြင့်
 The VALIDITY of this certificate is extended for one year from (1.4.2018) to (31.3.2019)
 ဤလက်မှတ်အား (၁-၄-၂၀၁၈) မှစ၍ (၃၁-၃-၂၀၁၉) မှာအထက် သက်တမ်းတိုးချိန်ဖြင့်
 See Naing
 10.12.2018
 For Director General
 (See Naing, Director)
 Environmental Conservation Department

Handwritten signature in blue ink.

Director General
Environmental Conservation Department
Ministry of Natural Resources and Environmental Conservation

Areas of Expertise Permitted
(ခွင့်ပြုသည့် ကျွမ်းကျင်မှုနယ်ပယ်များ)

1. Facilitation of meeting
2. Geology and Soil
3. Socio-Economy
4. Waste Management
5. Cultural Heritage
6. GIS & RS
7. Social Management Plan
8. Stakeholder Engagement Plan and Public Consultation

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for one year from (1.1.2020) to (31.12.2020)
ဤလက်မှတ်အား(၁-၁-၂၀၂၀)ရက်နေ့မှ (၃၁-၁၂-၂၀၂၀) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
20.1.2020
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for nine months from (1.4.2019) to (31.12.2019)
ဤလက်မှတ်အား(၁-၄-၂၀၁၉) ရက်နေ့မှ (၃၁.၁၂.၂၀၁၉) ရက်နေ့အထိ (၉)လသက်တမ်း တိုးမြှင့်သည်။

Soe Naing
17.6.2019
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six month from (1.1.2021) to (30.6.2021)
ဤလက်မှတ်အား(၁-၁-၂၀၂၁)ရက်နေ့မှ (၃၀-၆-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION
သက်တမ်းတိုးမြှင့်ခြင်း

The VALIDITY of this certificate is extended for six months from (1.7.2021) to (31.12.2021)
ဤလက်မှတ်အား(၁-၇-၂၀၂၁)ရက်နေ့မှ (၃၁-၁၂-၂၀၂၁) ရက်နေ့အထိ (၆)လ သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

EXTENSION (သက်တမ်းတိုးမြှင့်ခြင်း)

The VALIDITY of this certificate is extended for one year from (1.1.2022) to (31.12.2022)
ဤလက်မှတ်အား(၁-၁-၂၀၂၂) ရက်နေ့မှ (၃၁-၁၂-၂၀၂၂) ရက်နေ့အထိ တစ်နှစ်သက်တမ်းတိုးမြှင့်သည်။

Soe Naing
For Director General
(Soe Naing, Director)
Environmental Conservation Department

Appendix - 3
Meeting Minutes, Photos, Power Point Presentation of
ESIA Stage
And
Socio-economic Survey Form

**Meeting Minutes, Documentary Photos and Power Point
Presentation of ESIA Stage**

Engagement Meetings for ESIA Phase of Myanmar Than Taw Myat Cement Grinding Plant, Dagon Myothit (East) Township, Yangon

No	Date	Time	Meeting Venue	Meeting Attendee	Main Concern
1	26.1.2022	12:00	Yangon Regional ECD	<ul style="list-style-type: none"> ➤ MTTM ➤ SEM ➤ Environmental Conservation Department ➤ U Aung Myo Naing (AD) ➤ U Pyae Phyo Aung (Deputy Head of Section) ➤ Daw Nyein Nyein San (Deputy Head of Section) ➤ Daw Khin Nyat Nyaw (Assist Head of Section) 	<ul style="list-style-type: none"> ➤ The project proponent should build the relationship with the local people by creating job opportunities. ➤ When mitigation measures are prepared for induced impacts by project activities, third party should prepare the practicable ones that project proponent can follow and implement. It should be prepared together with third party organization and project proponent. ➤ Noise impact should be considered mainly. ➤ Reforestation should be undertaken with the coordination of Department of Forest. ➤ It is needed to choose more practical HSE equipment in consideration of HSE plan and policy. ➤ Project proponent should assure land title due to the existence of a city development project like Amata City Project near the proposed project site.



Stakeholder Meeting with Environmental Conservation Department

Response:

- Project proponent will develop and implement effective local hiring action plan and policy coordinating with the local authorities.
- Third Party Consultant will prepare Environmental Management Plan (EMP) and mitigation measures with the coordination of Project Proponent.
- Noise impact will be mitigated by using silencers for fans, enclosing for grinding mill operators, installation of noise barriers around noise-emitting equipment and conducting periodical ambient noise monitoring at appropriate locations.
- Reforestation will be undertaken under the guidance of Department of Forest.
- Proper and practicable Occupational Health and Safety Management Plan will be prepared.
- The cement plant and associated facilities will require total of 49.9 acres land area. For the proposed cement grinding plant, the required land has been purchased from the company which transferred farmland to other use.

No	Date	Time	Meeting Venue	Meeting Attendee	Main Concern
1	22.7.2022	9:30	Township GAD Office (Dagon Myothit East)	<ul style="list-style-type: none"> ➤ GAD Officer ➤ MTTM ➤ SEM 	<ul style="list-style-type: none"> ➤ General Administrator would like the project proponent and survey team to take care of the security.
Stakeholder Meeting with Forest Department					
Response:					
<ul style="list-style-type: none"> ➤ All the project survey activities will be informed to the General Administration Department in real time. 					

Public Consultation Meeting for ESIA Phase of (EIA Stage)

Time	9:00 AM – 10:15 AM
Date	26th, July, 2022
Venue	Administrative Office, Kyar Ni Kan (Malit Village tract)
Question and Answer	
U Nyunt Wai (Kyu Chaung)	<ul style="list-style-type: none"> ➤ He thought that it is worried for the air and water quality of the surrounding environment. But it is not easy to predict the advantage and disadvantage of the project since it has not started yet. However, he would like to ask create job opportunity for the local people when the project is implemented. ➤ Village roads are also needed to maintain and upgrade.
U Win Htay (Kyu Chaung)	<ul style="list-style-type: none"> ➤ He advised that project proponent should prevent to some impacts before implementation process. He suggested that wastewater from the plant should be discharged safely without discharging directly into the surrounding drainage or creek. ➤ He discussed concerning with the increasing population due to the hiring labour for project activities. It is worried for the security of local community when the labour from other places encroaches into the community. Hence, he would like the project proponent to do labour screening process with the approval of Labour Screening Committee organizing with project site officers and local administrators. ➤ Then, he would like to request the use of local business services like hiring vehicles for the project site. ➤ He also would like to request to support for the access of electricity at the expanded village area. ➤ He suggested that the wastewater from the plant should be discharged in good water flow.
U Hla Ngwe (Lay Daunt Kan)	<ul style="list-style-type: none"> ➤ He would like to suggest for fire suppression water pond for fire security of both plant and villages since there is no water available to put out the fire. ➤ He said that general committee consisting of project site officers and local community should be established for the employment.
U Thein Zaw (Village Head-Malit Village Tract)	<ul style="list-style-type: none"> ➤ He said that reporting of the project site is not very strong. For the construction of the fences for the plant boundary, the project site use labour from other area and local people did not have chance for the employment. ➤ He said that local people wanted more business opportunities concerning with the project activities.
U Tun Naung (Project Site Executive officer)	<ul style="list-style-type: none"> ➤ He replied that the labour hiring process was undertaken giving priority to the speed of the construction process when the fences of plant boundary were constructed. ➤ The project proponent will cooperate with the village community as much as they can and will consider and solve the presented issues based on the need of the project.

Attendant List (Local People)

No	Name	Position/ Occupation	Village	Telephone Number
1	U Myint Moe	Trader	Kyu Chaung	09 254118513
2.	U Win Htay	Farmer	Kyu Chaung	09795974593
3.	U Win Shwe	Casual Labour	Kyu Chaung	09250158107
4.	U Hla Thein	100 Houses Group Elder	Kyar Ni Kan	09786608583
5.	U Khin Soe	10 Houses Group Elder	Kyu Chaung	09254809293
6.	U Shwe Paung		Kyar Ni Kan	09440295211
7	U Kyaw Zin Lat	Casual Labour	Kyar Ni Kan	09676181961
8	U Hla Kwyal	Volunteer at Social Organization	Kyu Chaung	09688639111
9	U Hla Htay	Fire Service	Kyar Ni Kan	09669510431
10	U Sein Twin	10 Houses Group Elder	Kyar Ni Kan	09420184417
11	U Myo Thein	10 Houses Group Elder	Kyar Ni Kan	09771667184
12	U Kyaw Liwn	10 Houses Group Elder	Kyar Ni Kan	
13	U Aye Thaug	100 Houses Group Elder	Kyar Ni Kan	
14	Daw Aye Aye Nwe	Clerk	Kyar Ni Kan	
15	U Hla Ngwe	Villager Head	Lay Daunt Kan	
16	U Aung Myint	10 Houses Group Elder	Kyu Chaung	
17	U Soe Win	10 Houses Group Elder	Lay Daunt Kan	
18	U Soe Myint	10 Houses Group Elder	Lay Daunt Kan	
19	Zin Maung Min	Villager	Lay Daunt Kan	
20	U Han Nyunt	Villager	Kyu Chaung	
21	U Chit Soe	Vllager	Lay Daunt Kan	
22	U Nay Lin	Villager	Kyu Chaung	
23	U Khin Zaw	Villager	Lay Daunt Kan	
24	U Aung Min	Villager	Lay Daunt Kan	
25	U Than Soe	Villager Executive Officer	Kyu Chaung	

26	U Mya Oo	100's Household	Kyu Chaung	
27	Daw Yee Myint	Villager	Kyar Ni Kan	
28	U Sein Win	10 Houses Group Elder	Kyu Chaung	
29	U Htay Lwin	10 Houses Group Elder	Kyar Ni Kan	
30	U Aye Liwn	Elders	Kyu Chaung	
31	U Nyunt Wai	Elders	Kyu Chaung	
32	U Than Htay Aung	Elders	Kyar Ni Kan	

Attendant List (Company)

No	Name	Position/ Occupation	Company	Telephone Number
1	U Aung Ko Sett	Director	MTTM	09 444745557
2.	U Tun Naung	Project Site Executive Officer	MTTM	0977733096/ 09428017514
3.	Daw Zin New Myint	Project Coordinator	MTTM	09420761542
4.	Daw Myat Thitsar Naing	Social Consultant	SEM	09777006416
5.	Daw Nan Cherry Thein	Social Consultant	SEM	09777006417
6.	U Arkar Phyo	Environmental Consultant	SEM	09777006410

Documentary Photo



Presentation



Presentation



Question and Answer



Question and Answer





Question and Answer












Question and Answer



Attendant List Photo

မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်တွင် ဆောင်ရွက်မည့် တစ်နေ့လျှင် တစ် ၅၀၀၀ကျ
 ဘီလပ်မြေကြိုတံခွဲစက်ရုံ တည်ဆောက်ရေးစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့် (ဒုတိယအကြိမ်မြောက်) တွေ့ဆုံဆွေးနွေးခြင်း










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 နေရာ - ဝေလင်ကျေးရွာအုပ်စု၊ ပုသိမ်မြို့

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ ဌာနအမည်	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁	ဦး ဖြစ် ရှိ	စတုဂံ ဘဝလ်	ဈေးဥပဒေ	၀၉ ၉၅၅ ၁၁၈၅ ၁၃	
၂	ဦး ထင် ငွေ	လယ်	"	၀၉ ၇၉၅၅ ၇၄၅၅၅၅	
၃	ဦး စိန် ဓမ္မ	ကျွမ်းကျင်	"	၀၉ ၉၅၀၁၅၈ ၁၀၇	
၄	ဦး လှ သိန်း	ကုမ္ပဏီ	ဧည့်သည်	၀၉ ၇၈၆၆၀ ၅၅၅၅၅၅	
၅	ဦး နီ နီ	ဆက်သွယ်ရေး	ကျွမ်းကျင်	၀၉ ၉၅၅၅၀၅၅၅၅၅	
၆	ဦး ရွှေစံ		ဧည့်သည်	၀၉ ၄၄၀၅၅၅၅၅၅၅	
၇	ဦး အောင်အောင်	ကျွမ်းကျင်	"	၀၉ ၆၇၆၁၈၁၅၅၅၅	
၈	ဦး လှ ငွေ	ပရိယာယ်	ကျွမ်းကျင်	၀၉ ၆၈၈၆၅၅၅၅၅၅	
၉	ဦး လှ ငွေ	ဦးစီး	ဧည့်သည်	၀၉ ၆၆၅၅၀၅၅၅၅၅	

မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်တွင် ဆောင်ရွက်မည့် တစ်နေ့လျှင် တစ် ၅၀၀၀ကျ
 ဘီလပ်မြေကြိုတံခွဲစက်ရုံ တည်ဆောက်ရေးစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့် (ဒုတိယအကြိမ်မြောက်) တွေ့ဆုံဆွေးနွေးခြင်း

၂၀၂၂ ခုနှစ်၊ ဇူလိုင်လ၊ ၂၆ ရက်
 အချိန် - ၇:၁၅ to ၁၀:၁၅ am
 နေရာ - ဝေလင်ကျေးရွာအုပ်စု၊ ပုသိမ်မြို့

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ ဌာနအမည်	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁	ဦး ဒီနာ သိန်း	ဆက်သွယ်ရေး	ဧည့်သည်	၀၉ ၄၂၀၁၈၅၅၅၅၅၅	
၂	ဦး မျိုး သိန်း	"	"	၀၉ ၇၇၁၆၆၇၁၈၅၅	
၃	ဦး အောင်လှ	"	"		
၄	ဦး အောင်အောင်	ကုမ္ပဏီ	"	၀၉	
၅	ဦး အောင်အောင်		"		
၆	ဦး လှ ငွေ	ပရိယာယ်	ဧည့်သည်		
၇	ဦး အောင်အောင်	ဆက်သွယ်ရေး	ကျွမ်းကျင်		
၈	ဦး စိန် စိန်		ဧည့်သည်		
၉	ဦး စိန် စိန်		"		



မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်တွင် ဆောင်ရွက်မည့် တစ်နေ့လျှင် တန် ၅၀၀၀ကျ ထိလုပ်မြေကြိတ်ခွဲစက်ရုံ တည်ဆောက်ရေးစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့် (ဒုတိယအကြိမ်မြောက်) တွေ့ဆုံဆွေးနွေးခြင်း

၂၀၂၂ ခုနှစ်၊ ဇူလိုင်လ၊ ၂၆ ရက်
အချိန် - ၇:၁၅ am - ၁၀:၁၅ am
နေရာ - မလင်ကျေးရွာအုပ်စု၊ ရွှေ
၀၇-၂၅-၂

