LEAD SMELTING AND REFINING PROCESS

ENVIRONMENTAL IMPACT ASSESSMENT

(EIA Report)

YANGON METAL INDUSTRY CO., LTD.

FEBRUARY 2023

ENVIRO-KLEAN TECHNO-ASSOCIATES CO., LTD.

EKTA
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DECLARATIONS

Commitment - EIA Experts

Enviro-Klean Techno-Associates Co., Ltd. (EKTA) prepared the Environmental Impact Assessment (EIA) report to undertake the project title of "***Lead Smelting and Refining Project"*** of Yangon Metal Industry (YMI) Co., Ltd. in compliance with EIA Procedure and relevant laws/rules and formally submitted to the Environmental Conservation Department (ECD) for final approval. This document has been undertaken the Environmental and Social Impact Assessment, Environmental and Social Management, Monitoring Plan, and the Health Management Plans. The views, conclusions and recommendations in the document are to be taken to represent the views of technical perspectives on environmental and social impacts and not overwhelming by the client.

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

- To our knowledge, all information contained in this report is accurate and a truthful representation of all findings as relating to the project, and;

- The EIA Scoping Report has been prepared in strict compliance with all applicable national and international laws, rules regulations and procedure in force.

We also consulted the project proponent in EIA investigation processes to consider all biological, physical, social, economic, health, cultural and visual components of the study area, together with all pertinent legal matters relating to the environment, people and communities (including land use, resources use, and ownership of and rights to land and other resources) that may be affected by the Project during all Project phases including pre-construction, construction, operation, decommissioning, closure, and post-closure, and shall identify and assess all Adverse Impacts, risks, Cumulative Impacts and Residual Impacts for environment, social and, if relevant, health that potentially could arise from the Project.

(Kyaw Nyein Aye) Date: 02 -08-2020
Managing Director
Enviro-Klean Techno-Associates Co., Ltd. (EKTA)

CONSULTANT'S DECLARATIONS

We, as a third party consultant firm, conducted environmental impact assessment and support the professional implementation services to prepare the EIA Report for the Yangon Metal Industry Company Limited and in compliance with EIA Procedure and other relevant laws/rules and formally submitted to the Environmental Conservation Department (ECD) for final approval.

We do state that we intend to advance the environmental management and monitoring activities during our services provision within our sphere of influence, and make a clear statement of this commitment to our stakeholders and general public.

With this endorsement, we express We shall undertake all the activities of our consultation services confirming that:

a) the accuracy and completeness of the environmental impact assessment;

b) the Environmental Monitoring Report has been prepared in strict compliance with applicable laws including this Procedure and with the terms of references (ToR); and

c) the Project will at all times comply fully with the commitments, mitigation measures, and plans in the Environmental Monitoring Report.

Sincerely,

Dr. Lai Lai Win (TCR No. 0148)
Date: 16.2.2023

ENDORSEMENT LETTER

Endorsement – Yangon Metal Industry Co., Ltd.

We hereby submit our Environmental Impact Assessment (EIA) Scoping Report with the Summary in both Myanmar and English languages for the approval of the report, ***"Lead Smelting and Refining Project"*** confirming that by Article 62 of EIA procedure (2015):

a) the accuracy and completeness of the EIA;

b) that the EIA has been prepared in strict compliance with applicable laws including this Procedure and with the ToR for the EIA; and

c) that the Project will at all times comply fully with the commitments, mitigation measures, and plans in the EIA Report.

And we do commit that we shall:

i) arrange for appropriate public consultation through all phases of the EIA process as required by Articles 34, 50, and 61, and

ii) disclose to the public in a timely manner all relevant project-related information in accordance with this procedure except that which may relate to National Security concerns as informed by the Ministry.

Based on the Scoping, the Project Proponent shall prepare the ToR for the EIA investigations in accordance with applicable guidelines issued or adopted by the Ministry.

We do commit to undertake that;

a) timely disclosure of all relevant information about the proposed Project and its likely Adverse Impacts to the public and civil society through local and national media, the website(s) of the Project or Project Proponent, at public places such as libraries and community halls, and on sign boards at the Project site visible to the public, and provide appropriate and timely explanations in press conferences and media interviews;

b) arrange consultation meetings at national, regional, state, Nay Pyi Taw Union Territory and local levels, with PAPs, authorities, community-based organizations and civil society;

c) consultations with concerned government organizations including the Ministry, the concerned sector ministry, regional government authorities and others; and

d) field visits for the Ministry and concerned government organizations.

U Tint Myo Naing Managing Director
Yangon Metal Industry (YMI)
Myaung Ta Kar Industrial Zone,
Hmawby Township, Yangon, Myanmar

YANGON METAL INDUSTRY CO., LTD.

LIST OF ABBREVIATION

CEMP	= Construction Environmental Management Plan
CSR	= Corporate Social Responsibility
EMP	= Environmental Management Plan
EIA	= Environmental Impact Assessment
ECD	= Environmental Conservation Department
ECC	= Environmental Compliance Certificate
EMoP	= Environmental Monitoring Plan
GIIP	= Good International Industry Practices
HSE	= Health, Safety and Environment
IEE	= Initial Environmental Examination
IFC	= International Finance Corporation
NEQG	= National Environmental Quality (Emission) Guidelines
MIC	= Myanmar Investment Commission
MOECAF	= Ministry of Environmental Conservation and Forestry
MONREC	= Ministry of Natural Resources and Environmental Conservation
OEMP	= Operation Environmental Management Plan
OSHA	= Occupational Safety and Health Administration
PPE	= Personal Protective Equipment
WHO	= Word Health Organization

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EXECUTIVE SUMMARY

This EIA (Environmental Impact Assessment) scoping report is prepared by Enviro-Klean Techno-Associates Co., Ltd. (EKTA) for "Lead Smelting and Refining Project" which is implemented by Yangon Metal Industry Co., Ltd. (YMI). The Scoping of EIA report will include the services for investigations of the existing environments, environmental and social impacts assessment whichever positive and/or negatives, environmental management and monitoring plans and the public consultations.

Lead Smelting: The secondary production of Lead begins with the recovery of old scrap from worn-out, damaged, or obsolete products and with new scrap. The chief source of old scrap is Lead-acid batteries; other sources include cable coverings, pipe, sheet, and other Lead-bearing metals. The smelting of Lead involves several elements that are required to reduce the various forms of Lead (mainly Lead oxide and Lead sulphates) into metallic Lead.

1) Introduction

Lead Smelting and Refinery Project: Yangon Metal Industry Co., Ltd. exclusively engaged in establishing Lead Smelting and Refinery Project located in Myaung Ta Kar Industrial Zone, Hmawbi, Yangon.

1.1) Contact Detail of YMI

Contact Person:	U Kyaw Htoo
Position:	Project Manager, YMI
Phone (Office):	+95-098600157
Mobile:	+ 95-09254043654
Email:	admin@yangonmetal.com
Website:	https://www.yangonmetal.com
Address:	No. (261/262/263), Parrami Road, Myaung Ta Kar Industrial Zone, Hmawby Township

1.2) EIA Consultant

Enviro-Klean Techno-Associates Co., Ltd is a multi-disciplined environmental organization that provides a broad spectrum of services to local clients with a lot of experiences in providing technical aids to conflict and natural disaster suffered area in recently periods, since 2008.

Contact Details of EIA Consultant

Contact Person:	Dr. Lai Lai Win
Position:	Co-Leader of Project Management
Telephone (Office):	+95-01503447
Fax (Office):	+95-1503447
Mobile:	+959797241421
E-mail:	services01.ekta@gmail.com, lailaiwyn@gmail.com
Address:	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar.

EIA Consultant Team Leader

Name	Consultant Registration No.	Organization	Contact Address	Field
Dr. Kyaw Nyein Aye	00053 (See in Appendix)	Enviro-Kiean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +9595108613 Email: services01.ekta@gmail.com	Chemical Hazard Management, Project Management
Dr. Lai Lai Win	00148 (See in Appendix)	Freelance Consultant	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +959797241421 Email: lailaiwyn@gmail.com	Co-Leader in Project in Management

EIA Consultant Members

Name	Consultant Registration No.	Organization	Contact Address	Field	Name
Dr. Lai Lai Win	00148 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +959797241421 Email: lailaiwyn@gmail.com	Project Management, Wastewater Management, Biodiversity and Impact Assessment, Reporting,
U Thura Kyaw	00053 (See in Appendix)	Project Manager	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Chemical Hazard and Risk Assessment
Daw Khin Mar Khaing	00053 (See in Appendix)	Hazard Assessment Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Biohazards Assessment and Socioeconomic survey

U Nay Naing	00053 (See in Appendix)	Legal Consultant No. 13814 (တရားလွှတ်တော်ရှေ့နေ)	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Legal Framework
U Kaung Htet Swam	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Physical Baselines (Air, Water, Noise & Vibration, soil, etc.) and Environmental Health and Safety Management
Daw June Khine Wint Tun	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Waste management and Public Health and Safety Management
U Kyaw Swar Myint Thein	00248 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		GIS and Geologist (Hydrology and Disaster)
U Myatthu Kyaw	00233 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Air Pollution Control
Dr. Khin Nyein Aye	SaMa-17031	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Health Expert

2) Legal Framework

YMI will strictly follow the following national applicable laws along with the attached articles, rules and regulations in details.

1) The Myanmar Citizen Investment Law (2012)
2) The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law, 1994
3) The Forest Law, 1992
4) The Private Industrial Enterprise Law, 1990
5) The Factories Act (2016)
6) The Export and Import Law (2012)
7) Industrial Use Explosive Substances (2018)

8) The Public Health Law (1972)
9) Prevention and Control of Communicable Disease Law (1995)
10) The Control of Smoking and Consumption of Tobacco Product Law (2006)
11) Labour Organization Law (2011)
12) Settlement of Labour Dispute Law, 2012
13) Employment and Skill Development Law (2013)
14) The Minimum Wages Law (2013)
15) The Leaves and Holiday Act (1951)
16) The Law Amending the Workmen' Compensation Act, 1923 (Amended in 2005)
17) The Payment of Wages Law (2016)
18) Myanmar Insurance Law
19) Occupational Safety and Health Law, 2018
20) The Conservation of Water Resources and Rivers Law 2006
21) The Biodiversity and Conservation of Protected Areas Law (2018)
22) National Environmental Policy (1994)
23) The Environmental Conservation Law (2012)
24) Environmental Conservation Rules (2014)
25) The EIA Procedure (2015)
26) Environmental and Social Impact Assessment Guidelines (2014)
27) National Environmental Quality (Emission) Guidelines (2015)
28) The Prevention of Hazard from Chemical and Related Substances Law (2013)
29) The Highways Law, 2015
30) The Motor Vehicle Law (2015) and Rules (1987)
31) Social Security Law
32) Protection the Rights of Ethnic Nationalities Law (2015)
33) Natural Disaster Management Law 2013
34) The Fire Force Law (2015)
35) The Fire Service Law (2015)
36) The Consumer Protection Law (2014)
37) IFC EHS Guidelines (2007)

3) Project Description and Alternatives

YMI is constructed 2014-2018 and started producing lead products in 2018 afterward. The lead smelting and refinery factory can be seen as shown in Figure 1.