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ ဌာနအမည်	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁	ခင်မြင့်မင်း		၈၀၁၊ ဇော်စွာ		
၂	ဖော်စွာ		၇၂၂၊ ညောင်		
၃	ချစ်စို		၈၀၁၊ ဇော်စွာ		
၄	ဒေါ်လင်း		၇၂၂၊ ညောင်		Lin
၅	ဒေါ်စာ		၈၀၁၊ ဇော်စွာ		
၆	ကျော်မင်း		"		
၇	သန်းစို	ဒုတိယဥက္ကဋ္ဌ	၇၇၈၊ ညောင်		Soe
၈	ဖေစို	ဒုတိယဥက္ကဋ္ဌ	"		
၉	စိုစို		၈၀၇၊ ကို		



မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်းမြို့နယ်တွင် ဆောင်ရွက်မည့် တစ်နေ့လျှင် တန် ၅၀၀၀ကျ ထိလုပ်မြေကြိတ်ခွဲစက်ရုံ တည်ဆောက်ရေးစီမံကိန်းအတွက် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့် (ဒုတိယအကြိမ်မြောက်) တွေ့ဆုံဆွေးနွေးခြင်း

၂၀၂၂ ခုနှစ်၊ ဇူလိုင်လ၊ ၂၆ ရက်
အချိန် - ၇:၁၅ am - ၁၀:၁၅ am
နေရာ - မလင်ကျေးရွာအုပ်စု၊ ရွှေ

စဉ်	အမည်	ရာထူး	အဖွဲ့အစည်း/ ဌာနအမည်	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁	ဒေါ်ခင်မင်း	ဒုတိယဥက္ကဋ္ဌ	၇၂၂၊ ညောင်		
၂	ဒေါ်စိုစို	"	၈၀၇၊ ကို		၆၄
၃	ဒေါ်စာ	ဥက္ကဋ္ဌ	၇၂၂၊ ညောင်		၆၈
၄	ဒေါ်စိုစို	"	"		
၅	ဒေါ်သန်းစို	"	၈၀၇၊ ကို		၆၈
၆					
၇					
၈					
၉					

Village Level Engagement Activities



**Key Informant Interview
(Lay Daungt Kan Village)**



**Key Informant Interview
(Kyar Ni Kan & Kyu Chaung Village)**



Focus Group Discussion (Women)



Focus Group Discussion (Women)

Survey Activities



Power Point Presentation of ESIA Stage

	
	 DOUBLE RHINOS CEMENT

မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်၏
တစ်နေ့လျှင် တန် ၅၀၀၀ကျ
ဘိလပ်မြေကြိတ်ခွဲစက်ရုံ
တည်ဆောက်ရေးလုပ်ငန်းအတွက်
ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအဆင့်
ဒုတိယအကြိမ်မြောက်
လူထုတွေ့ဆုံဆွေးနွေးပွဲကျင်းပခြင်း

ရက်စွဲ ၂၆.၇.၂၀၂၂

အစည်းအဝေး အစီအစဉ်

- ၁။ အခမ်းအနားဖွင့်လှစ်ကြောင်းကြေငြာခြင်း
- ၂။ စီမံကိန်းဖော်ဆောင်သူနှင့် တတိယကြားခံအဖွဲ့အစည်းမှ မိတ်ဆက်ခြင်း
- ၃။ စီမံကိန်းဖော်ဆောင်သူမှ စီမံကိန်းအကြောင်း ဆွေးနွေးတင်ပြခြင်း
- ၄။ SEM မှ ပတ်ဝန်းကျင်နှင့်လူမှုဝန်းကျင်ဆန်းစစ်ခြင်းအကြောင်းအရာများအား ဆွေးနွေးတင်ပြခြင်း
- ၅။ အမေးအဖြေကဏ္ဍ
- ၆။ အခမ်းအနားပြီးဆုံးကြောင်းကြေငြာခြင်း

မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်

- ❖ မြန်မာသံတော်မြတ် ကုမ္ပဏီလီမိတက်ကို YUNNAN JIANGSHENG INVESTMENT နှင့် သံတော်မြတ်ကုမ္ပဏီတို့မှ ရှယ်ယာအချိုး (၇၀ : ၃၀) နှင့် ၂၀၁၆ ခုနှစ်တွင် တည်ထောင်ဖွဲ့စည်းခဲ့ပါသည်။
- ❖ မြန်မာသံတော်မြတ် ကုမ္ပဏီသည် မြန်မာနိုင်ငံတွင် ဘိလပ်မြေထုတ်လုပ်ခြင်းနှင့် ဖြန့်ဖြူးရောင်းချခြင်းကို လုပ်ကိုင်ဆောင်ရွက်နေသည့် ထိပ်တန်းကုမ္ပဏီများထဲမှ တစ်ခုဖြစ်ပါသည်။
- ❖ ရင်းနှီးမြှုပ်နှံမှုအမျိုးအစားမှာ နိုင်ငံခြားဖက်စပ်ရင်းနှီးမြှုပ်နှံမှုပုံစံ (Joint Venture - JV) ဖြစ်ပါသည်။
- ❖ ရင်းနှီးမြှုပ်နှံမှုတန်ဖိုးမှာ အမေရိကန် ဒေါ်လာသန်းပေါင်း ၇၂.၄ သန်းနှင့်ညီသော မြန်မာငွေကျပ် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆောင်ရွက်မည့် တတိယအဖွဲ့အစည်းများ

Resource and Environment Myanmar Co., Ltd.

REM ကုမ္ပဏီလီမိတက် (မြန်မာ့သယံဇာတနှင့် ပတ်ဝန်းကျင်ကုမ္ပဏီလီမိတက်) သည် တက္ကသိုလ်မှ အမျိုးမျိုးသော တာသာရပ်ဆိုင်ရာ ဆရာ/ဆရာမ ဟောင်းများဖြင့် ဖွဲ့စည်းထားပါသည်။

၂၀၀၈ ခုနှစ်တွင် ပထမဦးဆုံး ပတ်ဝန်းကျင်ဆိုင်ရာ အတိုင်ပင်ခံ ကုမ္ပဏီ အဖြစ် အစိုးရထံမှ တပ်တင်ခဲ့ပြီး သယံဇာတနှင့်ပတ်ဝန်းကျင်ထိခိုက်သိမ်းဆီးရေးဝန်ကြီးဌာန အသိအမှတ်ပြု အကြံပေးလုပ်ကိုင်သူ အထောက်အထားလက်မှတ် ၀၀၂ ကိုကိုင်ဆောင်ထားသည့် အဖွဲ့အစည်းဖြစ်ပါသည်။

REM သည် အခြေခံအဆောက်အအုံ၊ သဘာဝပတ်ဝန်းကျင်၊ ငလျင်အင်ဂျင်နီယာ လုပ်ငန်း၊ မြေအရင်းအမြစ်နှင့် ဘူမိဗေဒဆိုင်ရာ ဘေးအန္တရာယ် အကဲဖြတ်ခြင်းနှင့် သတင်းအချက်အလက် နည်းပညာ နယ်ပယ်များကို လုပ်ဆောင်လျက် ရှိပါသည်။

Sustainable Environment Myanmar Co., Ltd.

SEM ကုမ္ပဏီလီမိတက်သည် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ပေးသည့် အကြံပေးအဖွဲ့ဖြစ်ပါသည်။ REM ကုမ္ပဏီလီမိတက် (မြန်မာ့သယံဇာတနှင့် ပတ်ဝန်းကျင် ကုမ္ပဏီလီမိတက်) ၏ မိတ်ဖက်ကုမ္ပဏီတစ်ခု ဖြစ်ပါသည်။

၂၀၁၄ ခုနှစ်တွင် အတိုင်ပင်ခံ ကုမ္ပဏီ အဖြစ် မြန်မာနိုင်ငံအစိုးရထံတွင် မှတ်ပုံတင်ခဲ့ပါသည်။ သယံဇာတနှင့်ပတ်ဝန်းကျင်ထိခိုက်သိမ်းဆီးရေးဝန်ကြီးဌာန အသိအမှတ်ပြု အကြံပေးလုပ်ကိုင်သူ အထောက်အထားလက်မှတ် ၀၀၂၅ ကိုကိုင်ဆောင်ထားသည့် အဖွဲ့အစည်း ဖြစ်ပါသည်။

SEM သည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲသည့်အစီအစဉ် ရေးဆွဲသူများ၊ ပတ်ဝန်းကျင်ဆိုင်ရာ အကဲဖြတ်သူများ၊ ဘူမိဗေဒ ပညာရှင်များနှင့် GIS ပညာရှင်များ၊ စီမံခန့်ခွဲရေးဆိုင်ရာ ပညာရှင်များ၊ လူမှုဝန်းကျင်ဆိုင်ရာပညာရှင်များ အပါအဝင် အမျိုးမျိုးသော အရည်အချင်း ပြည့်ဝသည့် အတိုင်ပင်ခံ ပုဂ္ဂိုလ်များဖြင့် ဖွဲ့စည်းထားသည့် အဖွဲ့အစည်းဖြစ်ပါသည်။

အဆိုပါ စီမံခန့်ခွဲရေး အတွက် Sustainable Environment Myanmar (SEM) သည် အပြည်ပြည်ဆိုင်ရာ စံချိန်စံညွှန်းများနှင့်အညီ ပတ်ဝန်းကျင်နှင့် လူမှုရေးသက်ရောက်မှု ဆန်းစစ်ခြင်းကို ဦးစီးဆောင်ရွက်မည့်အဖွဲ့ ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆောင်ရွက်မည့် တတိယအဖွဲ့အစည်းများ

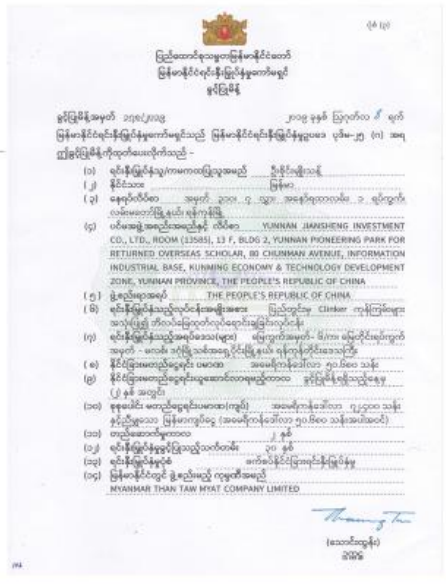
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Sustainable Environment Myanmar Co., Ltd.

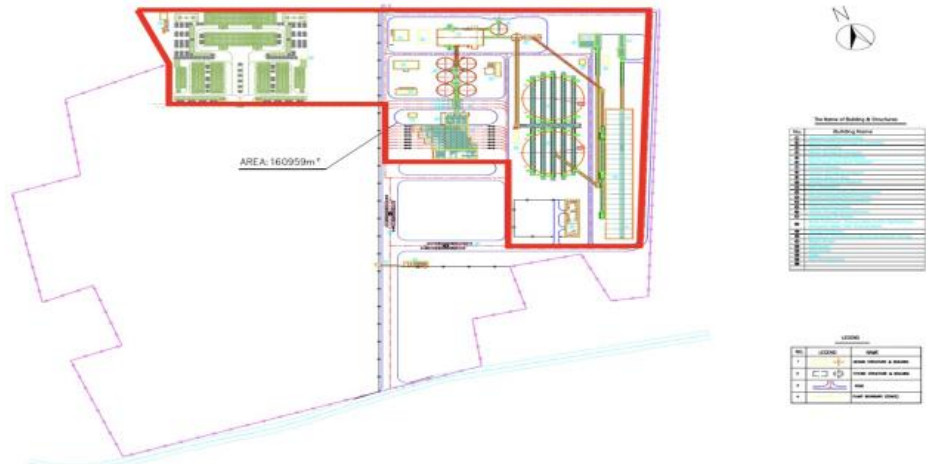


စီမံကိန်းအကြောင်းအရာ

- ❑ အဆိုပြု စီမံကိန်းအမျိုးအစားမှာ ပြည်တွင်းမှ Clinkerကုန်ကြမ်းများကို အသုံးပြု၍ ဘိလပ်မြေထုတ်လုပ်ရောင်းချခြင်း လုပ်ငန်းအမျိုးအစား ဖြစ်ပါသည်။
- ❑ အဆိုပြု စက်ရုံစီမံကိန်းမှာ မြေကွက်အမှတ် ၆ က/ မြေတိုင်းရပ်ကွက် အမှတ်- မလစ်၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်း၊ ရန်ကင်းတိုင်းဒေသကြီးတွင် တည်ရှိပြီး မြေဧက ၄၉.၄ ဧကကို အသုံးပြုမည်ဖြစ်ပါသည်။
- ❑ မြန်မာနိုင်ငံရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ ခွင့်ပြုချက်အမှတ် ၁၇၈/၂၀၁၉ ဖြင့် ၂၀၁၉ခုနှစ်၊ ဩဂုတ်လ၊ ၈ရက်တွင် ခွင့်ပြုခဲ့ပြီး ဖက်စပ်နိုင်ငံခြား ရင်းနှီး မြှုပ်နှံမှုပုံစံ (Joint Venture -JV) ဖြစ်ပါသည်။
- ❑ အဆိုပြု စက်ရုံစီမံကိန်း၏ တည်ဆောက်ရေးကာလမှာ ၂ နှစ်ဖြစ်ပါသည်။
- ❑ စီမံကိန်းအတွက် လိုအပ်သော လျှပ်စစ်စွမ်းအင်ကို မြန်မာလျှပ်စစ်လုပ်ငန်း (EPC) မှ ရယူအသုံးပြုသွားမည်ဖြစ်ပါသည်။



စီမံကိန်းစနစ်ချုပ်



စီမံကိန်းအကြောင်းအရာ

ထုတ်လုပ်မှုနည်းပညာ : ပြန်ပုံသဏ္ဍန် ကြိတ်ခွဲစက်ကို အသုံးပြုသည့် ဘီလပ်မြေကြိတ်ခွဲစက်ရုံ (ခေါင်လိုက်ကြိတ်ခွဲစက်အစား)

ထုတ်လုပ်သည့်လုပ်ငန်းစဉ် : မီးသင်းကျောက်မှ ဘီလပ်မြေထုတ်လုပ်ခြင်း

ကုန်ကြမ်းပစ္စည်းများ : မီးသင်းကျောက်နှင့် ဂေါဒန်

ထုတ်လုပ်နိုင်စွမ်း : တစ်ရက်လျှင် တန် ၅၀၀၀

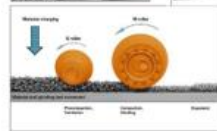
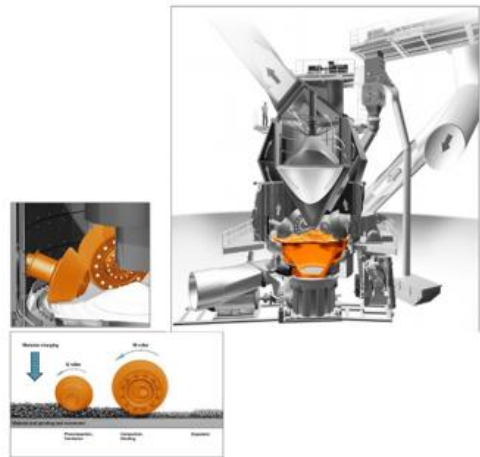
ကုန်ကြမ်းသယ်ယူပို့ဆောင်ခြင်း

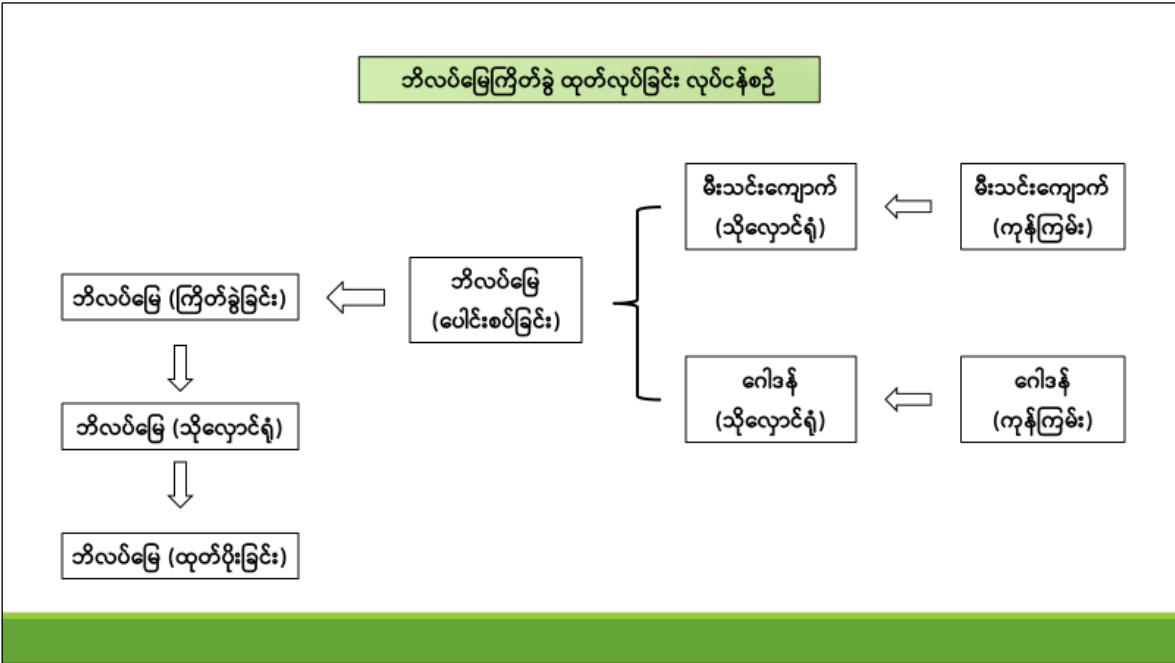
လိုအပ်သော ကုန်ကြမ်း ထုံးကျောက်များကို မြန်မာသံတော်မြတ်ဘီလပ်မြေစက်ရုံ (ကျောက်ဆည်)မှ ရေယာဉ်များဖြင့် သယ်ဆောင်ကာ ရန်ကုန်မြို့၊ ဒဂုံဆိပ်ကမ်းမှတစ်ဆင့် မြန်မာသံတော်မြတ် ဘီလပ်မြေကြိတ်ခွဲထုတ်လုပ်သည့်စက်ရုံ (ရန်ကုန်) သို့ ကားများဖြင့် တင်ပို့မည်ဖြစ်ပါသည်။

လည်ပတ်ရေးအဆင့်လုပ်ငန်းများ

၁) ကြိတ်ခွဲခြင်းလုပ်ငန်းစဉ်

၂) အထုတ်သွတ်ခြင်းနှင့် ထုတ်ပို့ခြင်း

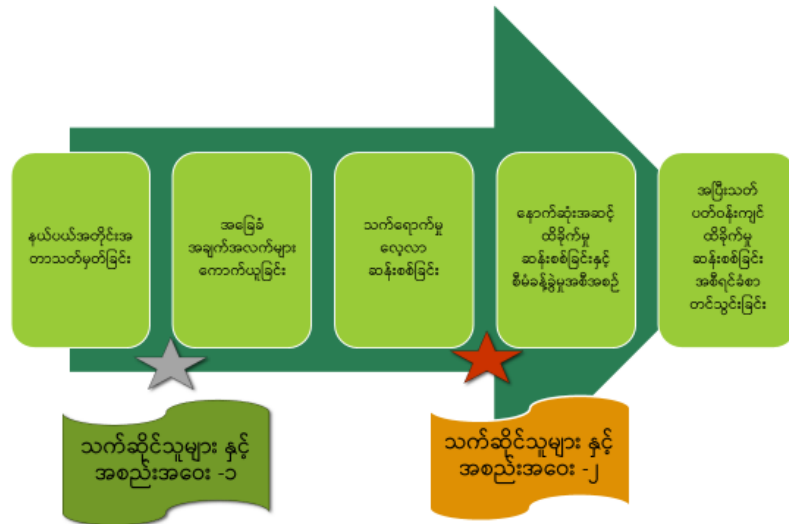




ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်

စဉ်	လုပ်ငန်းစဉ်	ပြီးစီးမှုအခြေအနေ
၁	တတိယကြားခံအဖွဲ့အစည်းအတည်ပြုခြင်း	ရရှိပြီး
၂	နယ်ပယ်အတိုင်းအတာသတ်မှတ်မှုအစီရင်ခံစာ ပြုစုရေးသားခြင်း	၂၀၂၀ခုနှစ်
၃	နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအဆင့်လူထုတွေ့ဆုံဆွေးနွေးခြင်း	၂၀၁၉ခုနှစ်၊ ဒီဇင်ဘာလမှ ၂၀၂၀ခုနှစ်၊ ဇန်နဝါရီလအထိ
၄	စီမံကိန်းအကြောင်းအရာဖော်ထုတ်ကြေငြာခြင်း	၂၀၂၀ခုနှစ်၊ မတ်လ
၅	နယ်ပယ်အတိုင်းအတာသတ်မှတ်မှုအစီရင်ခံစာ တင်သွင်းခြင်း	မတ်လ၊ ၂၀၂၀ ခုနှစ် (ပထမအကြိမ်) အောက်တိုဘာလ၊ ၂၀၂၁ ခုနှစ် (ဒုတိယအကြိမ်)
၆	နယ်ပယ်အတိုင်းအတာသတ်မှတ်ခြင်းအစီရင်ခံစာ အတည်ပြုခြင်း	၂၀၂၂ ခုနှစ်၊ ဇွန်လ
၇	အခြေခံအချက်အလက်ကောက်ယူခြင်းနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း	ဆောင်ရွက်ဆဲ
၈	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအဆင့် လူထုတွေ့ဆုံဆွေးနွေးခြင်း	ယခုအဆင့်
၉	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာပြုစုရေးသားခြင်း	ဆောင်ရွက်ဆဲ
၁၀	ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာတင်သွင်းခြင်း	ဆက်လက်ဆောင်ရွက်မည်



ပြည်သူ့လူထုနှင့်တွေ့ဆုံဆွေးနွေးခြင်းလုပ်ငန်းစဉ်

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း အပိုဒ် ၅၀ နှင့် ၆၁ အရ စီမံကိန်းနှင့်ဆက်စပ်နေသည့် သက်ဆိုင်သူများနှင့် တွေ့ဆုံခြင်းအား အောက်ပါအတိုင်း ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

ပထမအကြိမ်တွေ့ဆုံဆွေးနွေးခြင်း : အဆိုပြုစီမံကိန်း၏ လေ့လာမည့် နယ်ပယ်အတိုင်းအတာနှင့် စီမံကိန်းလုပ်ငန်းများအကြောင်း အသိပေးအကြောင်းကြားရန် စန်နုဝါရီလ၊ ၂၄ ရက်၊ ၂၀၂၀ ခုနှစ်တွင် ကျင်းပခဲ့ခြင်းဖြစ်ပါသည်။

ဒုတိယအကြိမ်တွေ့ဆုံဆွေးနွေးခြင်း : စီမံကိန်းအကြောင်းအရာများ၊ အခြေခံအချက်အလက်ကောက်ယူခြင်းလုပ်ငန်းစဉ်များ၊ ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများနှင့် သက်ရောက်မှုလျော့ချရေးနည်းလမ်းများအား အသိပေးတင်ပြရန် ကျင်းပသည့် ယခုအစည်းအဝေးဖြစ်ပါသည်။

ရည်ရွယ်ချက်

စီမံကိန်းမှ သက်ရောက်မှုများအား သင့်တော်သည့် သက်ရောက်မှုလျော့ချရေးနည်းလမ်းများ သတ်မှတ်ရန်အတွက် ဒေသနေပြည်သူများ၏ အကြံပြုချက်၊ ဆွေးနွေးချက်နှင့် စိုးရိမ်ပူပန်မှုများ ရယူရန်



ပထမအကြိမ်တွေ့ဆုံဆွေးနွေးခြင်း

လူထုတွေ့ဆုံပွဲခြံငုံသုံးသပ်ချက် (ပထမအကြိမ်လူထုတွေ့ဆုံပွဲအနှစ်ချုပ်)

ကိစ္စရပ်များနှင့် အကြံပြုချက်များ	တုံ့ပြန်ဖြေကြားခြင်း
<ul style="list-style-type: none"> စီမံကိန်း လုပ်ငန်းသုံးယာဉ်များ ပိုမိုများပြားလာသည့် အတွက် ယာဉ်ပေါ်တစ်ဆယ့် ဖြစ်နိုင်ခြေ 	<ul style="list-style-type: none"> စီမံကိန်းပိုင်ရှင်သည် ပတ်ဝန်းကျင်စီမံမှုအစီအစဉ်တွင် ဖော်ပြထားသည့် ယာဉ်များအရှိန်နှုန်းအတိုင်း တိကျစွာ လိုက်နာမောင်းနှင်စေမည် ဖြစ်ပါသည်။
<ul style="list-style-type: none"> စက်ရုံမှ အမှုန်အမွှားများနှင့် အမိုးအငွေ့၊ ဓာတ်ငွေ့များ ထုတ်လွှတ်မှုကြောင့် ဒေသနေပြည်သူများ၏ ကျန်းမာရေး အပေါ် သက်ရောက်မှု 	<ul style="list-style-type: none"> စီမံကိန်းပိုင်ရှင်သည် အနီးဆုံးနေထိုင်သူများအား ကျန်းမာရေး သက်ရောက်မှု လျော့ချရန်အတွက် အမျိုးသား ပတ်ဝန်းကျင်အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်အား တိကျစွာ လိုက်နာမည်ဖြစ်ပါသည်။
<ul style="list-style-type: none"> လမ်းတည်ဆောက်ခြင်းနှင့် ဂျန်နရေတာများ လည်ပတ်ခြင်းမှ ထွက်ရှိလာသည့် ဆူညံသံသည် သက်ကြီးရွယ်အိုများနှင့် တုန်းကြီးများ ကဲ့သို့ သက်ရောက်ခံရမှုအား အနှောင့် အယှက်ဖြစ်မှု 	<ul style="list-style-type: none"> စီမံကိန်းပိုင်ရှင်သည် လမ်းတည်ဆောက်ရေးတွင် အသုံးပြုသော ယာဉ်နှင့် စက်များအား ကောင်းစွာ ပြုပြင်ထိန်းသိမ်းမည်ဖြစ်ပြီး ဆူညံသံထွက်ပေါ်မှု လျော့ချရန်အတွက် ညအချိန်အလုပ်လုပ်ကိုင်ခြင်းအား ရှောင်ရှားမည်ဖြစ်ပါသည်။
<ul style="list-style-type: none"> စက်ရုံလည်ပတ်ခြင်းမှ ဆူညံသံထွက်ပေါ်နိုင်ခြေ 	<ul style="list-style-type: none"> လုပ်ငန်းလည်ပတ်စဉ်အတွင်း ဆူညံသံသက်ရောက်မှုကို လျော့ချရန် ဆူညံသံ ထိန်းချုပ်သည့် နည်းလမ်းများအား ဘီလပ်မြေကြိုက်ခွဲစက်ရုံတွင် အသုံးပြုသွားမည်ဖြစ်ပါသည်။
<ul style="list-style-type: none"> ပွင့်လင်းမြင်သာမှုမရှိခြင်း၊ 	<ul style="list-style-type: none"> စီမံကိန်းဖော်ဆောင်သူသည် စီမံကိန်းအကြောင်းအရာများကို လုံလောက်စွာ အချိန်နှင့်တပြေးညီ ဒေသနေပြည်သူများထံသို့ ပေးပို့နိုင်ရန် စီစဉ်မည်ဖြစ်ပါသည်။
<ul style="list-style-type: none"> စီမံကိန်းလုပ်ငန်းမှ စွန့်ပစ်ရေ စွန့်ထုတ်ခြင်းကြောင့် တိရစ္ဆာန် မျိုးပြုရေးပေါ် အကျိုးသက်ရောက်မှု နှင့် စီမံကိန်းလုပ်ငန်းမှ စက်ယန္တရားများ၏ တုန်ခါခြင်းကြောင့် တိရစ္ဆာန်များ မျိုးပွားပေါ် အကျိုးသက်ရောက်မှု 	<ul style="list-style-type: none"> ဘေးအန္တရာယ်ပတ်ဝန်းကျင်သို့ ရေဆိုးများ တိုက်ရိုက်စွန့်ပစ်ခြင်းကို ရှောင်ရှားရန်အတွက် ရေဆိုးသန့်စင်သည့် စနစ်အား ပါဝင်အသုံးပြုမည်ဖြစ်ပါသည်။ စီမံကိန်းဖော်ဆောင်သူသည် တုန်ခါမှုအတွက် ရေဆိုးထားသည့် ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ်အား လိုက်နာမည်ဖြစ်ပါသည်။
<ul style="list-style-type: none"> စက်ရုံမှထုတ်လွှတ်မှုများကြောင့် ညဉ့်ညဉ့်အခင်းအကြောင်းနှင့် လူနေစရိယာများသို့ လေထု အလုပ်သမားများ၏ လူမှုရေး ပြဿနာများ 	<ul style="list-style-type: none"> စီမံကိန်းဖော်ဆောင်သူသည် လေထုညစ်ညမ်းမှုအား စီမံခန့်ခွဲရန်အတွက် အမျိုးသား ပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်နှင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်အား လိုက်နာမည်ဖြစ်ပါသည်။ အလုပ်သမားများ၏ လူမှုရေးပြဿနာများအား ရှောင်ရှားရန်အတွက် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီရင်ခံစာတွင် ပါဝင်သည့် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်အား လိုက်နာသွားမည် ဖြစ်ပါသည်။