Table 1: Building Area of the Project Site

No	Description	Remark
1.	Storage Building	Completed
2.	Process Building	Completed
3.	Packing & Transfer Building	Completed
4.	Process Building	Completed
5.	Finished Storage Building	Completed
6.	Ingot Storage Building	Completed
7.	Roll Shop	Completed
8	Canteen	Completed
9	Packaging Area	Completed

Source: YMI Co., Ltd.

Figure 1: Lead Smelting and Refinery Factory, Yangon Metal Industry Co., Ltd

3.1) Machinery Layout

The machinery includes Breaking Machine (B 75 Breakers), Rotary Furnace, Dust Line, Alloy and Refined Kettles, Chain Scrap Conveyor, Rotary Smelter Kettle, Lead Refining & Ingot Molding, Casting Machine and Packing Machine, etc. The machinery layout is described in Figure 2.

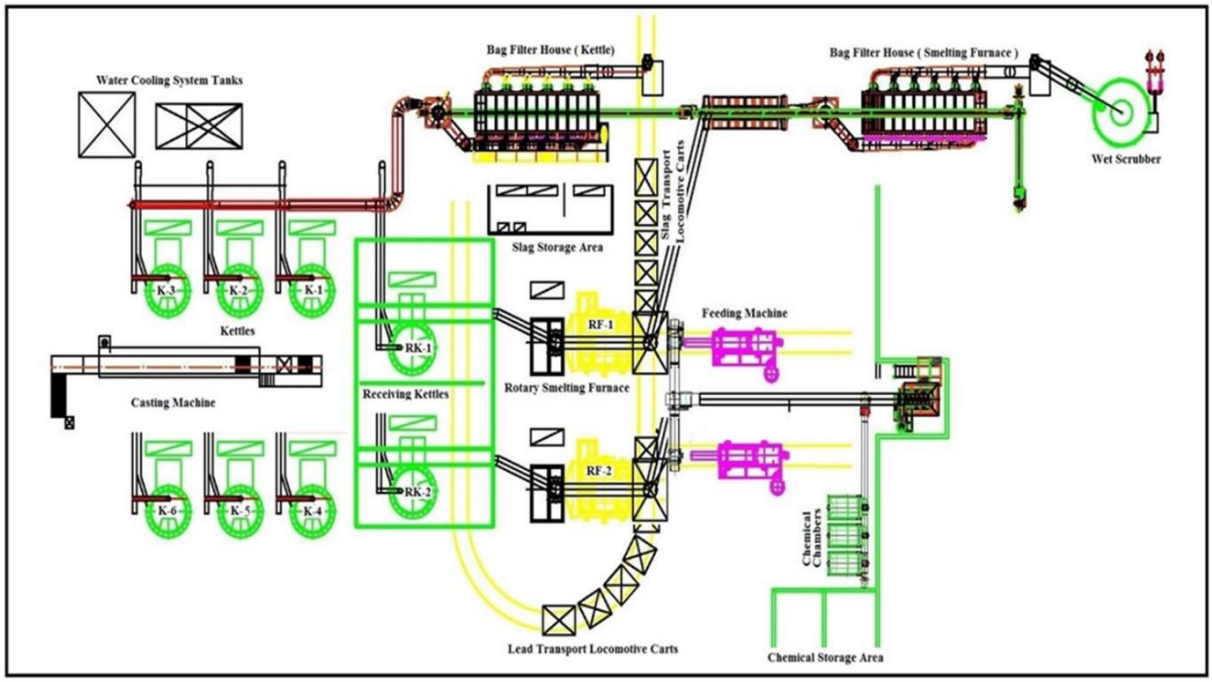


Figure 2: Machinery Layout Plan

3.2) Raw Materials and Production Process

The raw materials include used batteries and batteries related substances as shown in Figure.

Figure 3: Raw Materials (Heavy Metallic, Fine Metallic and Lead Plates)

The final products are alloy lead and refined lead materials, and the production process is in Figure 4.

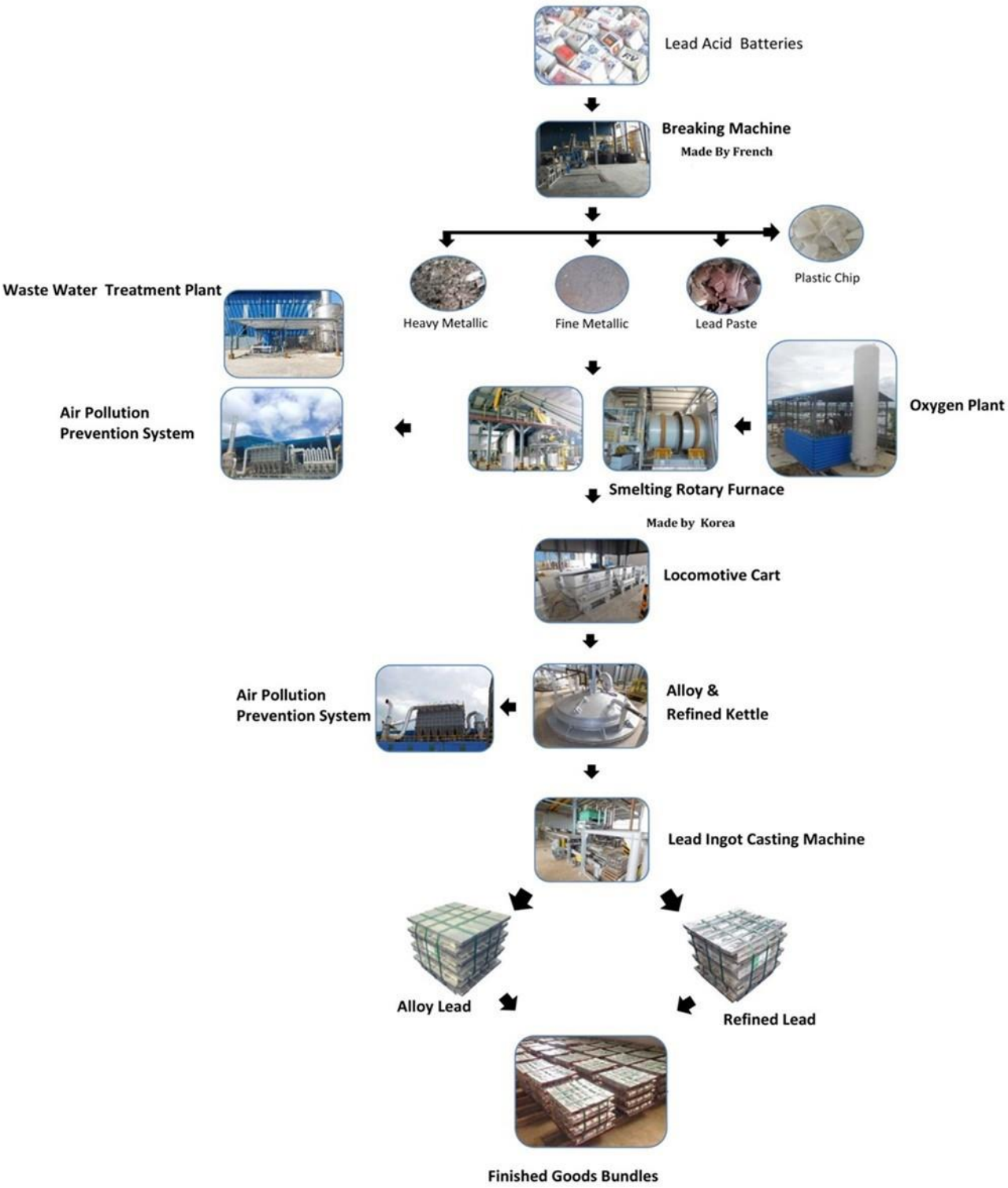


Figure 4: Production Process Flow Diagram of YMI

Figure 5: Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot

3.3) Water Supply and Electricity

The available water for industrial and domestic use is underground water from tube well and approximately 600 m^3/day of water consumption for both purposes.

Power supply mainly depends on the natural gas with the amount of approximately 5.5 mmcf/month. However, an emergency generator is used on project site not to occur electricity outage. Fire hose and fire extinguishers are placed around the factory to prevent fire.

3.4) Project Alternative

The various site investigations have been done, and the current location was chosen as the most suitable project site for infrastructure developments and site specific for this type of industry.

YMI Co., Ltd. is under operation with the existing infrastructure. Therefore, Zero alternative option is considered based on the current situation as follows.

Table 2: Study of Zero Alternative Option

Aspect	Conditions without the Project	Conditions with the Project
Economic Consideration	• Creation of job opportunity would not be feasible without this project. • Limited economic development with the current situations	• Job opportunities would be more developed for local residents. • Increase in local economy to a certain extent
Environment and Social Considerations	• No occurrence of natural, environmental and social impact by the project • Randomly arranged project leads to environmental and social complexity and segmentations.	• Construction and operation of Project will cause impact on natural & social environment. • Well planned project leads to the development of effective solutions for environmental and social issues. • Raising the status of living environment of local residential area by the projects.

Source: EIA Study Team

As an outcome of the Zero option study, the project implementation would be a better alternative approach with the development of designed quality, environmental and OHS management systems. However, the appropriate countermeasures would be required to reduce the negative impact.

Table 3: Comparison for Project Site Alternatives

Approach	YMI Factory Site	Other Locations in Yangon
Environment and Social Aspect	• Accessible location for sanitary landfill sites and spacious factory area for more environmentally friendly operation • Proximity for minimization of vehicle-related impact such as vehicular emission, traffic and use of fuel • Programmed CSR by Yangon Metal Industry • Regular and specific training program for employees will improve the workforce's additional/new skills	• Close to residential areas hence, making impact to nearby local residence • Occurrence of increased vehicle-related impacts, such as emission, traffic and use of fuel
Economy Aspect	• Cheaper labor cost due to the local employment but may require additional cost for capacity building (e.g. on the-job training). • More raw materials use and waste output due to inexperienced workforce.	• More overhead charges and capital costs in land lease.