စီမံကိန်းအကြောင်းအရာထုတ်ဖော်ကြေငြာခြင်း

စီမံကိန်းအကြောင်းအရာကို စီမံကိန်းနေရာအရှေ့တွင် ထင်ရှားစွာ ဆိုင်းဘုတ်စိုက်ထူစေခြင်းဖြင့် ဒေသနေပြည်သူများအား ထုတ်ဖော်ကြေငြာခဲ့ပါသည်။

မြန်မာဘာသာဖြင့်ရေးသားထားသည့် စီမံကိန်းအကျဉ်းချုပ်အား ကျေးရွာအုပ်ချုပ်ရေးမှူးရုံးတွင် ရက်သတ္တပတ် ၂ ပတ် (၁.၇.၂၀၂၁မှ ၁၄.၇.၂၀၂၁အထိ) ထားရှိကာ ဖတ်ရှုပြီးနောက် လူတိုင်း တုံ့ပြန်ချက်များနှင့်အကြံပြုချက်များအား ပေးပို့နိုင်ရန် စီစဉ်ခဲ့ပါသည်။



လူမှုဝန်းကျင်သက်ရောက်မှု ဆန်းစစ်ခြင်း

လူမှုဝန်းကျင်

လူမှုစီးပွား လေ့လာမှုများကို စက်ရုံအနီးတွင် တည်ရှိသော ရင်ကွက်တစ်ခု၊ ကျေးရွာ နှစ်ရွာကို အဓိကထား၍ လေ့လာမည့် မြစ်ပြီး သက်ရောက်မှုများကို မြို့နယ်အဆင့်ထိ ထည့်သွင်းစဉ်းစားသွားမည် ဖြစ်ပါသည်။

လူမှုရေး ဆိုင်ရာ အချက်အလက်များ ကောက်ယူခြင်းလုပ်ငန်းစဉ်များ

- သက်ဆိုင်သူများနှင့် တွေ့ဆုံခြင်း
- လူမှုစီးပွားရေးအခြေခံအချက်အလက် ကောက်ယူခြင်း
- ကျန်းမာရေးနှင့် ပတ်သတ်သည့် အခြေခံအချက်အလက်များ ကောက်ယူခြင်း

စဉ်	တွေ့ဆုံသူ/ရုပ်တွက်	မကုမ္ပဏီအုပ်စု/ရုပ်တွက်	စီမံကိန်းမှအကွာအဝေး
၁	ကြာနီကန်	မလစ်	မြန်မာသံတော်မြတ်ဘိလပ်မြေစက်ရုံ မှ ၀.၇ ကီလိုမီတာအကွာ
၂	ကျွဲချောင်းကျေးရွာ	မလစ်	မြန်မာသံတော်မြတ်ဘိလပ်မြေစက်ရုံ မှ ၀.၈ ကီလိုမီတာအကွာ
၃	လေးထောင့်ကန်ရုပ်တွက်	လေးထောင့်ကန်ရုပ်တွက်	မြန်မာသံတော်မြတ်ဘိလပ်မြေစက်ရုံ မှ ၁.၈ ကီလိုမီတာအကွာ



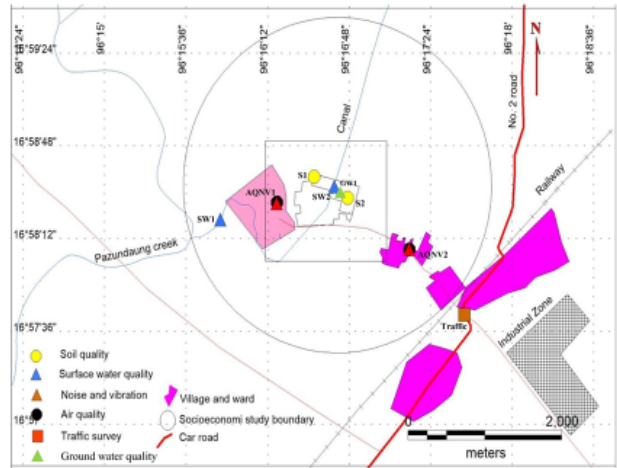
ရူပဝန်းကျင်သက်ရောက်မှု ဆန်းစစ်ခြင်း

ရူပဝန်းကျင်လေ့လာမှုများ

- မြေအရည်အသွေး
- လေအရည်အသွေး
- ဆူညံသံ

စသည့် ရူပဝန်းကျင်လေ့လာမှုများကို ပုံတွင် ဖော်ပြထားသည့် အတိုင်း လေ့လာဆန်းစစ် သွားမည်ဖြစ်ပါသည်။

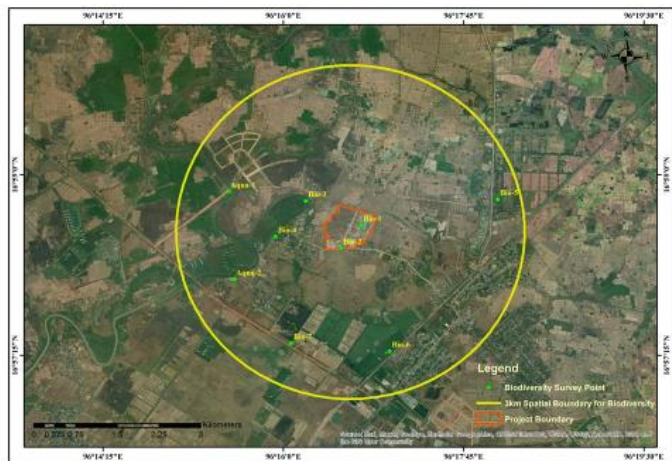
စဉ်	နမူနာအမျိုးအစား	ကောက်ယူမည့်အရေအတွက်
၁	မြေပေါ်ရေအရည်အသွေး (SW)	၂နေရာ
၂	မြေအောက်ရေအရည်အသွေး (GW)	၁နေရာ
၃	လေအရည်အသွေး (AQNV)	၂နေရာ
၄	မြေအရည်အသွေး (S)	၂နေရာ
၅	ယာဉ်သွားလာမှု(Traffic)	၁နေရာ



ဇီဝမျိုးစုံမျိုးကွဲ သက်ရောက်မှု ဆန်းစစ်ခြင်း

စီမံကိန်းဧရိယာအတွင်းရှိ ရှင်သန်ပေါက်ရောက်ရာဒေသမှာ ပြုပြင်ထားသည့် ရှင်သန် ပေါက်ရောက်ရာ ဒေသဟု အမျိုးအစား သတ်မှတ်ပြီး ယခင် (သို့) ယခုတွင် အသုံးပြုနေသော ဒေသဖြစ်ပါသည်။ (ဥပမာ- စိုက်ပျိုးရေးမြေများ၊ မြို့ပြနှင့် လူနေထိုင်သည့် ဧရိယာများ ဖြစ်ပါသည်) စီမံကိန်း လုပ်ငန်းများမှ သက်ရောက်မှု ရှိနိုင်သည်ဟု သတ်မှတ်ထားသော ဧရိယာအတွင်း အောက်ဖော်ပြပါ ဇီဝမျိုးစုံမျိုးကွဲများအား ကွင်းဆင်း လေ့လာသွားမည် ဖြစ်ပါသည်။

- ၁။ အပင်မျိုးစိတ်နှင့် ၎င်းတို့၏ ရှင်သန်ပေါက်ရောက်ရာဒေသ
- ၂။ သတ္တဝါမျိုးစိတ်နှင့် ၎င်းတို့၏ ကျင်လည်ကျက်စားရာဒေသ
 - နို့တိုက်သတ္တဝါများ
 - တွားသွားသတ္တဝါများ
 - ကုန်းနေရေနေသတ္တဝါများ
 - ဌက်နှင့်
 - လိပ်ပြာမျိုးစိတ်များ



ဇီဝမျိုးစုံမျိုးကွဲ သက်ရောက်မှု ဆန်းစစ်ခြင်း

ဒေသခံများအား တွေ့ဆုံမေးမြန်းခြင်း



ဇီဝမျိုးစုံမျိုးကွဲများအား ကွင်းဆင်းကောက်ယူခြင်း



စီမံကိန်းကြောင့် ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများနှင့်
လျှော့ချရေးနည်းလမ်းများ

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (တည်ဆောက်ရေးအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ရှုပဝန်းကျင်			
လေထုအရည်အသွေး	<ul style="list-style-type: none"> အဆောက်အဦများ နှင့် ဘိလပ်မြေ စက်ရုံ၊ သိုလှောင်ရုံများ တည်ဆောက်ခြင်း 	<ul style="list-style-type: none"> တည်ဆောက်ရေး လုပ်ငန်းလုပ်ဆောင်နေစဉ် ဘေးပတ်ဝန်းကျင် အပေါ် ဖုန်/ အမှုန်များ ထွက်ရှိလာသော သက်ရောက်မှုများ။ ဆောက်လုပ်ရေး လုပ်ငန်းသုံး ယာဉ်များ နှင့် စက်ယန္တရားများ မှ ထွက်ရှိလာသော မီးခိုးငွေ့များ။ 	<ul style="list-style-type: none"> တည်ဆောက်ရေး လုပ်ငန်းတွင် အသုံးပြုလျက်ရှိသော ယာဉ်များ၊ ယန္တရားများ အား ပုံမှန်စစ်ဆေးခြင်း။ မြောက်သွေရာသီတွင် မခင်းထားသည့် လမ်းများ (မြေသားလမ်းစသည်) ပေါ်တွင် ယာဉ်များသွားလာရာတွင် ဖုန်များထွက်ရှိမှု လျော့နည်းစေရန် ရေဖြန်းပေးခြင်း။ ဆောက်လုပ်ရေးသုံး ပစ္စည်းများ သယ်ဆောင်ရာတွင် အဖုံးအကာများ ဖုံးအုပ်၍ သယ်ယူစေခြင်း။
ဆူညံသံ နှင့် တုန်ခါမှု	<ul style="list-style-type: none"> အဆောက်အဦများ နှင့် ဘိလပ်မြေ စက်ရုံ၊ သိုလှောင်ရုံများ တည်ဆောက်ခြင်း 	<ul style="list-style-type: none"> တည်ဆောက်ရေး လုပ်ငန်းများကြောင့် ထွက်ရှိလာသော ဆူညံသံ နှင့် တုန်ခါမှုများ။ 	<ul style="list-style-type: none"> အသံဆူညံသော နေရာများတွင် လုပ်ကိုင်ရသော အလုပ်သမားများအား နားကြပ်များနှင့် အခြားသော လုပ်ငန်းခွင် ဘေးအန္တရာယ် ကာကွယ်ရေးပစ္စည်း (PPE) များကို ထောက်ပံ့ပေးခြင်း နှင့် မဖြစ်မနေအသုံးပြုစေခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (တည်ဆောက်ရေးအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ရှုပဝန်းကျင်			
ရေ အရင်းအမြစ်	<ul style="list-style-type: none"> ဝန်ထမ်းအဆောင်များမှ ရေသုံးစွဲမှု မိလ္လာနှင့် စွန့်ပစ်ရေ စွန့်ထုတ်မှု စက်ပစ္စည်း ကိရိယာများမှ မတော်တဆ ယိုမိတ်ခြင်း နှင့် ယိုစိမ့်ခြင်း 	<ul style="list-style-type: none"> ရေသုံးစွဲမှုနှင့် ဆက်စပ်သော သက်ရောက်မှုများ။ စက်ဆီ/ချောဆီများ ယိုမိတ်ခြင်း ကြောင့် မြေအောက်ရေ အရည်အသွေး ထိခိုက်မှုများ။ 	<ul style="list-style-type: none"> အလုပ်သမား အဆောင်များမှ ထွက်ရှိသည့် မိလ္လာရေများအား မိလ္လာကန် (မိလ္လာသန့်စင်စနစ်) အတွင်းသို့ ပိုက်များမှ တစ်ဆင့် စွန့်ပစ်ခြင်း။ ရေနှုတ်ပြောင်းများ ဆောက်လုပ်ထားခြင်း။ စက်ဆီ/ချောဆီများ ယိုမိတ်ခြင်း မရှိစေရန် စက်ပစ္စည်းများအား ပုံမှန်စစ်ဆေးခြင်း။ စက်ဆီ/ချောဆီ နှင့် စက်သုံးဆီများအား စနစ်တကျ ကောင်းမွန်စွာ သိုလှောင်ထားရှိခြင်း။ စက်ပစ္စည်းများအား သက်မှတ်ထားသော (Workshop) နေရာတွင်သာ ဆေးကြောသန့်စင်ခြင်း။
အပိုင်အခဲ စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> ဆောက်လုပ်ရေး လုပ်ငန်းများကြောင့် ထွက်ရှိလာသော စွန့်ပစ်ပစ္စည်းများ 	<ul style="list-style-type: none"> ဆောက်လုပ်ရေးသုံး စွန့်ပစ်ပစ္စည်းများ နှင့် လူသုံးစွန့်ပစ် အမှိုက်များကြောင့် လူထုကျန်းမာရေး အပေါ် သက်ရောက်မှုများ။ 	<ul style="list-style-type: none"> ဆောက်လုပ်ရေး လုပ်ငန်းများမှ ထွက်ရှိသော ပြန်လည် အသုံးပြုနိုင်သည့် ပစ္စည်းများအား ပြန်လည် အသုံးပြုခြင်း နှင့် ရောင်းချခြင်း။ ပြန်လည် အသုံးမပြုနိုင်သော ပစ္စည်းများအား သင့်လျော်စွာ သိုလှောင်၍ ခွင့်ပြုထားသော နေရာသို့ စွန့်ပစ်ခြင်း။ လူသုံးစွန့်ပစ် အမှိုက်များအား စုဆောင်း၍ သတ်မှတ်နေရာသို့ စွန့်ပစ်ခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (တည်ဆောက်ရေးအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
စီမံကိန်းကျင့်			
စီမံချိုးဖျက်မှု	<ul style="list-style-type: none"> လုပ်ကွက်အား ရှင်းလင်းခြင်း 	<ul style="list-style-type: none"> လုပ်ကွက်အား ရှင်းလင်းခြင်း၊ လုပ်ငန်းကြောင့် အပင်၊ သတ္တဝါနှင့် နေရင်းဒေသများ အပေါ် ထိခိုက်မှုများ။ 	<ul style="list-style-type: none"> စက်ရုံဝန်း အတွင်း သစ်ပင်ကြီးများအား ထိန်းသိမ်းထားခြင်း နှင့် သစ်ပင်များပြန်လည် ဖိုက်ဖျိုးခြင်း။ အဆောက်အဦ ဆောက်ရန်အတွက် လိုအပ်သော နေရာများတွင်သာ အပင်ပေါက်ရောက်မှုအား ရှင်းလင်းခြင်း။
လူမှုဝန်းကျင်			
လူမှုစီးပွား	<ul style="list-style-type: none"> အဆောက်အဦများ နှင့် ဘိလပ်မြေ စက်ရုံ၊ သို့လှောင်ရုံများ တည်ဆောက်ခြင်း 	<ul style="list-style-type: none"> အလုပ်အကိုင်အခွင့်အလမ်းများပေါ်ပေါက်ခြင်း ဆောက်လုပ်ရေး လုပ်ငန်းများအတွက် အလုပ်အကိုင်အခွင့်အလမ်းများ ရှိမည်ဖြစ်ပြီး အလုပ်သမား ခေါ်ယူရာတွင် အငြင်းပွားဖွယ်ရာများ ဖြစ်ပေါ်နိုင်ခြင်း 	<ul style="list-style-type: none"> အလုပ်အကိုင် အခွင့်အလမ်းများအား ဒေသနေပြည်သူများအတွက် စနစ်တကျ စီစဉ် ဆောင်ရွက်ပေးခြင်း။
လက်ရှိ လူမှုရေးအခြေခံ အဆောက်အဦများနှင့် ဝန်ဆောင်မှုများ	<ul style="list-style-type: none"> စီမံကိန်းတည်ဆောက်ခြင်းလုပ်ငန်းများ 	<ul style="list-style-type: none"> အခြေခံ အဆောက်အဦများ ဖွံ့ဖြိုးတိုးတက်လာနိုင်ခြင်း။ 	<ul style="list-style-type: none"> ဆောင်ရွက်ထားရှိသည့် CSR လုပ်ငန်းစဉ်များအား မှတ်တမ်း အထောက်အထားများ ထားရှိခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ရုပ်ဝန်းကျင်			
လေထုအရည်အသွေး	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း (ကြိတ်ခွဲခြင်း၊ ရောစပ်ခြင်း နှင့် ထုတ်ပိုးခြင်း) ထုတ်လုပ်ပြီးသော ဘိလပ်မြေအိတ်များအား သယ်ယူပို့ဆောင်ခြင်း 	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်းစဉ်မှ ထွက်ရှိလာသော အမှုန်များ (Particulate matter) လုပ်ငန်းသုံး ယာဉ်များ နှင့် စက်ယန္တရားများ မှ ထွက်ရှိလာသော စီးနိုးငွေ့များ 	<ul style="list-style-type: none"> လေထုအတွင်း ထုတ်လွှတ်မှု ထိန်းချုပ်သည့် စက်ပစ္စည်းများ (Dust Collector) တပ်ဆင်ခြင်း။ ကုန်ကြမ်းပစ္စည်းများ နှင့် ဘိလပ်မြေအိတ်များ သယ်ယူရာတွင် အဖုံးအကာများဖြင့် သယ်ယူခြင်း။
ဆူညံသံ နှင့် တုန်ခါမှု	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း (ကြိတ်ခွဲခြင်း၊ ရောစပ်ခြင်း နှင့် ထုတ်ပိုးခြင်း) 	<ul style="list-style-type: none"> ဘိလပ်မြေ ကြိတ်ခွဲစက်များ၊ ထုတ်လုပ်ခြင်း လုပ်ငန်းစဉ်များမှ ထွက်ရှိလာသော ဆူညံသံ နှင့် တုန်ခါမှု 	<ul style="list-style-type: none"> ဆူညံသံ ထွက်ရှိမှု အဆင့်အား NEQG ပါ သက်မှတ်ချက်များ ထက် ကျော်လွန်မှု မရှိစေရန် ဆောင်ရွက်စေခြင်း။ အသံဆူညံသော နေရာများတွင် လုပ်ကိုင်ရသော အလုပ်သမားများအား နားကြပ်များ နှင့် အခြားသော လုပ်ငန်းခွင် ဘေးအန္တရာယ် ကာကွယ်ရေးပစ္စည်း (PPE) များကို ထောက်ပံ့ပေးခြင်း နှင့် မဖြစ်မနေအသုံးပြုစေခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ
(လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ရုပ်ဝန်းကျင်			
ရေ အရင်းအမြစ်	<ul style="list-style-type: none"> ဝန်ထမ်းအဆောင်များမှ ရေသုံးစွဲမှု မိလ္လာနှင့် စွန့်ပစ်ရေ စွန့်ထုတ်မှု စက်ပစ္စည်း ကိရိယာများမှ မတော်တဆ ယိုမိတ်ခြင်း နှင့် ယိုစိမ့်ခြင်း 	<ul style="list-style-type: none"> ရေသုံးစွဲမှုနှင့် ဆက်စပ်သော သက်ရောက်မှုများ စက်ဆီ/ချောဆီများ ယိုမိတ်ခြင်း ကြောင့် မြေအောက်ရေ အရည်အသွေး ထိခိုက်မှုများ 	<ul style="list-style-type: none"> အလုပ်သမား အဆောင်များမှ ထွက်ရှိသည့် မိလ္လာရေများအား မိလ္လာကန် (မိလ္လာသန့်စင်စနစ်) အတွင်းသို့ ပိုက်များမှ တစ်ဆင့် စွန့်ပစ်ခြင်း။ စက်ဆီ / ချောဆီ နှင့် စက်သုံးဆီများအား စနစ်တကျ ကောင်းမွန်စွာ သိုလှောင်ထားရှိခြင်း။ စက်ပစ္စည်းများအား သက်မှတ်ထားသော (Workshop) နေရာတွင်သာ ဆေးကြောသန့်စင်ခြင်း။
အခိုင်အမဲ စွန့်ပစ်ပစ္စည်း	<ul style="list-style-type: none"> ဝန်ထမ်း အဆောင်များမှ ထွက်ရှိလာသော စွန့်ပစ်ပစ္စည်းများ 	<ul style="list-style-type: none"> လူသုံး အခိုင်အမဲ စွန့်ပစ် အမှိုက်များကြောင့် လူထုကျန်းမာရေး အပေါ် သက်ရောက်မှုများ။ 	<ul style="list-style-type: none"> လူသုံးစွန့်ပစ် အမှိုက်များအား စုဆောင်း၍ သက်မှတ်နေရာသို့ စနစ်တကျစွန့်ပစ်ခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ
(လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
စီဝန်ကျင်			
စီဝန်မျိုးစုံမျိုးကွဲ	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း 	<ul style="list-style-type: none"> လုပ်ကွက်အား ရှင်းလင်းခြင်း လုပ်ငန်းကြောင့် အပင်၊ သတ္တဝါနှင့် နေရင်းဒေသများ အပေါ် ထိခိုက်မှုများ 	<ul style="list-style-type: none"> စက်ရုံဝန်း အတွင် သစ်ပင်ကြီးများအား ထိန်းသိမ်းထားခြင်း။ အစားထိုး သစ်ပင်များပြန်လည် ခိုက်ချိုးခြင်း။ စီမံကိန်း ဧရိယာရှိ ဒေသတွင်း စီဝန်မျိုးစုံ မျိုးကွဲများ ၊ အထိအခိုက်မခံသော နေရင်းဒေသများ ကို သိရှိပြီး ထိန်းသိမ်း စောင့်ရှောက်နိုင်ရန်အတွက် ဝန်ထမ်းများ အား ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး အသိပညာပေး သင်တန်းများ ပြုလုပ် ပေးခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
လူမှုဝန်းကျင်			
လူမှုစီးပွား	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း 	<ul style="list-style-type: none"> အခြားဒေသမှ ပြောင်းရွှေ့လာသော အလုပ်သမားများနှင့် ဒေသခံများ အကြား လူမှုရေးပြဿနာများ ဒေသနေပြည်သူများ အတွက် အလုပ်အကိုင် အခွင့်အလမ်းများ ရှိမည်ဖြစ်ပြီး အလုပ်သမား ခေါ်ယူရာတွင် အငြင်းပွားဖွယ်ရာများ ဖြစ်ပေါ်နိုင်ခြင်း။ CSR အစီအစဉ်အရ အခြေခံ အဆောက်အအုံများ ဖွံ့ဖြိုးတိုးတက်လာနိုင်ခြင်း။ စီမံကိန်းဒေသအတွင်း စီးပွားရေးအခွင့်အလမ်းများတိုးမြှင့်လာခြင်း 	<ul style="list-style-type: none"> အလုပ်သမား ခေါ်ယူခြင်း လုပ်ငန်းစဉ်တွင် ဒေသနေ ပြည်သူများအား လက်တွေ့ကျကျ ဦးစားပေးစီစဉ်ပေးခြင်း။ လုပ်ငန်း မကျွမ်းကျင်သေးသည့် အလုပ်သမားများ အား လုပ်ငန်းခွင်အတွင်း အမျိုးမျိုးသော နည်းပညာများနှင့် စက်များကို မည်သို့ အသုံးချရမည်ကို သင်တန်း ပေးကာ သင်ကြား ပေးမည် ဖြစ်ပါသည်။ လုပ်ငန်းခွင် စည်းကမ်းများ ချမှတ်ခြင်း နှင့် တင်းကြပ်စွာ လိုက်နာမှု ရှိစေရန် ဆောင်ရွက်ခြင်း။ အရေးပေါ် ကျန်းမာရေး ကိစ္စများ အတွက် ဆေးပါး အထောက်အကူ များ ထားရှိခြင်း။ ဆောင်ရွက်ထားရှိသည့် CSR လုပ်ငန်းစဉ်များအား မှတ်တမ်း အထောက်အထားများ ထားရှိခြင်း။
ဒေသတွင်း ယာဉ်အသွားအလာ အပေါ် သက်ရောက်မှု	<ul style="list-style-type: none"> လုပ်ငန်းသုံးယာဉ်များ သွားလာမှု 	<ul style="list-style-type: none"> လုပ်ငန်းသုံးယာဉ်များ တိုးပွားလာမှုကြောင့် ယာဉ်ကြောပိတ်ဆို့ခြင်းနှင့် ယာဉ်မတော်တဆမှုများ 	<ul style="list-style-type: none"> ဒေသတွင်းပြည်သူများ၏ လက်ရှိ သယ်ယူပို့ဆောင်ရေးစနစ်ကို အနှောင့်အယှက်မဖြစ်စေဘဲ သင့်တော်သည့် ယာဉ်အသွားအလာ စီမံခန့်ခွဲမှုစနစ်အား ကျင်းသုံးမည်ဖြစ်ပြီး ဒေသတွင်းလမ်းများ ဖွံ့ဖြိုးမှုကို အကောင်အထည်ဖော်မည်ဖြစ်ပါသည်။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ (လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး			
လုပ်ငန်းခွင် ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း 	<ul style="list-style-type: none"> ဖုန်မှုန့် ဆူညံသံ နှင့်တူနီခါမျှ ရုပ်ပိုင်းဆိုင်ရာ ဘေးအန္တရာယ် စသည့်တို့ကြောင့် လုပ်ငန်းခွင် ကျန်းမာရေး နှင့် ဘေးအန္တရာယ် ကင်းရှင်းရေး အပေါ် သက်ရောက်မှု 	<ul style="list-style-type: none"> ဘေးကင်းရေး၊ လုံခြုံရေး၊ ကျန်းမာရေး အတွက် လိုအပ်သော တစ်ကိုယ်ရေသုံး ကာကွယ်ရေး ပစ္စည်းများ အသုံးပြုစေခြင်း။ ဝန်ထမ်းများ အတွက် ဘေးကင်းရေး၊ လုံခြုံရေး၊ ကျန်းမာရေး အတွက် စွမ်းရည်မြှင့် သင်တန်းများပေးခြင်း။ ဘိလပ်မြေ ထုတ်လုပ်သည့် လုပ်ငန်းတွင်ပါဝင်သည့် ကြိတ်ခွဲ စက်ရုံနှင့် ထုတ်ပို့ရုံများတွင် ဖုန်စုပ်စက် ကိရိယာများ တပ်ဆင်ထားခြင်း။ ထိရောက်မှုရှိသော လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး လမ်းညွှန်ချက်များ ရှိစေခြင်း နှင့် လိုက်နာဆောင်ရွက်စေခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ
(လုပ်ငန်းလည်ပတ်ဆောင်ရွက်ခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး			
စီမံကိန်း အနီးနေ လူထု ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေး	<ul style="list-style-type: none"> ဘိလပ်မြေ ထုတ်လုပ်မှု လုပ်ငန်း စက်ရုံသို့ အခြားဒေသမှ ပြောင်းရွှေ့လာသော အလုပ်သမားများ 	<ul style="list-style-type: none"> ဒေသခံများအပေါ် ဆူညံမှု၊ တုန်ခါမှု နှင့် ဖုန်မှုန့်များကြောင့် ဒေသခံများအပေါ် သက်ရောက်မှုများ အလုပ်သမားများ ရောက်ရှိလာမှုကြောင့် ကျန်းမာရေးဆိုင်ရာ ဝန်ဆောင်မှုများ နှင့် အနီးဝန်းကျင်ရှိ လူထု ကျန်းမာရေး အပေါ် သက်ရောက်မှုများ 	<ul style="list-style-type: none"> စက်ရုံ အနီးဝန်းကျင်တွင် သတိပေး ဆိုင်းဘုတ်များ တပ်ဆင်ခြင်း။ ခုခံအားကျဆင်းမှုရောဂါ၊ ငှက်ဖျားရောဂါ ကဲ့သို့သော ကူးစက်ရောဂါ ဆိုင်ရာ ကျန်းမာရေး လုပ်ငန်းတစ်ရပ် အနေဖြင့် သက်ဆိုင်ရာ ဌာန၊ အဖွဲ့အစည်းများဖြင့် ပူးပေါင်းပါဝင် လုပ်ဆောင်ခြင်း။

ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ နှင့် လျော့ချရေးနည်းလမ်းများ
(လုပ်ငန်းလည်ပတ်သိမ်းခြင်းအဆင့်)