Source: EIA Study Team

From the above comparison, this project contributes to more positive impact on social, environmental and economic points.

4) Existing Environmental and Social Conditions

The proposed project area is within Myaung Ta Kar Industrial Zone in Hmawby township and which is located around by the other industrial production nearby.

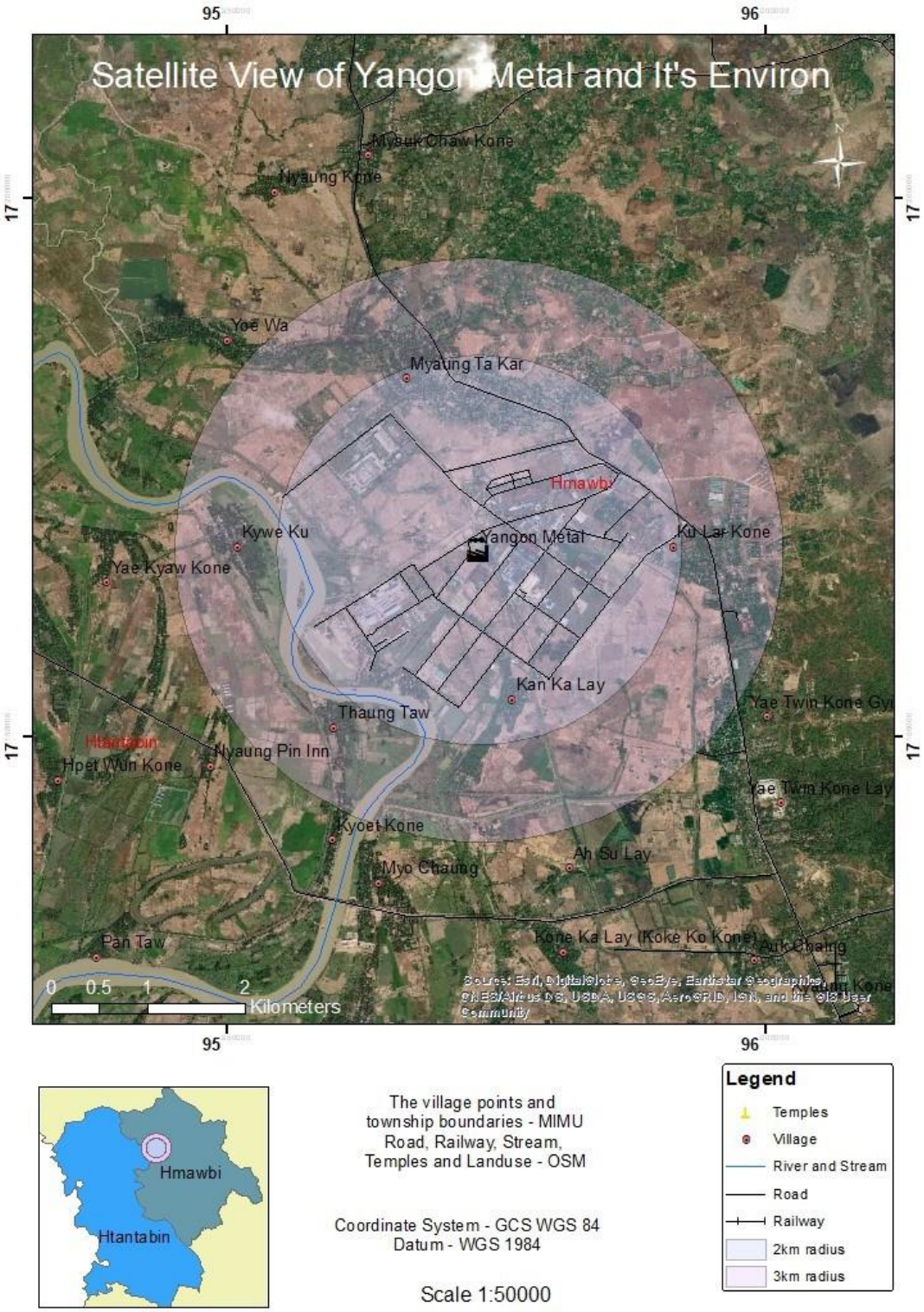


Figure 6: Satellite View of YMI Project Area

4.1) Physical Components

The physical environment is comprised of:

(1) Atmospheric Environment

(2) Water Environment

(3) Soil

(4) Noise & Vibration and

(5) Traffic Flow

4.1.1) Air Quality

The target air quality was monitored as per table and the emission results air parameters are described as in the table. The air monitoring points, near YMI factory in Myaung Ta Kar industrial zone as the source and Dhama Yayaye monastery as the receptor are set up for air quality survey.

Survey/Sample Type	Sample ID	Location
Air Quality	AQ-1	Lat: 17°10'1.18"N Long: 95°58'26.11"E
Air Quality	AQ-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E

Table 4: Emission Results for Air Quality

Parameter	Averaging Period	Unit	AQ-1	AQ-2	NEQG Guideline
Carbon Monoxide	1-hour	ppb	1.37	0.00007	-
Carbon Dioxide	8-hour daily maximum	ppm	240.14	153.05	5000
Particulate Matter PM10[a]	1-year 24-hour	µg/m^3	 27.28	 23.66	20 50
Particulate Matter PM2.5[b]	1-year 24-hour	µg/m^3	 18.70	 12.42	10 25
Sulfur Dioxide	24-hour 10-minute	ppb	1.73	2.96	20 500
Nitrox Oxide	1-year 1-hour	ppb	 23.83	 42.92	40 200
Volatile Organic Compounds	24-hour	ppm	0.44	1.57	20
Ozone	24-hour	ppm	0.0029	0.0009	100
Relative Humidity	24-hour	%	40.42	45.61	-

According to air quality results, no emission exceeds the standard and the project shall keep monitoring the target air parameters for clean air environment around the project site.

4.1.2) Noise and Vibration

Daytime and Night-time noise level and the vibration level measurement will be measured in dB near the production machines operation site and at the entrance boundary of the YMI factory. The results will be compared to be compliance with NEQG (2015).

The noise and vibration monitoring points, near YMI factory in Myaung Ta Kar industrial zone as the source and Dhama Yayaye monastery as the receptor are set up for noise and vibration quality survey.

Survey/Sample Type	Sample ID	Location
Noise and Vibration	NV-1 (source)	Lat: 17°10'2.09"N Long: 95°58'24.92"E
Noise and Vibration	NV-2 (receptor)	Lat: 17°09'19.138"N Long: 95°58'43.386"E

Table 5: A-Weighted Loudness Equivalent Noise Level at Myaung Ta Kar Industrial Zone

Noise Level	Day-time (dBA)	Night-time (dBA)
Q-1	65.43	59.51
Q-2	59.26	55.72
NEQG standard (Residential and institutional area)	55	45
WHO for specific environment, Industrial, commercial, shopping and traffic areas, indoors and outdoors	70	

(Source: EKTA Survey Team, May 2021)

The noise level in the project region will be monitored as the industrial level because the project is located in the industrial zone. The residential (i.e. monastery area) Q-2 is exceed the standards in origin and there will not have a stress from the project activities.

Table 6: Daily Average Vibration Level Results at Myaung Ta Kar Industrial Zone (Source: EKTA Survey Team, May 2021)

Survey Result	Daytime (dBA)	Nighttime (dBA)
Q-1	45	36
Q-2	42	31
Standard (Standard)[II]	65-70	60-65

[II] : Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating (Japanese road side guideline standard).

The project region is nearby the Yangon-Pyay highway road and the vibration level is a little bit high but not exceed the standard.

4.1.3) Surface and Groundwater Quality

Water sampling locations points for groundwater and surface water are shown as in the table.

Sample ID	Sample Type	Coordinate
GW-1	Ground Water	Lat: 17°10'7.17"N Long: 95°58'23.64"E
SW-1	Surface Water	Lat: 17°10'7.68"N Long: 95°58'24.30"E

SW-2	Industrial Effluent	Lat: 17°10'0.45"N Long: 95°58'26.88"E

Table 7: Analysis Results of Surface Water Quality

No	Parameter	Unit	SW-1	SW-2	NEQG **Guideline***
1	Total Suspended Solids	mg/l	148	30	50
2	Zinc	mg/l	Nil	Nil	0.2
3	Temperature	°C	25.0	25.0	<3[b]
4	pH	S.U[a]	8.2	8.4	6-9
5	Lead	mg/l	Nil	Nil	0.1
6	Fluoride	mg/l	1.0	0.8	5
7	Copper	mg/l	Nil	Nil	0.1
8	Chemical oxygen demand	mg/l	64	32	50
9	Arsenic	mg/l	Nil	Nil	0.05
10	Aluminum	mg/l	<0.01	0.03	0.2
11	Cadmium	mg/l	0.02	0.3	0.05
12	Nickel	mg/l	0.6	0.4	0.1
13	Mercury	mg/l	< 0.1	< 0.1	0.01

***National Environmental Quality Guideline**

[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

The surface water in the region was analyzed for 13 parameters in total and it was originally high in TSS, BOD, and Nickle. The industrial effluent is also high Nickle and mercury concentration. However, the project will not dispose the wastewater to the water bodies through recycling water in the industrial process and evaporation process which was set up in the factory.

4.1.4) Groundwater Quality

The target groundwater quality parameters are described as in the following tables.

Table 8: Analysis Parameters for Groundwater Quality

No	Parameter	Unit	Result	WHO Drinking Water Guideline*
1	pH	S.U [a]	7.4	6.5 – 8.5
2	Turbidity	NTU	32	5
3	Total Dissolved Solid	mg/l	325	1000
4	Nitrate	mg/l	0.3	50
5	Chloride	mg/l	Nil	250
6	Iron	mg/l	1.60	0.3
7	Manganese	mg/l	5.7	0.05

8	Hardness ($CaCO_3$)	mg/l	36	500
9	Sulfate	mg/l	120	500
10	Arsenic	mg/l	Nil	0.01

***WHO Drinking Water Guideline (Geneva-1993)**

[a] Standard unit

The groundwater in the project site is highly turbidity, ironic and manganese water which is not suitable for drinking.

4.1.5) Soil Quality

The soil sample is collected from the bare soil near the area where the raw materials, batteries are temporarily stored. The analysis results are presented in table below.

Table 9: Analysis Parameters for Soil Quality

No.	Parameter	Unit	Result
1	pH	S.U [a]	9.76
2	Moisture	%	15.75
3	Lead	ppm	1692.00
4	Zinc	ppm	4.46
5	Mercury	ppm	0.03
6	Copper	ppm	8.59
7	Iron	ppm	24.22
8	Chromium	ppm	0.004

[a] Standard unit

Soil is collected from the raw material store area, and it was highly contaminated with lead.

4.1.6) Traffic Survey

The study area, Yangon Metal Industry (YMI) is located at the central part of Industrial Zone. It is assessed with car road and 1.6 km far from Highway. Hlaing River is located 2 km west of YMI and the nearest jetty is located at its bank. Traffic Survey (hereinafter as TS) was conducted in two locations, TS-1 and TS-2 presented in figure 4.3-4. This TS aims to collect data of travel behavior patterns and characteristics for a short-term period (12-hour) to record the hourly variation of traffic flow at the designated locations.

Table 10: Summary of Traffic Survey

No. of Traffic Survey Points	▪ 2 points (TS-1 and TS-2)
Location of TS-1	▪ Access road to YMI. ▪ Located near the main entrance gate of the YMI, at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E. ▪ Vehicles passing the TS point in both directions (inbound and outbound) were counted. ▪ Number of Lane: 2 (1 lane for each direction)
Location of TS-2	▪ Ygn-Pyay road. ▪ Located on the Yangon – Pyay Highway Road, at the Latitude of 17°10'27.66"N and Longitude of 95°59'12.36"E. ▪ Vehicles travelling in both directions of Yangon – Pyay Highway Road were counted.

	▪ Number of Lane: 4 (2 lanes for each direction)
Method	▪ Manual counting method was applied with the structured TS form. The TS form was designed based on the classified vehicles on hourly basis. Tally counters were utilized to record the volume of traffic volume in the study area. A total of 4 enumerators were used in this study.

Figure 7: Traffic Survey Locations

Table 11: Vehicle Class

No.	Class*	Description
1	Motorcycle	All type of vehicles with two wheels
2	3-Wheeler	All type of vehicles with 3-wheels (eg. Chinese Made 3-wheelers used for transport of goods and materials)
3	Car	Car, Pick-up, Van
4	Bus	YBS Buses (Such as Line number 37, 90), Highway express and all types of buses
5	Truck (< 3 tons)	Truck with loading capacity of less than 3 tons
6	Truck (> 3 tons)	Truck with loading capacity of higher than 3 tons
7	Truck (Trailer)	Truck with trailer

***Vehicle classes are adapted from the Yangon – Pyay Highway toll plaza**

4.1.7) Vehicle Composition

The total volume of vehicles at TS-1 appeared at 1267. Among them, Motorcycle accounted for the highest proportion at 83% while the classes made up very few percentages, from 1 to 5 % and no bus appeared during the time of the survey. The detailed information of the TS-1 is presented in Table 12 and Figure 8.

At TS-2, the total traffic volume during the study period was 6825 which is higher than TS-1. The motorcycle was found the highest contribution to the total traffic volume at 40%, 3-wheeler and Trailer Truck appeared the lowest at 2% respectively. The other classes, Cars, Bus and Truck (both <3 tons and > 3 tons) ranged from 12 to 21 % of total volume. The detailed information of the TS-2 is presented Figure 9.

Table 12: Vehicle Composition at Studied Locations

TS-1					**TS-2**				
Class	**In**	**Out**	**Total**	**Total (%)**	**Class**	**Pyay-Ygn**	**Ygn-Pyay**	**Total**	**Total (%)**
Motorcycle	535	517	1052	83	Motorcycle	1349	1376	2725	40
3-wheeler	20	25	45	4	3-wheeler	54	61	115	2
Cars	37	30	67	5	Cars	669	796	1465	21
Bus	0	0	0	0	Bus	246	263	509	7
Truck (< 3 tons)	24	14	38	3	Truck (< 3 tons)	488	548	1036	15
Truck (> 3 tons)	22	26	48	4	Truck (> 3 tons)	415	414	829	12
Truck (Trailer)	11	6	17	1	Truck (Trailer)	75	71	146	2
Total	**649**	**618**	**1267**	**100**		**3296**	**3529**	**6825**	**100**

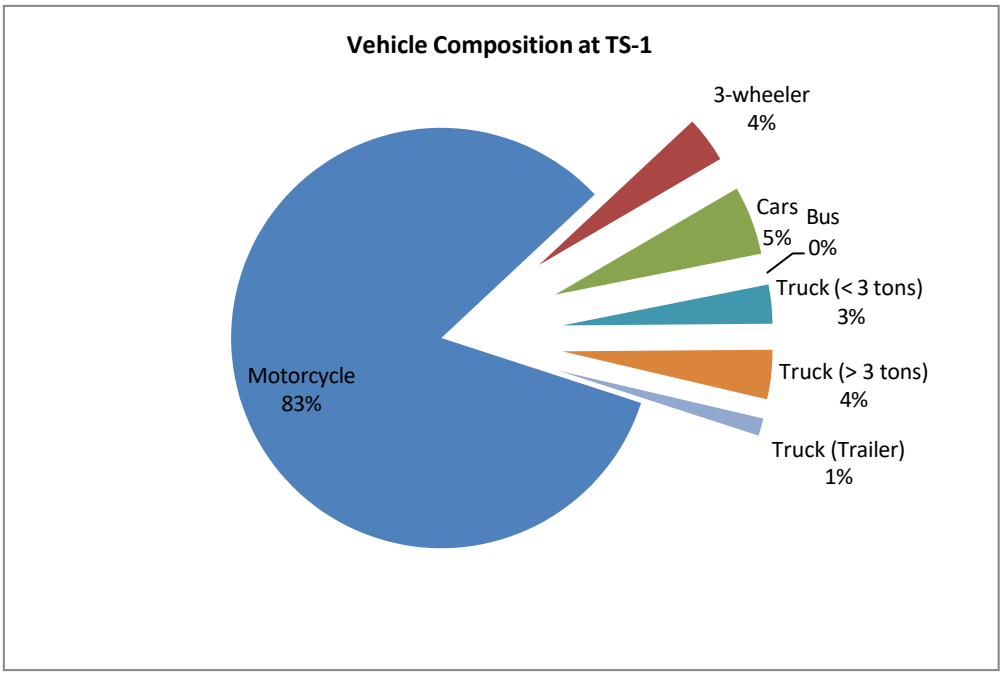


Figure 8: Vehicle Composition at TS-1

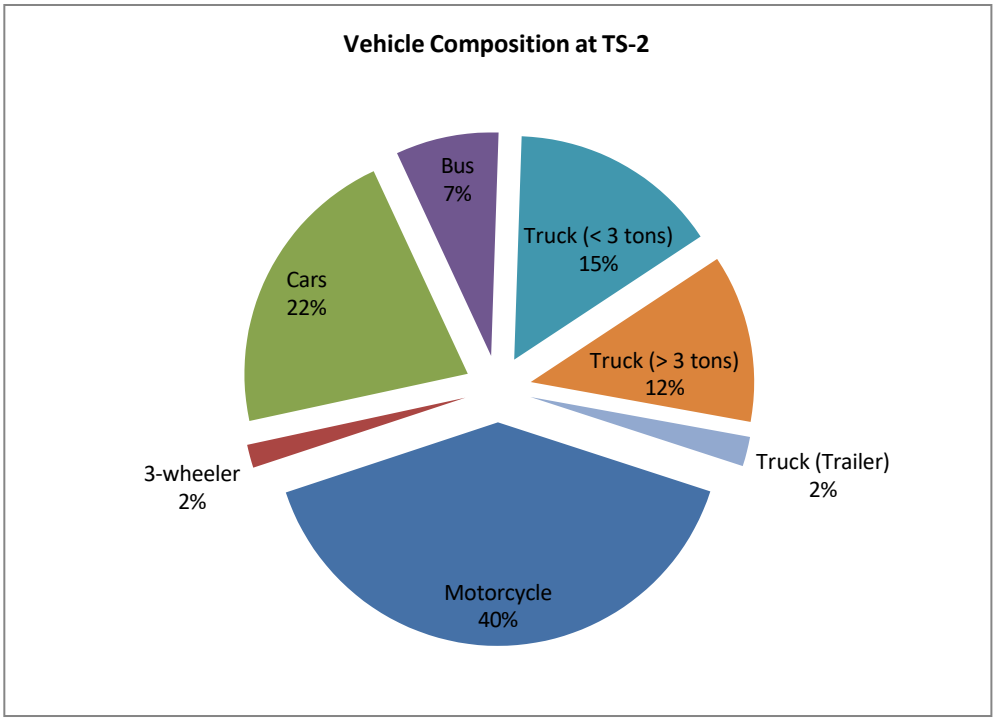


Figure 9: Vehicle composition at TS-2

4.3) Ecological Components

The survey area is planned to make circular surrounding area around the factory within 1 km vicinity area.