သက်ရောက်မှုများ	စီမံကိန်း ဆောင်ရွက်မှု	ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ	လျော့ပါးစေရေး နည်းလမ်းများ
ရူပငန်းကျင်			
လေအရည်အသွေး	<ul style="list-style-type: none"> ကိရိယာ၊ ပစ္စည်းများနှင့် စွန့်ပစ်ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်း၊ မြေတူးဖော်ခြင်း နှင့် ဖျက်သိမ်းခြင်း လုပ်ငန်းများနှင့် ဆက်စပ်၍ ဖုန်မှုန့် ထွက်ရှိခြင်း 	<ul style="list-style-type: none"> လုပ်ငန်းဖျက်သိမ်းနေစဉ်အတွင်း ထုတ်လွှတ်မှုများသည် တည်ဆောက်ရေးယန္တရားများနှင့် အကြီးစားစက်ပစ္စည်းများ သယ်ယူပို့ဆောင်ရေးယာဉ်များ၏ အိတ်စောမှ ကနဦးထွက်ရှိမည် ဖြစ်ပါသည်။ 	<ul style="list-style-type: none"> တည်ဆောက်ရေးယန္တရားများနှင့် အကြီးစားစက်ပစ္စည်းများအား ပုံမှန်ထိန်းသိမ်းပေးခြင်း ဖုန်ထွက်ရှိသော ပစ္စည်းအစုအဝုံများနှင့် လမ်းများအား ရေဖြန်းခြင်း
ရေထု	<ul style="list-style-type: none"> စွန့်ပစ်အမှိုက်များစွန့်ပစ်ခြင်း 	<ul style="list-style-type: none"> လုပ်ငန်းဖျက်သိမ်းရေးကာလအတွင်းထွက်ရှိသော စွန့်ပစ်အမှိုက်အခဲများသည် စွန့်ပစ်ရန်အတွက် သိမ်းဆည်းထားစဉ် (သို့) မှန်ကန်စွာ မစွန့်ပစ်သည့် အခါတွင် ရေထုအား ညစ်ညမ်းမှု ဖြစ်ပေါ်စေပါသည်။ 	<ul style="list-style-type: none"> အန္တရာယ်ရှိပစ္စည်းများအတွက် ထိန်းချုပ်ရေးနည်းလမ်းများ နှင့် အရည်များ ဖိတ်စင်ခြင်းနှင့် ယိုဖိတ်ခြင်းတို့ကို ကာကွယ်ရန် သို့လှောင်ရေးဧရိယာအတွက် ထိန်းချုပ်ရေးနည်းလမ်းများ ချမှတ်ထားပါမည်။
တုန်ခါမှုနှင့်ဆူညံသံ	<ul style="list-style-type: none"> ကိရိယာ၊ စွန့်ပစ်ပစ္စည်းများ သယ်ယူပို့ဆောင်ခြင်း 	<ul style="list-style-type: none"> ယန္တရားများနှင့်ကိရိယာများ၏ အင်ဂျင်များမှ ထွက်ရှိသော ဆူညံသံနှင့် တုန်ခါမှု 	<ul style="list-style-type: none"> မြို့ဖျက်ရေးအလုပ်များအား နေ့အချိန် မနက် ၈ နာရီမှ ညနေ ၅ နာရီအထိ ဆောင်ရွက်စေရပါမည်။

အနာဂတ်တွင် ဆောင်ရွက်မည့် အစီအစဉ်များ

ယခု လုပ်ငန်းစဉ်မှ ရရှိလာသော အကြံပြုတုန့်ပြန်ချက်များကို ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်းတွင် ထပ်မံပါဝင်မည့် သက်ရောက်မှုလျော့ချရေးအတွက် ထည့်သွင်းစဉ်းစား မည်ဖြစ်ပါသည်။

ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် သက်ရောက်မှုများအား အသေးစိတ် ထပ်မံဆန်းစစ် သွားမည် ဖြစ်ပါသည်။

သက်ရောက်မှု လျော့ချရေး နည်းလမ်းများနှင့် စောင့်ကြပ်ကြည့်ရှုရေး နည်းလမ်းများ နှင့်အတူ ပတ်ဝန်းကျင် စီမံခန့်ခွဲမှု အစီအစဉ် (EMP) အား ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ဖော်ပြသွားမည် ဖြစ်ပါသည်။

ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းအား ပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဦးစီးဌာနသို့ တင်ပြသွားမည် ဖြစ်ပါသည်။

သက်ဆိုင်ရာ ကျေးရွာ အုပ်ချုပ်ရေးမှူးရုံးများနှင့် မြို့နယ် အထွေထွေ အုပ်ချုပ်ရေးမှူးရုံးတွင် မြန်မာဘာသာဖြင့် ရေးသားထားသည့် စီမံကိန်းအကျဉ်းချုပ်ကို ဖတ်ရှုနိုင်ရန် စီစဉ်ပေးသွားပါမည်။



ဆက်သွယ်ရန် လိပ်စာ

စီမံကိန်းဖော်ဆောင်သူ	မြန်မာသံတော်မြတ်ကုမ္ပဏီလီမိတက်
ဆက်သွယ်ရန်ပုဂ္ဂိုလ်	ဦးအောင်ကိုဆက်
ဆက်သွယ်ရန်လိပ်စာ	မြေကွက်အမှတ် ၆ က/ မြေတိုင်းရပ်ကွက် အမှတ်-မလစ်၊ ဒဂုံမြို့သစ်အရှေ့ပိုင်း၊ ရန်ကုန်တိုင်းဒေသကြီး
ဆက်သွယ်ရန်ဖုန်းနံပါတ်	+၉၅၉ ၄၄၄၇၄၅၅၅၇
အီးမေးလ်	thantawmyat@gmail.com
အကြံပေးဆောင်ရွက်သူ	Sustainable Environment Myanmar Co., Ltd.
ဆက်သွယ်ရန်ပုဂ္ဂိုလ်	ဒေါ်နန်းချယ်ရီသိန်း
ဆက်သွယ်ရန်လိပ်စာ	တိုက် (ဘီ)၊ အခန်း (၃၀၆)၊ ဒယ်တာပလာဇာ၊ ရွှေဂုံတိုင်လမ်း
ဆက်သွယ်ရန်ဖုန်းနံပါတ်	+၉၅၉ ၇၇၇၀၀၆၄၁၇
အီးမေးလ်	nancherry@sustainablemyanmar.com

အမေးအဖြေကဏ္ဍ

ကျေးဇူးတင်ပါသည်။

Socio-economic Survey Form

မြန်မာသံတော်မြတ်ကမ္မဏီလီမိတက်၏ တစ်နေ့လျှင် တန်၅၀၀ထုတ်လုပ်နိုင်စွမ်းရှိသော
ဘိလပ်မြေကြိတ်ခွဲစက်ရုံ စီမံကိန်းနှင့်စပ်လျဉ်း၍ လူမှုစီးပွားရေးဆိုင်ရာ အခြေအနေများလေ့လာဆန်းစစ်သည့်
အိမ်ထောင်စုမေးခွန်းလွှာ

A. အိမ်ထောင်စုအမျိုးအစားသတ်မှတ်ခြင်း

A1	ပြည်နယ်/တိုင်းဒေသကြီး _____
A2	မြို့နယ် _____
A3	ရပ်ကွက်/ကျေးရွာအုပ်စု _____
A4	ကျေးရွာ _____
A5	အိမ်ထောင်စုနမူနာအမှတ် _____
A6	တည်နေရာ _____
A7	အိမ်ထောင်ဦးစီးအမည် _____
A8	ဖြေဆိုသူအမည် _____

B. ကွင်းဆင်းလေ့လာသည့်မှတ်တမ်း

B1	မေးမြန်းသည့်ရက်	(ရက်/လ/နှစ်) ____/____/ ၂၀၂၂	
B2	မေးမြန်းသည့်အချိန်	စတင်သည့်အချိန်	_ : _
		ပြီးဆုံးသည့်အချိန်	_ : _
B3	မေးမြန်းသူ	စစ်ဆေးသူ	
	အမည် _____	အမည် _____	

မှတ်ချက်

C. အိမ်ထောင်စုအချက်အလက်

C1	အသက်		
C2	ကျား/မ	ကျား-----၁ မ -----၂	
C3	သင့်အိမ်ထောင်စုတွင် မိသားစုဝင် ဘယ်နှစ်ယောက် ရှိပါသလဲ	မိသားစုဝင်အရေအတွက် _____	
C4	မည်သည့်လူမျိုးဖြစ်ပါသလဲ	ကချင် -----၁ ကယား -----၂ ကရင် -----၃ ချင်း -----၄ ဗမာ -----၅ မွန် -----၆ ရခိုင် -----၇ ရှမ်း -----၈ အခြား -----၉၉	
C5	အသုံးပြုသည့်ဘာသာစကား	ကချင် -----၁ ကယား -----၂ ကရင် -----၃ ချင်း -----၄ ဗမာ -----၅ မွန် -----၆ ရခိုင် -----၇ ရှမ်း -----၈ အခြား -----၉၉	
C6	ကိုးကွယ်သည့်ဘာသာ	ဗုဒ္ဓဘာသာ ----- ၁ ခရစ်ယာန် ----- ၂ အခြား ----- ၉၉	
C7	အိမ်ထောင်ရေးအခြေအနေ	လူပျို/အပျို ----- ၁ အိမ်ထောင်သည် ----- ၂ မုဆိုးဖို/မ ----- ၃ ကွာရှင်းထားသူ ----- ၄	

C8	ပညာရေးအခြေအနေ	ကျောင်းမနေ ----- ၁ ဘုန်းကြီးကျောင်း ----- ၂ မူလတန်း ----- ၃ အလယ်တန်း ----- ၄ အထက်တန်း ----- ၆ တက္ကသိုလ်တက်ဆဲ ----- ၇ ဘွဲ့ရ ----- ၈ အခြား ----- ၉၉	
C9	အလုပ်အကိုင်	စိုက်ပျိုးရေး ----- ၁ မွေးမြူရေး ----- ၂ အသေးစားလုပ်ငန်း ----- ၃ အစိုးရဝန်ထမ်း ----- ၄ ပုဂ္ဂလိကဝန်ထမ်း ----- ၅ ကျွမ်းကျင်လုပ်သား ----- ၆ ကျပန်း ----- ၇ အခြား ----- ၉၉	

အိမ်ထောင်စုစီးပွားရေးအခြေအနေ

D. အိုးအိမ်အခြေအနေ

D1	သင်တို့ မိသားစုနေထိုင်သော အိမ်က ကိုယ်ပိုင်လား။	ကိုယ်ပိုင် ----- ၁ အိမ်ငှား ----- ၂ အခြား ----- ၉၉	If 2 or others> D3
D2	သင်တို့ မိသားစုနေထိုင်သော အိမ်က ကိုယ်ပိုင်ဖြစ်လျှင် မည်ကဲ့သို့အိမ်အမျိုးအစား ဖြစ်ပါသလဲ။	တိုက် ----- ၁ တိုက်ခံ ----- ၂ သစ်သားအိမ် ----- ၃ ဝါးအိမ် ----- ၄ အခြား ----- ၉၉	
D3	ဤရွာတွင်နေထိုင်သည်မှာ မည်မျှကြာပါပြီလဲ။	တစ်နှစ်အောက် ----- ၁ ၂ နှစ်မှ ၅ နှစ်အတွင်း ----- ၂ ၅ နှစ်နှင့် အထက် ----- ၃ ၁၀ နှစ်အထက် (မွေးစမှစ၍) ----- ၄	

E. Agricultural (စိုက်ပျိုးရေး)

E1	မည်သည့်စိုက်ပျိုးမြေအမျိုးအစားကို ပိုင်ဆိုင်ပါသလဲ။	မပိုင်ပါ _____၉၇ လယ် _____ဧက ယာ _____ဧက ကိုင်း _____ဧက နှစ်ရှည် _____ဧက အခြား _____ဧက	If 97> F1
E2	စီးပွားဖြစ် မည်သည့်သီးနှံအမျိုးအစားများကို စိုက်ပျိုးသလဲ?	စပါး-----၁ အခြား-----၉၉	
E3	တစ်ဧက အထွက်နှုန်း	_____	
E4	အိမ်ထောင်စု၏ စိုက်ပျိုးမြေအတွက် ရေသွင်းရန် ရေရရှိပါသလား	ရှိ-----၁ မရှိ-----၂	If 2> F1
E5	ရေသွင်းရန် ရေရရှိနိုင်သည့် အရင်းအမြစ်	ဘုံပိုင်တွင်း-----၁ ကိုယ်ပိုင်တွင်း-----၂ စမ်းရေ-----၃ ရေလှောင်ကန်-----၄ ကန်ရေ-----၅ မြစ်ရေ-----၆ အခြား :-----၉၉	
E6	ရေရရှိမှု အခြေအနေ	လုံလောက်သည်-----၁ မလုံလောက်ပါ-----၂	If 1> E8
E7	မည်သည့်လများတွင် မလုံလောက်သနည်း။	_____	
E8	ရေ အရည်အသွေး	ကောင်း-----၁ သင့်-----၂ မကောင်း-----၃ အခြား :-----၉၉	

F. Livestock (မွေးမြူရေး)

F1	သင့်တို့အိမ်ထောင်စုတွင် တိရစ္ဆာန်များ မွေးမြူထားပါသလား?	ရှိ ----- ၁ မရှိ ----- ၂	If 2 > G1
F2	သင့်တို့အိမ်ထောင်စုတွင် မည်သည့်တိရစ္ဆာန်များ မွေးမြူထားပါသလဲ? (MA)	ကျွဲ ----- ၁ နွား ----- ၂ ဝက် ----- ၃ ကြက် ----- ၄ ဘဲ ----- ၅ လား/မြည်း ----- ၆ အခြား ----- ၉၉	

G. Fishery (ရေလုပ်ငန်း)

G1	သင့်တို့အိမ်ထောင်စုတွင် ရေလုပ်ငန်း လုပ်ကိုင်ပါသလား?	ရှိ ----- ၁ မရှိ ----- ၂	If 2 > H1
G2	ငါးဖမ်းသည့်အခါ မည်သို့ ငါးဖမ်းကြပါသလဲ?	နေ့စဉ် ----- ၁ နေ့တိုင်းနီးပါး ----- ၂ တစ်ခါတစ်ရံ ----- ၃	
G3	မည်သည့်နေရာတွင် အများအားဖြင့် သွားရောက် ငါးဖမ်းကြပါသလဲ?	မြစ် ----- ၁ ချောင်း ----- ၂ ပင်လယ် ----- ၃ အခြား ----- ၉၉	
G4	မည်သည့်ရေလုပ်ငန်းသုံးပစ္စည်းများ ပိုင်ဆိုင်မှုရှိပါသလဲ? (MA)	မပိုင်ပါ ----- ၉၇ စက်တပ်လှေ ----- ၁ ငါးဖမ်းလှေငယ် ----- ၂ ကွန်ပိုက် ----- ၃ တန်းပိုက် ----- ၄ မြှိုး ----- ၅ အခြား ----- ၉၉	
G5	မည်သည့် ငါးအမျိုးအစားများကို ဖမ်းပါသလဲ? (MA)	ငါးလူး ----- ၁ ငါးဖယ် ----- ၂ ငါးရံ ----- ၃ ငါးခုံးမ ----- ၄ တီလားဗီးယား ----- ၅ ငါးခူ ----- ၆ ငါးဖိန်း ----- ၇ ငါးအုံမက် ----- ၈ အခြား ----- ၉၉	

H. Household's Assets (အိမ်ထောင်စု ပိုင်ဆိုင်မှု)

စဉ်	အမျိုးအမည်	အရေအတွက်	
01	ကား		
02	ထွန်စက်		
03	လှေ		
04	လျှပ်စစ်ပန်ကာ		
05	အိမ်ဖုန်း		
06	ဟန်ဖုန်း		
07	အပ်ချုပ်စက်		
08	မီးစက်		
09	တီဗွီ		
10	ဒီဗွီဒီ		
11	ရေခဲသေတ္တာ		
12	အဝတ်လျှော်စက်		
13	မော်တော်ဆိုင်ကယ်		
14	စက်ဘီး		
15	အခြား		