Table 13: Representative GPS Points of the Study Sites

No.	Latitude	Longitude
1	17°10'07.0"N	95°58'23.0"E
2	17°10'00.0"N	95°58'23.17"E
3	17°09' 59.62"N	95°58'27.74"E
4	17°10' 05.08"N	95°58'25.95"E

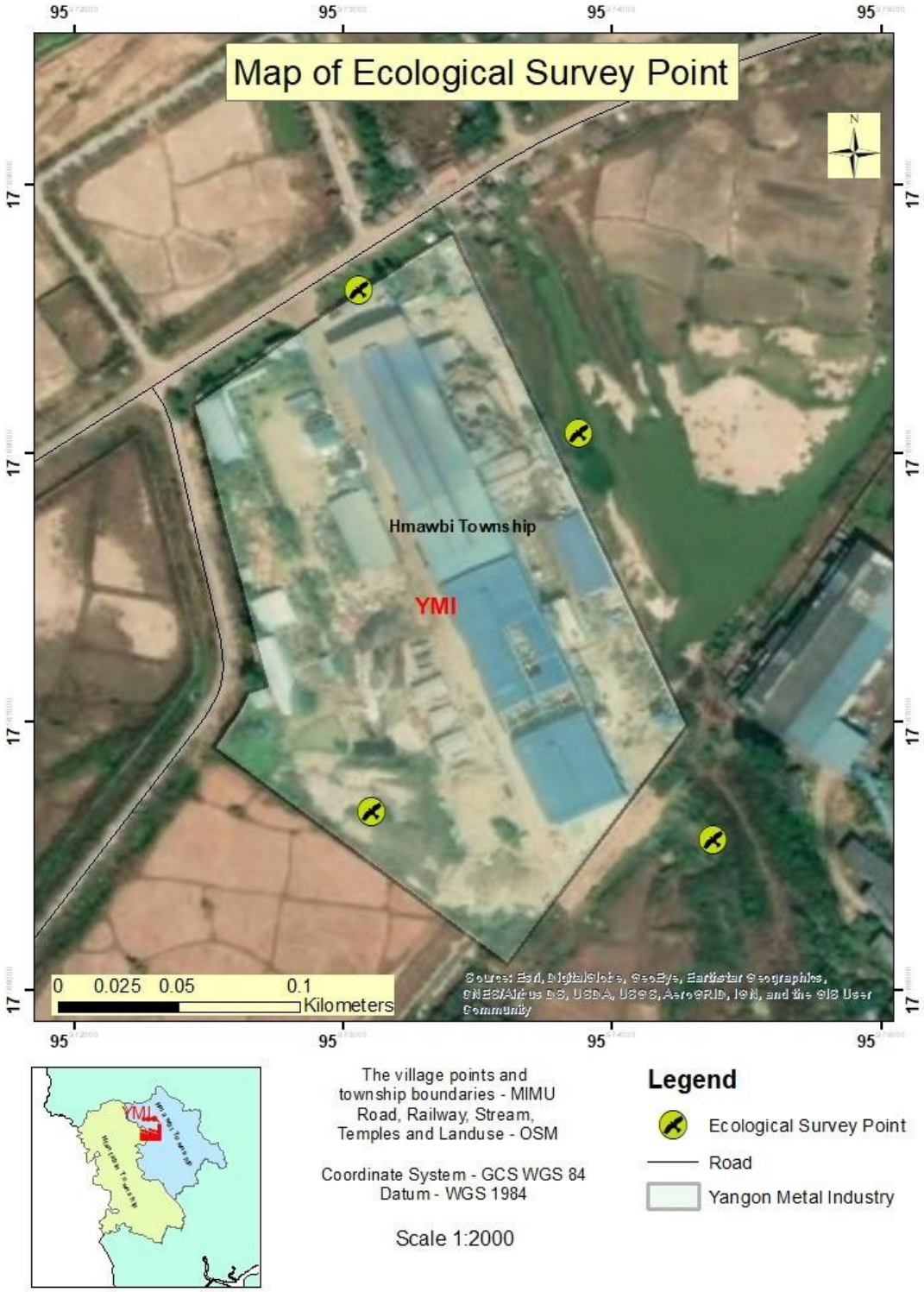


Figure 10: Ecological Survey Area

4.3.1) Floral Components

All the plants and trees including grasses, bushes and other floral related species will be collected and identified with the IUCN reference list to signify the impacts to floral components by project activities.

Here, no impact is expected on the floral services by project activities because the project is already in operation stage.

Investigation Results of Floral Species

Within Project area, there are two major habitat types were observed Plantation and Shrub Land. The present survey identified and recorded 40 plants species within the area. Based on IUCN Globally Threatened Red List (2019-2), there was no threatened species in this area. Plantation plant was Thayet (*Mangifera indica*), Banana (*Terminalia catappa*) for food. And other plant species were Letpan (*Bombax ceiba*), Mohbin (*Scaphium scaphigerum*), Kokko (*Albizia lebbek*) species for shadow. The dominant tree species in this area are Khaya (*Manikara hexandra*), Gangaw (*Albizia lebbek*).

4.3.2) Fauna Components

The fauna species such as birds and some insects are expected to occur nearby the project area but expected not to have affected them. The Fauna survey will identify the species in 5 groups, mammals, Herpetofauna, Insects (Butterfly, Dragonfly), Bird and fish. The IUCN red list species will be identified with the status. However, the project is expected no dramatical effect on the fauna species due to it is within the industrial zone.

Investigation Results of Floral Species

A total of 49 species were recorded in survey area ,2 species of mammal ,11 species of Herpetofauna, 8 species of Butterfly , 2 species of Dragonfly , 22 species of Bird and 4 species of fish .Base on IUCN Red list of threatened species in fauna(2019-2) , there was no threatened species . These areas one endemic species in this area.

4.4) Social Components

The study area, Yangon Metal Industry (YMI) is located at the central part of Industrial Zone. Kan Ka Lay Village is the nearest village located south of YMI. Myaung Ta Kar, Kywe Ku, Thaung Taw, Kan Ka Lay and Ku Lar Kone Villages are located within 3 km radius of YMI and regarded as affected villages for ESIA Process. For the affected villages, the location point and distance from YIM is illustrated in Table 14.

Table 14: List of Affected Villages

No.	Name	Latitude	Longitude	Distance from YMI
1	Ku Lar Kone (VT)	17.16769	95.99140	1.9 km
2	Kywe Ku	17.16769	95.95097	2.4 km
3	Thaung Taw	17.15087	95.95989	2.3 km
4	Myaung Ta Kar (VT)	17.18330	95.96669	1.9 km
5	Kan Ka Lay	17.15349	95.97642	1.6 km

The socio-economic survey covered the following items:

Section/Title	Contents
A. Household Characteristics	·Primary information on survey respondents and households (name, gender, ethnicity, age etc.)

B. Income, Expenditure, and Lifestyles	·Average income and major income source ·Recent increase in income and its reason ·Average expenditure status ·Key areas of spending by household
C. Access to Utilities, Basic Social Infrastructure	·Drinking water supply and sanitation ·Sewage and waste management ·Power supply and main source of energy ·Medical and health status ·Status of education facilities such as schools ·Status of religious and cultural facilities
D. Impacts on Ecosystems and Communities	·Expected environmental and social impact (Impact on water resources, religious and cultural facilities etc.) ·Positive/Negative environmental/social impacts before and after construction ·Expected impact on vulnerable groups
E. Perceptions and Expectations	·Project perception and level of project info awareness ·Source of project information ·Level of expectations and concerns about the positive/negative impact of the project ·Feedback collections regarding the project
F. Health Condition	-History of Health problems at the study site -Survey of Lead-related issues

4.1.8) Survey Results

The EKTA survey team conducted the investigation on the socioeconomic status of the affected villages as well as the health survey from August 24th to 27th in 2020. The surveyor team was comprised of a project management unit, a survey leader, and two followers for socioeconomic survey. One medical doctor (M.B.B.S) joined the surveyor group for the health status investigation in the affected area. Before conducting the interview survey, the project management.

No.	Survey Area	Duration	Surveyor/Interviewer	Remarks
1	Myaung Ta Kar	25.8.2020	EKTA social survey team + a medical doctor	❖ Two responsible persons from the YMI factory also joined the team throughout the survey period. ❖ Medical doctor checked the basic health status of the respondents in village community and factory compound as well as conduct the interview survey on their health
2	Kular Kone	26.8.2020	EKTA social survey team + a medical doctor	
3	Kan Ka Lay	24.8.2020	EKTA social survey team + a medical doctor	

4	Kywe Ku	24.8.2020	EKTA social survey team + a medical doctor	conditions using the health survey questionnaire.
5	Industrial Zone	27.8.2020	EKTA social survey team + a medical doctor	
6	Other Places	24.8.2020	EKTA social survey team + a medical doctor	

Figure 11: Photographic Records of Socioeconomic Survey at the Factory Area and Affected Villages

(1) Number of Respondents

Total 114 respondents from the industrial zone and the village community around the industrial zone were incorporated during the socioeconomic survey period. As shown in result chart, Myaung Ta Kar stood a peak in number of respondents.

Villages	Total Respondents	Male	Female
Myaung Ta Kar	61	49	12
Industrial Zone	21	20	1
Kular Kone	10	6	4
Kywe Ku	5	2	3

Kankalay	16	15	1
Other Places	1	1	0
Total	114	93	21

4.1.9) Community Health Survey

A medical doctor (Dr. Chan Myae Thu with general medical license number:48517) joined the community health survey on the same date of the socioeconomic survey. Health survey questionaire was prepared by the health consultant and attached in Annex-5, Survey form for Covid-19 disease in Annex 5-1 and Questionaire for Key Informant Interview in Annex 5-2.

Figure 12: Photographic Records of Staff Health Survey in YMI Factory Clinic

Figure 13: Photographic Records of Community Health Survey at the Affected Villages

4.1.10) Investigation Results of Occupational and Community Health Survey

The EKTA health consultant examined and investigated the responses of the respondents in relation with the possible health damage due to lead toxicity. Over 90 % of the respondents including the YMI employees gave the positive feedbacks on health problems in the meanwhile. There was no bad comment and/or feedback of negative health impact related with lead leakage or toxicity although about 20 % of the respondents think the negative impact on health due to project operation. When examined by questionnaire survey on community health condition, very few people said they have some symptoms but those are related to the previous scenario of the respondents before the project operation.

According to the survey result, the project region is commonly free of communicable infectious diseases except for some common cold and seasonal flu. There was no recent history of disease outbreaks scenario in the project region.

5) Key Environmental and Social Impacts and Mitigation Measures

5.1) Impact Assessment Methodology

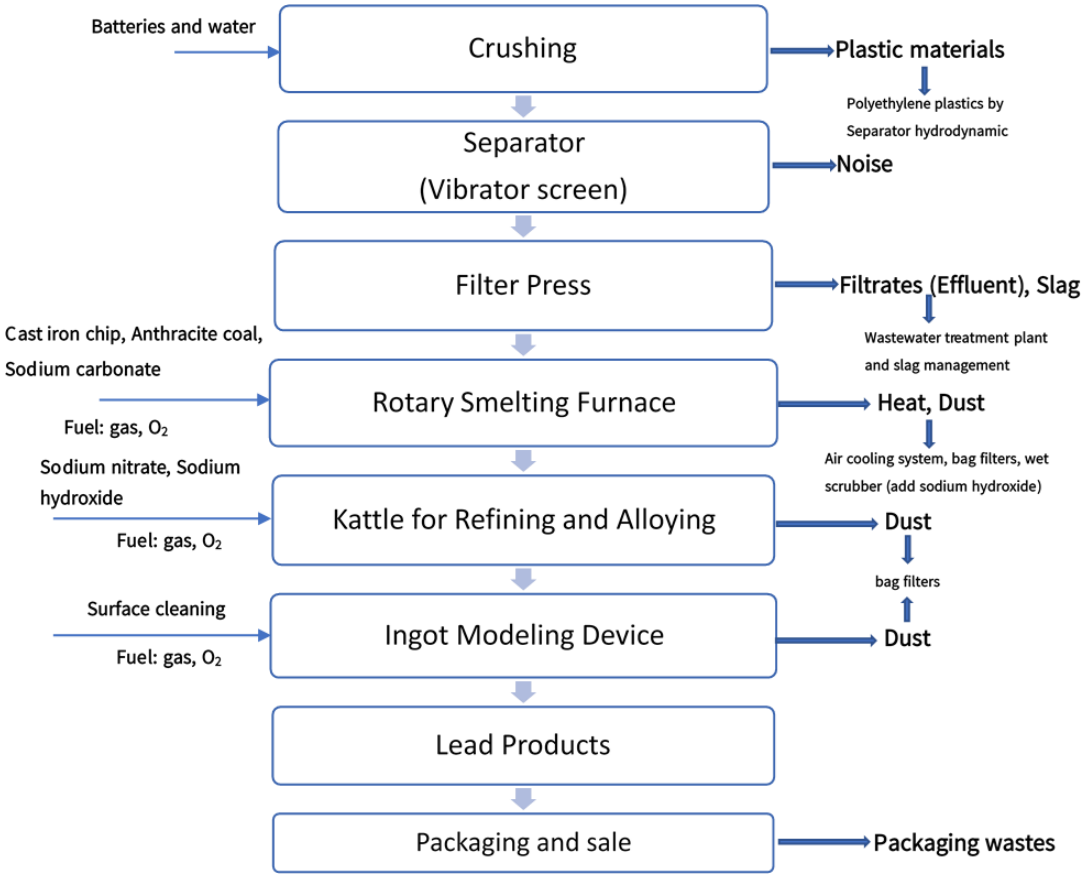
Table 15: Methodology and Approach

Impact Level	Explanation of Impacts	Mitigation Measures	Residual Impacts
Critical (A)	-impact is irreversible with extensive and severe damages to ecology and socioeconomic values -issues cannot be resolved	Cannot mitigate and should find the alternative approach.	Need to be changed, relocated or abandoned
Major (B)	-impact is substantial, but it can be reduced technically and/or adequate management measures	√	Residual impact will be minor.

Moderate (C)	-impact is moderate in terms of extent and severity -can effectively reduce using simple measures	√	Residual impact will be insignificant.
Minor (D)	-impact magnitude is small in a small area -easily manage through good implementation practices	Control measures	Residual impact will be negligible.
Insignificant (E)	-impact is very small compared to Level 2 -easily mitigate through good implementation practices	x	Residual impact will never become significant.
Nature of Impact	Positive impact (+)	An interaction will possibly lead to positive impacts	
	Negative impact (-)	An interaction will possibly lead to negative impacts	

5.2) Key Impacts and Mitigation Measures

The potential impacts which are likely expected during the design phase, construction phase and production and operation phases are shown in the following table. However, the factory is already constructed the facilities and currently in the production and operation phase.



Staff wastes and kitchen wastes are also expected to be occurred and managed according to the municipality guidelines.

Table 16: Predictions of the Potential Positive/Negative Impacts from the Lead Factory

Sr. No.	Aspect/Activity	Minor (D)	Moderate (C)	Major (B)	Insignificant (E)	Critical (A)	Need to be explored
1	**Investigation and design Phase**						
1.1	Soil Investigation				√		
2	**Construction Phase**						
2.1	Impact on fauna	√					
2.2	Impact on flora	√					
2.3	Impact on water resource	√					
2.4	Land value increase	√					
2.5	Influx of labour	√					
2.6	Dust related Ailment		√				
2.7	Noise Nuisance		√				
2.8	Construction Accidents	√					

3	**Production & Operation Phase**						
3.1	Impact on Fauna				√		
3.2	Impact on Flora				√		
3.3	Impact on water availability for other uses		√				
3.4	Impact on groundwater	√					
3.5	Impact on surface water		√				
3.6	Employment Opportunities		√				
3.7	Influx of labour from other area	√					
3.8	Loss of historical and cultural assets				√		
3.9	air emissions		√				
3.10	Noise nuisance	√					
3.11	Solid waste		√				
3.12	Chemical Hazards			√			
3.13	Health Hazards		√				
3.14	Transportation	√					
3.15	Soil			√			

Since the project construction phase is already established, the following parameters will be reflected for the changes in operation phase management as necessary:

(i) Fugitive dust and air quality management
(ii) Noise and vibration
(iii) Soil Erosion and Drainage Management
(iv) Solid waste management
(v) Domestic and Industrial Wastewater Management Plan
(vi) Traffic management
(vii) Occupational Health and Safety Management
(viii) Information Disclosure and Consultation

5.3) Emergency Response Plan

The following constitute the main objectives of the Emergency Response and Rescue Plan.

- Ensure employees are aware of their responsibilities in an emergency situation.
- Outline basic procedures to follow during safety related emergencies.

The activities will include:

1. Maintenance of Emergency Contacts

a) Key Management Team Members

b) External emergency service contacts such as the Fire Services Department of Hmawby, Township Police Department, company subscribed clinics and township hospitals, including contact numbers of the doctors in charge.

2) Update and post all Safety Notice Boards in various sections of the project area with:

a) Emergency Plans which will clearly indicate exit routes, location of first aid boxes, fire extinguishers and Assembly Points (that will be clearly marked and designated in the project areas).

b) Emergency Toolboxes/rescue equipment.

c) Company Ambulance contact numbers.

5.4) Preventive Measures for Covid-19 Infection Diseases

The preventive measures have been observed during the survey period as per the following. The factory completely developed the incident management plan specific to this crisis and be compliance with the MOHS guidelines for sanitation facilities and social distancing rules. The followings are some examples of response plans for Covid-19 crisis:

- Implement a single entry with temperature and hygiene check.
- Install hand washing facilities at the factory entry.
- Keep the workplace clean and disinfected. Focus on all the surfaces that come into most contact with the staff (desks, telephones, working tables, door handles and knobs...)
- Allocate and make mandatory to wear protective equipment (face masks, hairnets, white coats, goggles) for all staff and visitors.
- Promote constant hand washing among the workers, contractors, and costumers. Provide all the necessary supplies for cleaning and disinfection.
- Promote the frequent use of alcohol-based hand sanitizers.
- Train all staff on hygiene and biosecurity.
- Brief all staff on the protocols to follow in case of the detection of any symptom related to COVID-19.
- Poster presentation at the required and suitable places in the factory for Covid-19 awareness and relief plan
- Restricting non-essential physical contact as much as possible.
- Compliance with MOHS room for facility quarantine rules and regulations while transporting raw/finished products from and to the factory.

6) Public Disclosure and Consultation Meetings

According to Article 61 of EIA procedure (2015), the Project Proponent has been undertaken the consultation meeting for a timely disclosure of all relevant information about the proposed Project and its likely adverse Impacts to the public and civil society as part of the EIA investigations, under the guidance and help of the consultants.

6.1) Stakeholder Consultation Meeting

During Covid-19 period, the number of people in a meeting is limited and so the consultants and project proponent discussed with the township GAD to make a reliable meeting for preventing people crowded at the same time and same place. Also, the materials such as hand gel, masks are supported to the meeting attendees and strictly follow the social distancing guideline in a meeting room. Public address method was used for meeting invitation and total 14 people attended the meeting.

List of Attendees in PCM

No.	Name	Position	Department	Contact
1	U Khin Zaw	Sub department officer (Electric)	Directorate of Industrial Supervision and Inspection: DISI	09 795515827
2	U Maung Nge	Security Officer/ Myaungtagar Industrial Zone	Police Station	09 970553663
3	U Hla Soe	Administrator	Forest Department (Hmawbi)	09 423669902
4	U Kyaw Htay	Administrator	Kularkone Village	09 5059798
5	U Kyaw Htoo	Factory Officer	Yangon Metal Industry	09 254043654
6	U Myo Thu	Safety Manager	Yangon Metal Industry	09 959560310
7	U Moe Kyaw Thu	Assistant Manager (QC)	Yangon Metal Industry	09 450063177
8	U Nyi Nyi Tun	Admin Manager	Yangon Metal Industry	09 420124349
9	U Myo Nyunt Aung	Deputy Factory Manager	KMN Galvanizing	09 979765226
10	U Tint Myo Naing	MD	Yangon Metal Industry	09 5103779
11	Dr. Kyaw Nyein Aye	Environmental Consultant	EKTA	09 5038656
12	Dr. Lai Lai Win	Environmental Consultant	EKTA	09 797241421
13	Daw Nan Thazin Oo	Social	EKTA	09 777006389
14	Daw Ei Ei Win Myat	Social	EKTA	09 777006391

6.2) Questions and Answers

Stakeholders	Questions	Answers
U Kyaw Htay **(Head, Kular Kone village tract)**	Thanks for getting a chance of discussion in Yangon Metal Industry's environmental meeting. Unlike this factory, there was a case of child death from lead poison due to one industry in this industrial zone. I had to deal with that case a lot. I have been to this industry before with the government officials. The industry's condition is much cleaner than the former one. However, it may have requirements. I am unable to identify the requirements	U Tint Myo Naing (MD, YMI) Thanks for discussion. Since the company was established, all employees are treated like family. Uniform is ready to wear as soon as an employee enters the industry. If an employee goes back home, just need to take off uniform. In meal section, vegetable soup, fish paste and fried vegetables are served in every week and meat curry is served six days in a week. It serves three

	because I am not an expert. I want to request experts to solve requirements systematically. As this industry produces secondary lead from waste battery, I want to suggest for monitoring employees' health every six months. It is impossible for employees to afford medical examination expense. Our administration party is always trying not to harm locals. Therefore, I want to give suggestion which not to appear employees' grievances due to this industry.	meals a day. Milk bottles are provided once a week. Eating banana in everyday is mandatory for all employees. In medical examination section, all employees are checked medical examination once a year by company's fund. According to medical examination result, if we doubt the maximum level of lead occurs in an employee, that employee is transferred to other department like sale and admin department.
	Thanks for explaining. We all are expecting the benefits from the discussion. Also thanks for well implementation. I'm glad to see this kind of factory development in our country.	**Dr. Lai Lai Win** **(Environmental Consultant)** I have not checked and analyzed detailed health examination data of the factory yet, However, it includes in proceeding procedure.
U Tint Myo Naing (MD, YMI)	In addition to the current pure lead manufacturing industry, there is also a battery factory. The aim of pure lead manufacturing is import substitution. In order to produce lead, purchased and installed machines from Korea. More lead is released by operating those machines. Thus, start exporting that extra lead. Now, we try to use zero drain system which does not discard wastewater outside. That system is being used in United States and Europe. If other factories want to use that system, we can share that design. Our industry attended International Secondary Lead Conference which holds twice a year. The attendant from our industry discussed about technological innovation, mechanical changes and ways to improve the environment at that conference. We practically applied those discussions in sustainable development of our company and environment.	
Dr. Kyaw Nyein Aye (MD, EKTA)	It has regulations which declare from Ministry of Labor about labor welfare such as employees' health and workplace safety. We include those regulations in writing our EIA report. Because this industry was built with international standard, the rules which announce from Yangon Metal Industry may already include those regulations. This type of industry is called recycle industry. We should welcome this type of industry. Waste materials which discard from industries are dangerous. Technologies are not up to date in our country. If it is more modern in technologies, high-valued metals can be generated from waste materials. Advanced battery technology can help reduce fuel consumption. When lead production industries are developing in our country, it is possible to reduce fuel consumption. By welcoming this kind of entrepreneur, our country will become world-class country.	