I. Household's income and Expenditure (အိမ်ထောင်စု ဝင်ငွေ နှင့်သုံးစရိတ်)

11	တစ်လ ပျမ်းမျှဝင်ငွေ	_____	
12	တစ်လ ပျမ်းမျှအသုံးစရိတ်	_____	

J. Credit Facility (ချေးငွေပံ့ပိုးမှု)

J1	လွန်ခဲ့သည့် ၁၂လအတွင်း ငွေချေးထားသည့် အကြွေး ရှိပါသလား။	ရှိ-----၁ မရှိ-----၂	If 2>K1
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J2	ရွာတွင်းရှိအကြွေးယူသည့်နေရာ	ဘဏ်----- ၁ ငွေစုငွေချေး----- ၂ မိသားစု----- ၃ မိတ်ဆွေ/ အိမ်နီးချင်း----- ၄ အခြား----- ၉၉	
J3	အဘယ့်ကြောင့်ငွေချေးရသနည်း။	လယ်ယာမြေပြင်ဆင်ရန်----- ၁ စီးပွားရေးပြုလုပ်ရန်----- ၂ လက်ထပ်ပွဲပြုလုပ်ရန်----- ၃ အိမ်ပြင်ဆင်ရန်----- ၄ ကျန်းမာရေး----- ၅ ပညာရေး----- ၆ အခြား----- ၉၉	
J4	အတိုးနှုန်းမည်မျှနည်း။	တစ်လလျှင်----- ရာခိုင်နှုန်း အတိုးမပေးရပါ----- ၉၇	

K. Energy Usage (စွမ်းအင် သုံးစွဲမှု)

K1	သင့်အိမ်ထောင်စုတွင် အလင်းရောင်အတွက် မည်သည့် စွမ်းအင်ကို အဓိက သုံးပြုပါသလဲ?	အစိုးရလျှပ်စစ်မီး ----- ၁ ပုဂ္ဂလိက လျှပ်စစ်မီး ----- ၂ ကျေးရွာပိုင် မီးစက် ----- ၃ ကိုယ်ပိုင်မီးစက် ----- ၄ ဖယောင်းတိုင် ----- ၅ ရေနံဆီ ----- ၆ ဆိုလာ ----- ၇ ဘတ္တရီ ----- ၈ အခြား ----- ၉၉	
K2	သင့်အိမ်ထောင်စုတွင် ချက်ပြုတ်ရန်အတွက် မည်သည့် စွမ်းအင်ကို အဓိက သုံးပြုပါသလဲ?	အစိုးရလျှပ်စစ်မီး ----- ၁ ပုဂ္ဂလိက လျှပ်စစ်မီး ----- ၂ ကျေးရွာပိုင် မီးစက် ----- ၃ ကိုယ်ပိုင်မီးစက် ----- ၄ ထင်း ----- ၅ မီးသွေး ----- ၆ လောင်စာတောင့် ----- ၇ အခြား ----- ၉၉	

L. Water (ရေအရင်းအမြစ်)

L1	အဓိက သုံးရေကို ဘယ်ကနေ ရရှိပါသလဲ (SA)	ရေတွင်း----- ၁ ရေလှောင်ကန်----- ၂ မိုးရေ----- ၃ မြစ်/ချောင်းရေ----- ၄ စိမ့်စမ်းရေ----- ၅ အခြား(ဖော်ပြပါ)----- ၉၉	
L2	အဓိက သောက်ရေကို ဘယ်ကနေ ရရှိပါသလဲ (SA)	ရေတွင်း----- ၁ ရေလှောင်ကန်----- ၂ မိုးရေ----- ၃ မြစ်/ချောင်းရေ----- ၄ စိမ့်စမ်းရေ----- ၅ အခြား(ဖော်ပြပါ)----- ၉၉	
L3	သောက်ရေကိုပြုပြင်သန့်စင်ပါသလား။	ပြုပြင်ပါသည်။----- ၁ မပြုပြင်ပါ။----- ၂	If 2>L5
L4	သောက်ရေကို ဘယ်လိုပြုပြင် သန့်စင်ပါသလဲ။	ကျိုချက်----- ၁ ကလိုရင်း/ရေသန့်ဆေး/ ကျောက်ချဉ်သုံးခြင်း-- ၂ ရေစစ်ဖြင့် စစ်ခြင်း----- ၃ အနည်ထိုင်ခြင်း----- ၄ အခြား(ဖော်ပြပါ)----- ၉၉	
L5	သင်တို့မိသားစုသည် အိမ်သာအသုံးပြုပါသလား။	သုံးပါသည်----- ၁ မသုံးပါ ----- ၂	If 2>L7
L6	သင်တို့ မိသားစု အဓိက အသုံးပြုသော အိမ်သာက ဘယ်လို အမျိုးအစားလဲ။	ယင်လုံအိမ်သာ----- ၁ ယင်မလုံ(တွင်းဖွင့်)----- ၂ ရေပေါ်အိမ်သာ ----- ၃ အခြား(ဖော်ပြပါ)----- ၉၉	
L7	အမှိုက်များကို မည်သို့ စွန့်ပစ်ပါသလဲ? (MA)	မီးရှို့ခြင်း----- ၁ မြေမြုပ်ခြင်း----- ၂ အိမ်နားရှိလမ်းပေါ်ကိုပစ်ခြင်း----- ၃ မြစ်/ချောင်းထဲသို့ပစ်ခြင်း----- ၄ ကျေးရွာထဲရှိ စုပေါင်းအမှိုက်စွန့်ပစ်တဲ့နေရာ-- ၅ အခြား(ဖော်ပြပါ)----- ၉၉	

M. Transportation/ Movement Information (လမ်းပန်းဆက်သွယ်ရေး အချက်အလက်များ)

M1	ရွာတွင် မည်သည့် သယ်ယူပို့ဆောင်ရေးသည် အဓိက ဖြစ်သနည်း။	ကား ----- ၁ ထော်လာဂျီ ----- ၂ ဆိုင်ကယ် ----- ၃ စက်ဘီး ----- ၄	
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		ခြေလျင် ----- ၅ လှေ ----- ၆ အခြား(ဖော်ပြပါ) ----- ၉၉	
M2	လမ်းအမျိုးအစား	မြေသားလမ်း ----- ၁ ကျောက်ခင်လမ်း ----- ၂ ကတ္တရာလမ်း ----- ၃ ကွန်ကရစ်လမ်း ----- ၄ အခြား(ဖော်ပြပါ) ----- ၉၉	
M3	လမ်းပန်းဆက်သွယ်ရေး အခြေအနေသည်	ကောင်း ----- ၁ အသင့်အတင့် ----- ၂ မကောင်းပါ ----- ၃	

N. Health (ကျန်းမာရေးဆိုင်ရာအချက်အလက်များ)

N1	သင့်ရပ်ကွက်/ ကျေးရွာတွင် ဆေးခန်း (သို့) ကျန်းမာရေးဌာန ရှိပါသလား?	ရှိ ----- ၁ မရှိ ----- ၂	If 2>N3
N2	ဘယ်လိုအမျိုးအစားတွေရှိပါသလဲ? (MA)	ဆေးရုံ ----- ၁ တိုက်နယ်ဆေးရုံ ----- ၂ ဆေးခန်း ----- ၃ ကျန်းမာရေးဌာန ----- ၄ ကျန်းမာရေးဌာနခွဲ ----- ၅ အခြား ----- ၉၉ မသိဘူး ----- ၈၇	
N3	လွန်ခဲ့သော ခြောက်လအတွင်း သင့်မိသားစုတွင် ရောဂါဖြစ်ပွားခဲ့ပါသလား။	ဖြစ်သည် ----- ၁ မဖြစ်ပါ ----- ၂	If 2 > N8
N4	ဖြစ်ပွားခဲ့ပါက မည့်သည့်ရောဂါများဖြစ်ပွားခဲ့ပါသနည်း။	ငှက်ဖျား ----- ၁ ဝမ်းရောဂါ ----- ၂ အသည်းရောင်အသားဝါ ----- ၃ တုပ်ကွေး ----- ၄ အရေပြားရောဂါ ----- ၅ သွေးတိုးရောဂါ ----- ၆ ကင်ဆာ ----- ၇ နှလုံးရောဂါ ----- ၈ အသက်ရှူလမ်းကြောင်းဆိုင်ရာရောဂါ ----- ၉ အသည်းရောဂါ ----- ၁၀	

		အခြား-----၉၉	
N5	ဖြစ်ခဲ့တယ်ဆိုလျှင် ဘာကြောင့်လဲ? (OP)	မသိပါ-----၉၇ -----	
N6	နေမကောင်းဖြစ်လျှင် အများအားဖြင့် ဘယ်ကို သွားလဲ?	ဆေးရုံ----- ၁ တိုက်နယ်ဆေးရုံ----- ၂ ဆေးခန်း----- ၃ ကျန်းမာရေးဌာန----- ၄ ကျန်းမာရေးဌာနခွဲ----- ၅ အခြား----- ၉၉	
N7	နေမကောင်းဖြစ်လျှင် အများအားဖြင့် မည်သူ့ ထံ သို့ သွားရောက် ကုသပါသလဲ?	ဆရာဝန် ----- ၁ သူနာပြု ----- ၂ သားဖွားဆရာမ ----- ၃ အရုံသားဖွား ----- ၄ ကျန်းမာရေးမှူး ----- ၅ တိုင်းရင်းဆေးဆရာ ----- ၆ အပ်ပုန်း(ရမ်းကု) ----- ၇ အခြား-----၉၉	
N8	သင်သည့် အောက်ပါတို့ကို သုံးစွဲပါသလား?	ဆေးလိပ်သောက်ခြင်း----- ၁ ဆေးပါသောကွမ်းယာစားခြင်း/ဆေးငုံခြင်း-- ၂ ဓနိရည်/ထန်းရည်/ဘီယာ/အရက်သောက် သုံးခြင်း----- ၃ စိတ်ကြွဆေး (ဥပမာ-ယာဘ၊ ဆေးခြောက်)-၄ မသုံးစွဲပါ----- ၅	

O. Opinions upon the project (စီမံကိန်းပေါ်သဘောထားအမြင်များ)

O1	သည်စီမံကိန်း အကြောင်းကိုသိပါသလား။	သိပါသည်-----၁ မသိပါ-----၂	If 2>03
O2	ယခုစီမံကိန်းကို မည်ကဲ့သို့ သင်သိရှိပါသနည်း။	အစိုးရအဖွဲ့အစည်း ----- ၁ အစိုးရမဟုတ်သော အဖွဲ့အစည်းများ ----- ၂ ရပ်ရွာခေါင်းဆောင် ----- ၃ သတင်းစာ၊ ရေဒီယို၊ ရုပ်မြင်သံကြား ----- ၄ မိသားစုဝင် ----- ၅ မိတ်ဆွေ၊ သူငယ်ချင်း ----- ၆ အခြား----- ၉၉	
O3	ဒီစီမံကိန်း လုပ်တာကို ကျေနပ်မှု ရှိပါသလား။	ရှိ----- ၁ မရှိ----- ၂	If 2>05

04	ကျေနပ်မှုရှိပါက (OP)
05	ကျေနပ်မှုမရှိပါက (OP)
06	စီမံကိန်းအပေါ်တွင်အကြံပြုချက် (OP)
07	ဒေသဖွံ့ဖြိုးမှုအတွက်လိုအပ်ချက် (OP)

Thank you!

Appendix - 4

Lab Result



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ
 ဝန်ကြီးဌာန
 ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနှင့် သစ်တောရေးရာ ဝန်ကြီးဌာန
 (မြေအသုံးချရေးဌာနခွဲ)
 ရန်ကင်းမြို့

စာအမှတ်- ၁၁-၂(၁)/၂၀၂၁-၂၀၂၂ (၁၁၇)
 နေ့စွဲ- ၂၀၂၂ ခုနှစ်၊ ဩဂုတ်လ (၁၄) ရက်

အကြောင်းအရာ။ မြေကုမ္ပဏီ ဓာတ်ခွဲအဖြေများပေးပို့ခြင်း။
 ရည်ညွှန်းချက်။ Sustainable Environment Myanmar Co., Ltd မှ (4.8.2022)
 နေ့တွင် ပေးပို့သော နမူနာ။
 အထက်အကြောင်းအရာပါ ကိစ္စနှင့်ပတ်သက်၍ ရည်ညွှန်းစာဖြင့် ပေးပို့
 လာသော မြေကုမ္ပဏီ (၂ - မျိုး) အား ဓာတ်ခွဲစစ်ဆေးပြီးဖြစ်၍ ဓာတ်ခွဲတွေ့ရှိချက်
 အဖြေများကို ဤစာနှင့် အတူ ပူးတွဲပေးပို့ပါသည်။

Muhammad
 (ဒေါက်တာသန္တာညီ)
 ဒုတိယညွှန်ကြားရေးမှူး
 ဓာတ်ခွဲခန်းတာဝန်ခံ
 မြေအသုံးချရေးဌာနခွဲ

မိတ္တူကို-
 - ရုံးလက်ခံ



DEPARTMENT OF AGRICULTURE (LAND USE)

SOIL ANALYTICAL DATA SHEET

Sustainable Environment Myanmar Co., Ltd (4.8.2022)

Division - ရန်ကင်းတိုင်းဒေသကြီး

Sheet No. 1

Township - အရှေ့ဒဂုံမြို့နယ်

Sr No. S 1-2 /2022

Sr No.	Sample	pH	
		Soil:Water 1:2.5	pH
1	S-1	6.75	Near Neutral
2	S-2	7.35	Slightly Alkaline

Shan
(ဒေါက်တာသန္တာ)
ဒုတိယညွှန်ကြားရေးမှူး
ဓာတ်ခွဲခန်းတာဝန်ခံ
မြေအသုံးချရေးဌာနခွဲ
၆



DEPARTMENT OF AGRICULTURE (LAND-USE)

SOIL ANALYTICAL DATA SHEET

Sustainable Environment Myanmar Co., Ltd (4.8.2022)

Division - ရန်ကင်းတိုင်းဒေသကြီး

Township - အရှေ့ဒဂုံမြို့နယ်

Sheet No. 2

Sr No. 51-2 /2022

Sr No.	Sample	Zinc (Zn) ppm	Copper (Cu) ppm	Iron (Fe) ppm	Manganese (Mn) ppm	Lead (Pb) ppm	Cadmium (Cd) ppm	Nickel (Ni) ppm	Chromium (Cr) ppm	Mercury (Hg) ppm
1	S-1	Not Detected	Not Detected	22.21	11.04	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
2	S-2	Not Detected	Not Detected	11.59	5.43	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

မှတ်ချက် - မြေဆီလွှာအရင်းအမြစ်များအရ Iron (Fe) နှင့် Manganese (Mn) ပါဝင်မှုသည် MPL (Maximum permissible Limit) ထက် မကျော်လွန်ပါ။

[Ref : ASEAN Soil&Nutrient Management Guidline (2017); Berson(2014);IRRI (2013)]

Mend

(ခေါက်တာသန္တာညီ)
ဒုတိယညွှန်ကြားရေးမှူး
ဓာတ်ခွဲခန်းတာဝန်ခံ
မြေအသုံးချရေးဌာနမှူး

Report No. : 22520-00087
 Job Ref. : 5000153
 Date : 10-Aug-22
 Page 1 of 1

TEST REPORT

CLIENT NAME : SUSTAINABLE ENVIRONMENT MYANMAR CO.,LTD
 ADDRESS : B-306. DELTA PLAZA, SHWEGONDAING ROAD,
 BAHAN TOWNSHIP, YANGON

The following sample was submitted and identified by client and analysed at our lab with the following results.