U Myo Nyunt Aung (Khin Maung Nyunt Steel Products & Galvanizing Co.,Ltd)	I comprehend EIA procedure because our factory is also now executing EIA. I would like to say welcome companies which focus on the environment impacts. The main problem in Myaungtakar Industrial Zone, located in Hmawby Township, is air pollution. It is impossible to control that problem individually. All stakeholders need to be involved in solving that problem.
Dr. Lai Lai Win (Environmental Consultant)	I would like to say thank you for attending meeting. The voice of the locals is very important. I would like to request all stakeholders' suggestions from the relevant departments because your opinions are also very important. We review suggestions from this meeting and append the reviewed suggestions to EIA report and then submit to the Environmental Conservation Department (ECD).

The presentation file and some of the distinctive suggestions have been described in the following table and the details information is attached in Annex 4.

Table 17: Main Issues and Suggestions at EIA Scoping Stage

No.	Stakeholders	Suggestions
1.	**U Khin Zaw**	▪ Air quality, groundwater quality, and surface water quality determinations will be done quickly. ▪ There must be identified with the distinctive labels to the hazardous waste bins. ▪ Should support PPE to workers who working at the breaking machines due to risk of acid remnants from the old batteries. ▪ The occupational health will be periodically checked.
2.	**U Kyaw Htay** **(Head, Kular Kone village tract)**	It's very good because the company implemented and operate the factory with the strict guidelines and principles.
3.	**U Hla Soe** **(Forest Department, Hmawby Township)**	Good Air, Water and Soil are the main components not to be impacted on the environment. As the civil development, the factories are needed to dispose the wastes systematically. The wastewater from the factory process should be disposed through the filtering pond not to landslide and should plant the trees to reduce the air pollution and environmental impacts.
4.	**U Myo Nyunt Aung** **(KMN Galvanizing Co,.Ltd)**	The environmental management plans are perfectly fit with the minimum impacts to the environment, and I would like to suggest the factory keeps following the guidelines to be sustainable.
5.	**U Maung Nge** **(Police Security Officers)**	In my point of view, the factory construction state and environmental management plans are perfectly matched.

6.2.1) Stakeholder Consultation during EIA Investigation Stage (with Surrounding Village Community)

Focus group discussion was conducted by EKTA consultant team with the project stakeholders from YMI factory, with men and women groups in the affected villages nearby in complied with the guidelines to Covid-19 period, at least with 5-10 participants in the group discussions. Focus group discussions were conducted after submitting the EIA scoping report to ECD by contributing the Executive summary in Myanmar language.

Figure 14: Stakeholder Consultation of EKTA Consultants with the YMI Factory and Surrounding Village Community

6.2.2) Public Disclosure

The suggestion form was prepared by EKTA social consultant team and the key informant persons were selected from the YMI factory itself, the surrounding 5 production factories of YMI, 2 heads of village tracts and one village administrator from Myaung Ta Kar village, Kular Kone village, Kan Ka Lay village, respectively. Kywe Ku village is situated in the other side of Hlaing river from the project site and the surveyors cannot communicate with the village

administrator due to difficulties in transportation during Covid-19 period. The copies of executive summary were distributed to the administrative offices and collected the suggestions and attitudes on the project activities and EIA report preparation by public address method.

Table 18: List of Respondents in Suggestion Forms

No.	Participants	Position	Work Place
1	U Kyaw Htay	Village Tract Administrator	Administrative office, Kular Kone village
2	U Kyaw Myo Naing	Village Tract Administrator	Administrative office, Myaung Ta Kar village
3	U Than Shwe	Village Administrative member	Administrative office, Kan Ka Lay village
4	U Kyaw Htoo	Factory Manager	Myaung Ta Kar Industrial Zone
5	U Moe Myint Win	General Manager	Myanmar Smelting & Refining Co., Ltd.
6	U Ye Kyi	Management Officer	Han Steel
7	U Nyi Nyi Tun	Admin Manager	YMI
8	U Zaw Min Yu	Admin Officer	Japfa Comfeed Mill
9	Admin Manager	Admin Office	Sogo Steel Industry
10	U Myo Nyunt Aung	Deputy Factory Manager	Khin Maung Nyunt Steel Production & Galvanizing

6.3) Key Concerns from Village Community and Industrial Zone

The key concerns from both village and industrial communities are environmental health problem from lead toxicity if the factory is not operated under control and mostly they accepted the project operation for regional economic development and work opportunities.

6.4) Stakeholder Consultation during EIA Investigation Stage (with Government Stakeholder)

The consultants from EKTA lead the meeting and demonstrated by the presentation slide to explain the project background, process steps, products and the possible impacts on natural environment and society by the project activities with the respective impact mitigation and control measures, following by management and supervision activities of the factory.
Public Consultation meeting during the EIA study for Yangon Metal Industry (PCM attendant list and presentation power point described in Appendix).

Venue:	Yangon Metal Industry Meeting Room
Date:	20-1-2023
Time:	10:00 am – 11:30 am
Attendees:	20 persons (including local government authorities, Yangon Metal Industry responsible person, third party consultant team)

Meeting Agenda:
10:00: Open the meeting and introduction of attendees
Presentation by Consultant (Dr. Lai Lai Win) with the following outlines:
10:10: Purpose of the meeting
10:12: Project description
10:15: Scope of study area
10:18: Production process of Yangon Metal Industry
10:25: Current Status of ESIA for Yangon Metal Industry
10:30: Findings
10:35: Impact assessment and mitigation measure
10:40: Environmental and Social Management Plan
10:45: Further activities
10:48: Q&A session
11:30: Close

Question and Answer Session

After the presentation, the floor opened for questions and answers for the discussion on ESIA of Yangon Metal Industry.

Comments and Suggestion	Answers and Discussion
U Tint Myo Naing, (Managing Director, Yangon Metal Industry) • Currently the YMI has plan to construct the new warehouse for the final products with the reference technology from Japan and Korea. • YMI production process is follow the ISO standard and discharge the wastewater after treated in systematically. The air and water quality can monitor every time in the factory. • The Safety Officer is the one who has the international experience for the Safety and manage well in the Safety department. • The factory provide the medical check up for the employee and monitor the lead percent in human body and compare to the WHO standard. • After upgrading the machine from the factory, the medical results from the employee are better than the previous. • The factory tries to provide the PPE even the PPE are difficult to buy the Covid -19 period. • There are many trees are planting surround the factory area, this is the very good example and monitoring system for the environmental quality of the factory. If the factory emits the polluted water and air to the environment, the trees and plants will not be the current situation as everyone can visualize.	**Dr. Lai Lai Win** (Consultant, EKTA) Thank you very much for the fruitful discussion and comments. From the side of the consultant, the consultant team members did the factory visit and try to be the clear understanding about the process before accepting this report. And the consultant team find out this factory follow the laws and regulation in systemically and has the good practice in Occupational Health and Safety. Today discussion and suggestion will be recorded and added to the ESIA report. In addition, the factory should have the suggestion box at the entrance of the factory and keep monitoring with the assigned team from factory.
U Than Zaw, (YMI) • I have been working here for 13 years and there are no difficulties and didn't feel any health problem.	
U Min Zaw Oo, (Manager, ATM) • As the surrounding factory, we can clearly see that YMI is one of the factories who take responsible and operate systematically and follow the guideline and laws.	
U Zaw Lwin, (Secretary, Industrial Zone Committee) • Today presentation and discussion are good enough and clear to understand. • The factory needs to follow carefully the environmental management plan. • The factory is the one of the places where the Industrial Zone Office can show the good practice factory to other government department. • For CSR, YMI help and support to the	

Hmawbi township hospital and Industrial Zone Office for the Oxygen requirement.	
U Kyaw Htay, (Administrative Head, Kalarkone Village) • This factory has no problem about the employee's health related to the lead content in human body. • The example from the MD (YMI) is really good to know that mentioned about the trees and plants didn't show any problem till now.	

Summary of Suggestions

The authorize persons from other departments give the comments about today presentation is good enough and they would like to suggest that the factory must follow the ESIA to sustain the good environmental quality surrounding area of the factory.
Total attendance of 20 attendees, there are 12-suggestion forms are collected.
The summary of the Suggestions forms is as follow;

- The factory should maintain the good practice of Occupational Health and Safety.
- As the suggestion from the consultant, the suggestion box in front of the factory should implement as soon as possible.
- The factory should keep follow the YCDC rules for the solid waste disposing and can contact to YCDC (Hmawbi Department) anytime.
- For the Covid-19 vaccine, the factory should provide the full vaccine for all employees.

The Managing Director of the Yangon Metal Industry say the thankful remark to all the participants who are attended in PCM meeting and they are willing to follow the Environmental guideline from the ECD and commit to do the monitoring report for every 6 months.
Then the consultation meeting was closed at 11:30 am of this consultation day 20th January, 2023.

Disclosure Method

The main objective of the Public Consultation meeting is to establish a program for multi-directional communication between project and stakeholders, throughout the lifetime of the project.
The emphasis of the process is to ensure implementation of a formal program of communication in an object management, the project community, major stakeholders and interested parties.