Sample Description : Than Taw Myat Cement Grinding Plant and Concrete Batching Plant, East Dagon
 (Surface Water - 1)
 Sampling Date & Time : 02-Aug-22 & 09:41
 Sample Condition : Glass and Plastic Bottle at Ambient Temperature
 Lab Code : W-089
 Date Sample(s) Received : 04-Aug-22
 Testing Period : 04-Aug-22 TO 09-Aug-22

No.	Test Items	Methods	Results	Units
1	Nitrogen(Kjeldahl)	APHA 4500-NorgB (Macro Kjeldahl Method) (23rd Edition) (In-house Method)	<1	mg/L
2	Phosphorus	APHA 4500-P E (Ascorbic Acid Method) (23rd Edition)	0.077	mg/L
3	Oil & Grease	APHA 5520 B (Partition-Gravimetric Method) (23rd Edition)	<5	mg/L

***** End of Report *****

M.C.Z

SGS (Myanmar) Limited

MCS
 (Thin Thin Maw)
 Laboratory Manager

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REPORTED RESULTS REFER TO SUBMITTED SAMPLE(S) ONLY. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF COMPANY.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only.

WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

TEST REPORT

CLIENT NAME : SUSTAINABLE ENVIRONMENT MYANMAR CO.,LTD
 ADDRESS : B-306. DELTA PLAZA, SHWEGONDAING ROAD,
 BAHAN TOWNSHIP, YANGON


The following sample was submitted and identified by client and analysed at our lab with the following results.

Sample Description : Than Taw Myat Cement Grinding Plant and Concrete Batching Plant, East Dagon
 (Surface Water - 2)
 Sampling Date & Time : 02-Aug-22 & 11:15
 Sample Condition : Glass and Plastic Bottle at Ambient Temperature
 Lab Code : W-090
 Date Sample(s) Received : 04-Aug-22
 Testing Period : 04-Aug-22 TO 09-Aug-22

No.	Test Items	Methods	Results	Units
1	Nitrogen(Kjeldahl)	APHA 4500-NorgB (Macro Kjeldahl Method) (23rd Edition) (In-house Method)	<1	mg/L
2	Phosphorus	APHA 4500-P E (Ascorbic Acid Method) (23rd Edition)	0.018	mg/L
3	Oil & Grease	APHA 5520 B (Partition-Gravimetric Method) (23rd Edition)	<5	mg/L

***** End of Report *****

M.C.Z

SGS (Myanmar) Limited

 (Thin Thin Maw)
 Laboratory Manager

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Report No. : 22520-00089
 Job Ref. : 5000153
 Date : 10-Aug-22
 Page 1 of 1

TEST REPORT

CLIENT NAME : SUSTAINABLE ENVIRONMENT MYANMAR CO.,LTD
ADDRESS : B-306. DELTA PLAZA, SHWEGONDAING ROAD,
 BAHAN TOWNSHIP, YANGON

The following sample was submitted and identified by client and analysed at our lab with the following results.

Sample Description : Than Taw Myat Cement Grinding Plant, East Dagon (Ground Water - 1)
Sampling Date & Time : 02-Aug-22 & 11:38
Sample Condition : Glass and Plastic Bottle at Ambient Temperature
Lab Code : W-091
Date Sample(s) Received : 04-Aug-22
Testing Period : 04-Aug-22 TO 09-Aug-22

No.	Test Items	Methods	Results	Units
1	Nitrogen(Kjeldahl)	APHA 4500-NorgB (Macro Kjeldahl Method) (23rd Edition) (In-house Method)	<1	mg/L
2	Phosphorus	APHA 4500-P E (Ascorbic Acid Method) (23rd Edition)	0.171	mg/L
3	Oil & Grease	APHA 5520 B (Partition-Gravimetric Method) (23rd Edition)	<5	mg/L

***** End of Report *****

M.C.Z

SGS (Myanmar) Limited

MCS
 (Thin Thin Maw)
 Laboratory Manager

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REPORTED RESULTS REFER TO SUBMITTED SAMPLE(S) ONLY. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF COMPANY. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only.

WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

ANALYSIS REPORT

PROJECT : CEMENT GRINDING PLANT
CUSTOMER NAME : SUSTAINABLE ENVIRONMENT MYANMAR COMPANY LIMITED
ADDRESS : B306, DELTA PLAZA, SHWEGONDAING ROAD, BAHAN TOWNSHIP, YANGON, MYANMAR.
SAMPLING SOURCE : SW-1
SAMPLE TYPE : SURFACE WATER **SUBMITTAL/ RECEIPT NO.** : 1/8/2022
SAMPLING DATE : AUGUST 2, 2022 **RECEIVED DATE** : AUGUST 3, 2022
SAMPLING TIME : 09:41 HOUR **ANALYSIS DATE** : AUGUST 3 – AUGUST 11, 2022
SAMPLING METHOD : GRAB **ANALYSIS NO.** : LAA082/2022
SAMPLING BY : RU **REPORT NO.** : L00082/2022

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT
			SW-1
			LAA082/2022
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM: 5210 B AND 4500-O G)	2.2
CHMEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM : 5520 C)	56
TOTAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE TUBE FERMENTATION TECHNIQUE (SM: 9221 B)	2,300
SAMPLE CONDITION			
WATER'S COLOUR/TURBID			LIGHT BROWN/ TURBID
SEDIMENT			BROWN

SM : APHA/AWWA/WEF STANDARD METHOD FOR THE EXAMINATION OF WATER AND WASTEWATER, 23RD EDITION, 2017

Toe Toe Hlaing

(MS TOE TOE HLAING)

GENERAL MANAGER

DATE AUGUST 15, 2022

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

ANALYSIS REPORT

PROJECT : CEMENT GRINDING PLANT
CUSTOMER NAME : SUSTAINABLE ENVIRONMENT MYANMAR COMPANY LIMITED
ADDRESS : B306, DELTA PLAZA, SHWEGONDAING ROAD, BAHAN TOWNSHIP, YANGON, MYANMAR.
SAMPLING SOURCE : SW-2
SAMPLE TYPE : SURFACE WATER **SUBMITTAL/ RECEIPT NO.** : 1/8/2022
SAMPLING DATE : AUGUST 2, 2022 **RECEIVED DATE** : AUGUST 3, 2022
SAMPLING TIME : 11:15 HOUR **ANALYSIS DATE** : AUGUST 3 – AUGUST 11, 2022
SAMPLING METHOD : GRAB **ANALYSIS NO.** : LAA082/2022
SAMPLING BY : RU **REPORT NO.** : L00082/2022

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT
			SW-2
			LAA082/2022
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM : 5210 B AND 4500-O G)	1.7
CHMEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM : 5520 C)	54
TOTAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE TUBE FERMENTATION TECHNIQUE (SM : 9221 B)	2,300
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			LIGHT GREY / TURBID GREY

SM : APHA/AWWA/WEF STANDARD METHOD FOR THE EXAMINATION OF WATER AND WASTEWATER, 23RD EDITION, 2017

Toe Toe Hlaing

(MS TOE TOE HLAING)

GENERAL MANAGER

DATE AUGUST 15, 2022

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- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

ANALYSIS REPORT

PROJECT : CEMENT GRINDING PLANT
CUSTOMER NAME : SUSTAINABLE ENVIRONMENT MYANMAR COMPANY LIMITED
ADDRESS : B306, DELTA PLAZA, SHWEGONDAING ROAD, BAHAN TOWNSHIP, YANGON, MYANMAR.
SAMPLING SOURCE : GW-1
SAMPLE TYPE : GROUNDWATER **SUBMITTAL/ RECEIPT NO.** : 1/8/2022
SAMPLING DATE : AUGUST 2, 2022 **RECEIVED DATE** : AUGUST 3, 2022
SAMPLING TIME : 11:38 HOUR **ANALYSIS DATE** : AUGUST 3 – AUGUST 11, 2022
SAMPLING METHOD : GRAB **ANALYSIS NO.** : LAA084/2022
SAMPLING BY : RU **REPORT NO.** : L00084/2022

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT
			GW-1
			LAA084/2022
BIOCHEMICAL OXYGEN DEMAND	mg/L	MEMBRANE ELECTRODE METHOD (SM : 5210 B AND 4500-O G)	1.2
CHMEMICAL OXYGEN DEMAND	mg/L	CLOSED REFLUX, TITRIMETRIC METHOD (SM : 5520 C)	34
TOTAL COLIFORM BACTERIA	MPN/100 mL	MULTIPLE TUBE FERMENTATION TECHNIQUE (SM : 9221 B)	170
SAMPLE CONDITION			
WATER'S COLOUR/TURBID SEDIMENT			LIGHT GREY / LITTLE TURBID GREY

SM : APHA/AWWA/WEF STANDARD METHOD FOR THE EXAMINATION OF WATER AND WASTEWATER, 23RD EDITION, 2017

Toe Toe Hlaing

(MS TOE TOE HLAING)

GENERAL MANAGER

DATE AUGUST 15, 2022

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- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

Laboratory Technical Consultant: U Saw Christopher Maung
 B.Sc Engg: (Civil), Dip S.E(Delft) Lecturer of YIT (Retd). Consultant (Y.C.D.C), LWSE 001.
 Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
 Issue Date - 01-12-2012
 Effective Date - 01-12-2012
 Issue No - 1.0/Page 1 of 1

W0822 122

WATER QUALITY TEST RESULTS FORM

Client Sustainable Environment Myanmar Co.,Ltd.
 Nature of Water GW - 1 (Than Taw Myat Cement Grinding Plant)
 Location East Dagon Township
 Date and Time of collection 2.8.2022 (11:38 AM)
 Date and Time of arrival at Laboratory 4.8.2022
 Date and Time of commencing examination 5.8.2022
 Date and Time of completing 7.8.2022

Results of Water Analysis

**WHO Drinking Water Guideline
(Geneva - 1993)**

pH		6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	mg/l as CaCO ₃	
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium Chloride (as NaCL)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Total Suspended Solids	12 mg/l	
Total Dissolved Solids	mg/l	1000 mg/l
Manganese	mg/l	0.05 mg/l
Phosphate	mg/l	
Phenolphthalein Acidity	mg/l	
Methyl Orange Acidity	mg/l	
Salinity	ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
 Signature: Zaw Hein Oo
 Name: B.Sc (Chemistry)
Sr.Chemist

Approved by
 Signature: [Signature]
 Name: B.E (Civil) 1980
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.) ISO Tech Laboratory

Laboratory Technical Consultant: U Saw Christopher Maung
 B.Sc Engg: (Civil), Dip S.E(Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
 Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
 Issue Date - 01-12-2012
 Effective Date - 01-12-2012
 Issue No - 1.0/Page 1 of 1

W0822 124

WATER QUALITY TEST RESULTS FORM

Client Sustainable Environment Myanmar Co.,Ltd.
 Nature of Water SW - 1 (Than Taw Myat Cement Grinding Plant), Concrete Batching Plant
 Location East Dagon Township
 Date and Time of collection 2.8.2022 (9:41 AM)
 Date and Time of arrival at Laboratory 4.8.2022
 Date and Time of commencing examination 5.8.2022
 Date and Time of completing 7.8.2022

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

pH		6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	mg/l as CaCO ₃	
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium Chloride (as NaCL)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Total Suspended Solids	46 mg/l	
Total Dissolved Solids	mg/l	1000 mg/l
Manganese	mg/l	0.05 mg/l
Phosphate	mg/l	
Phenolphthalein Acidity	mg/l	
Methyl Orange Acidity	mg/l	
Salinity	ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
 Signature: Zaw Hein Oo
 Name: B.Sc (Chemistry)
Sr.Chemist

Approved by
 Signature: [Signature]
 Name: B.E (Civil) 1980
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd) ISO Tech Laboratory

Laboratory Technical Consultant: U Saw Christopher Maung
 B.Sc Engg: (Civil), Dip S.E(Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
 Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

WTL-RE-001
 Issue Date - 01-12-2012
 Effective Date - 01-12-2012
 Issue No - 1.0/Page 1 of 1

W0822 125

WATER QUALITY TEST RESULTS FORM

Client Sustainable Environment Myanmar Co.,Ltd.
 Nature of Water SW - 2 (Than Taw Myat Cement Grinding Plant), Concrete Batching Plant
 Location East Dagon Township
 Date and Time of collection 2.8.2022 (11:15 AM)
 Date and Time of arrival at Laboratory 4.8.2022
 Date and Time of commencing examination 5.8.2022
 Date and Time of completing 7.8.2022

Results of Water Analysis

**WHO Drinking Water Guideline
(Geneva - 1993)**

pH		6.5 - 8.5
Colour (True)	TCU	15 TCU
Turbidity	NTU	5 NTU
Conductivity	micro S/cm	
Total Hardness	mg/l as CaCO ₃	500 mg/l as CaCO ₃
Calcium Hardness	mg/l as CaCO ₃	
Magnesium Hardness	mg/l as CaCO ₃	
Total Alkalinity	mg/l as CaCO ₃	
Phenolphthalein Alkalinity	mg/l as CaCO ₃	
Carbonate (CaCO ₃)	mg/l as CaCO ₃	
Bicarbonate (HCO ₃)	mg/l as CaCO ₃	
Iron	mg/l	0.3 mg/l
Chloride (as CL)	mg/l	250 mg/l
Sodium Chloride (as NaCL)	mg/l	
Sulphate (as SO ₄)	mg/l	500 mg/l
Total Solids	mg/l	1500 mg/l
Total Suspended Solids	28 mg/l	
Total Dissolved Solids	mg/l	1000 mg/l
Manganese	mg/l	0.05 mg/l
Phosphate	mg/l	
Phenolphthalein Acidity	mg/l	
Methyl Orange Acidity	mg/l	
Salinity	ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
 Signature: Zaw Hein Oo
 Name: B.Sc (Chemistry)
 Sr.Chemist

Approved by
 Signature: [Signature]
 Name: B.E (Civil) 1980
 Technical Officer
 ISO TECH Laboratory

(a division of WEG Co.,Ltd.) **ISO Tech Laboratory**