Monitoring and follow up

The public involvement is one of the key factors and the inclusion of the views of the affected and interested public helps to ensure the decision-making process is equitable and fair and leads to more informed choice and better environmental outcomes.
The project will use the two-way communication channel such as suggestion box at the entrance of factory, publish the notice form and information share at the company website and factory's notice board. By using this approach of monitoring and follow up activities, when conflict arises, the factory tries to defuse it at the earliest possible time. On the other hand, the use of an independent, mutually acceptable third party as the convenor of discussions between disputants can improve the chances of a satisfactory outcome.

7) Environmental and Monitoring Plans

7.1) ESMP Implementation Body

In the clause 103 of Environmental Impact Assessment Procedure (2015), it is stated that:

"The Project Proponent shall fully implement the EMP, all Project commitments and conditions, and is liable to ensure that all contractors and sub-contractors of the Project comply fully with all applicable Laws, the Rules, this procedure, the EMP, Project commitments and conditions when providing services to the Project".

7.2) Planned Budget Allocations for ESMP and Monitoring Plans

Under Environment Management Cost, following activities can be considered:

Sr No.	Activities / Scope for Environment protection and management	Approx. Capital Cost (USD)
1	Fire Fighting & Emergency Services	2,000,000
2	Green Belt	25,000
3	Activities in the area of Environment and Safety during construction activities	100,000
4	Septic Tanks and associated development	100,000
5	Air pollution Preventive Measures	200,000
6	Industrial Wastewater Treatment Facilities	50,000
7	Parking Area	5,000
8	Transporting Vehicles	100,000
9	Environmental Monitoring & EMP (breakup in the below table 7.5-1)	39,000
	Total	**2,619,000**

7.3) Planned Budgetary Provision for ESMP Monitoring Plans

The main cost for Environmental Monitoring during construction and operation phases is cost for field measurements such as air quality, water, and noise and soil quality.

Table 19: Estimated Environmental Management Plan and Monitoring Cost (Operation Phase)

Indicator (Survey item)	Location of Data Collection	Method and Frequency	Institution	Annual Cost (USD)
Monitoring EMP implementation Mitigation measures Enhancement measures Contingency Compensation	Project area	Daily monitoring and documenting, and quarterly reporting	Site Manager and Operation Department of YMI	1,000
Air quality (NO_2, SO_2, CO, Ozone, $PM_{2.5}$, PM_{10})	1 location	Twice a year	Third Party	1,000
Noise	2 locations	Twice a year	Third Party	500

Surface Water Quality Analysis (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location	Twice a year	Third Party	500
Effluent Water (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location (From storage pond)	Twice a year	Third Party	500
Ground Water Quality Analysis (pH, Turbidity, Total Dissolved Solid, Nitrate Chlorine, Iron, Manganese, Hardness, Sulfate, Arsenic, Total Coliform, etc.)	1 Location	Twice a year	Third Party	500
Soil Quality	1 Location	Twice a year	Third Party	1000
Implementation of Ecosystem Management plan	Within project area	Regular monitoring and quarterly reporting	Operation Department	500
Occupational Health and Safety	YMI Compound (Work site and offices)	Twice a year Record of accidents and infectious diseases, blood testing for lead concentration, Medical checkup	EHS Department	5,000
Community Health and Safety	Resident area nearby the project sites	once a year Record of accidents and infectious diseases related to the community	EHS Department	1000
EMP Monitoring Report Preparation		Twice a year	Third Party	5000
The implementation status for CSR activities such as community support program	community nearby the project site	Once a year	Operation Department	Upto 2 % of annual net profits

7.4) CSR Plans

YMI endeavors to undertake the successful implementation of education and skill development activities in the Project region. YMI will focus on following key areas where initiatives can be taken through CSR activities.

1. Establishing of skill development centers focusing on infrastructure sector requirements (Upto 0.5% of net profit)

2. Development of a training institutes to boost the local capacity building for the industrial production sector covering staff at various skill levels like operation workers, supervisors, QC, security staff, IT staff etc., subject to the approval of the relevant authorities (Upto 1% of net profit)
3. Elementary education initiatives in line with the policy framework and applicable laws in Myanmar (Upto 0.5% of net profit)

YMI will allocate up to 2% of its net profits after tax for spending in CSR activities and areas to be spent are targeted in line with those enlisted above.

8) Conclusions and Recommendations

YMI's lead smelting plant has managed the facility & opportunity to process a much wider range of industrial wastes and by-products than a traditional Lead recycling facility. The smelting Plant is found to be fully integrated with pollution control modules and can be configured for a wide range of Battery Recycling Capacities.

The EIA will be considered the views, concerns, and perceptions of project stakeholders, communities and/or individuals that could be affected by the Project or who otherwise have an interest in the Project.

The EIA will include the results of consultations with the public and other stakeholders on the environmental and social issues. The concerns raised during such consultations shall be considered in assessing impacts, designing mitigation measures, and in the development of management and monitoring plans.

အစီရင်ခံစာအကျဉ်းချုပ်

ဤ သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုစစ်တမ်း နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာကို ရန်ကုန်သတ္တု စက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက် (YMI) က အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသော ခဲအရည်ကျိုု သန့်စင်ရေးစီမံကိန်းအတွက် ပတ်ဝန်းကျင်သန့်ရှင်းရေးနည်းပညာရှင်များအစုအဖွဲ့ (EKTA) က ရေးသား ပြုစုထားခြင်းဖြစ်ပါသည်။ ဤအစီအရင်ခံစာတွင် လက်ရှိ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လေ့လာတွေ့ရှိချက်များအတွက် ဝန်ဆောင်မှုများ၊ ပတ်ဝန်းကျင် နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများကို ကောင်းသည်ဖြစ်စေ၊ ဆိုးသည်ဖြစ်စေ ဆန်းစစ်လေ့လာထားခြင်းများအပြင် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုများ နှင့် စောင့်ကြည့် လေ့လာရေးတို့ အတွက် ကြိုတင်စီမံချက် ရေးဆွဲခြင်းများ၊ လူထု သဘောထားကြားနာချက်များလည်း ပါဝင် မည် ဖြစ်ပါသည်။

ခဲ အရည်ကျိုခြင်း။ ။ ခဲ သတ္တုကို ဒုတိယအကြိမ် ပြန်လည်ရယူထုတ်လုပ်ခြင်းလုပ်ငန်းဖြစ်ပြီး ခဲ ပါဝင်မှုရှိသော ပစ္စည်းများ၏ အပျက်အစီးများ၊ အဟောင်းအမြင်းများ သို့မဟုတ် အသစ်အတိုင်း ရှိနေသေးသော်လည်း နည်းပညာဟောင်းမြင်းသွားပြီဖြစ်သော ပစ္စည်းများမှ ခဲ သတ္တုအား ပြန်လည်ရယူခြင်းလုပ်ငန်း ဖြစ်ပါသည်။ အဓိကအားဖြင့် ခဲ အက်ဆစ်သုံး ဘက္ထရီ အဟောင်းများကို စုဆောင်း ထုတ်လုပ်နိုင် သကဲ့သို့ အခြား ခဲ ပါဝင်သည့် ပိုက်များ၊ ခဲပြားများ၊ ခဲသုံး လျပ်စစ်ပစ္စည်းများမှ လည်း ထုတ်လုပ်နိုင်ပါ သည်။ ခဲ အရည် ကျိုခြင်းတွင် ခဲပါဝင်သည့် သတ္တုအသွင်အမျိုးမျိုး (အများအားဖြင့် ခဲအောက်ဆိုဒ် နှင့် ခဲဆာလဖိတ်များ) ကို ခဲသတ္တုစင် အဖြစ် ဓာတ်လျှော့ခြင်း ပြုလုပ်၍ အဆင့်ဆင့် ထုတ်လုပ်ရန် လိုအပ်ပါသည်။

၁) နိဒါန်း

ခဲ အရည်ကျိုသန့်စင်ရေးစီမံကိန်း။ ။ ရန်ကုန်သတ္တုစက်မှုလုပ်ငန်း ကုမ္ပဏီ လီမိတက် (YMI) သည် ရန်ကုန်တိုင်းဒေသကြီး၊ မှော်ဘီမြို့နယ်ရှိ မြောင်းတကာစက်မှုဇုံတွင် တည်ရှိသော ခဲ အရည်ကျိုု သန့်စင်ရေးစီမံကိန်းကို ဆောင်ရွက်လျက်ရှိပါသည်။

၁.၁) YMI ၏ ဆက်သွယ်ရန် လိပ်စာအပြည့်အစုံ

ဆက်သွယ်ရမည့်သူ	-	ဦးကျော်ထူး
ရာထူး	-	စီမံကိန်းမန်နေဂျာ
ဖုန်း	-	(ရုံး): +95-098600157
မိုဘိုင်း	-	+ 95-09254043654
အီးမေလ်း	-	admin@yangonmetal.com
ဝဘ်ဆိုက်	-	https://www.yangonmetal.com
လိပ်စာ	-	နံပါတ် ၂၆၁/၂၆၂/၂၆၃ ၊ ပါရမီလမ်း ၊ မြောင်းတကာစက်မှုဇုန် ၊ မှော်ဘီမြို့နယ် ၊ ရန်ကုန်တိုင်းဒေသကြီး

၁.၂) ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေး

Enviro-Klean Techno-Associates Co., Ltd သည် ပတ်ဝန်းကျင်ဆိုင်ရာအတွေ့အကြုံများစွာဖြင့် နည်း ပညာပိုင်း ထောက်ပံ့ပေးခြင်းအားဖြင့် ၂၀၀၈ ခုနှစ်ကတည်းကပင် ပြည်တွင်းလုပ်ငန်းရှင်များအတွက် အငြင်းပွားမှုများသော နေရာများ နှင့် သဘာဝဘေးအန္တရာယ်ကြုံတွေ့ခဲ့သော နေရာဒေသများတွင် ပတ်ဝန်းကျင်ဆိုင်ရာ ဝန်ဆောင်မှုများ ပေးလာခဲ့သော အဖွဲ့အစည်းတစ်ခုဖြစ်ပါသည်။

EIA အကြံပေးများ၏ လိပ်စာအပြည့်အစုံ

ဆက်သွယ်ရမည့်သူ	-	ဒေါက်တာကျော်ငြိမ်းအေး
ရာထူး	-	မန်နေဂျင်းဒါရိုက်တာ
ဖုန်း	-	(ရုံး): +95-01503447
ဖက်စ် (ရုံး)	-	+95-1503447
မိုဘိုင်း	-	+9595108613
အီးမေလ်း	-	services01.ekta@gmail.com
ဝဘ်ဆိုက်	-	https://yangonmetal.com/
လိပ်စာ	-	နံပါတ် ၂၀၃ ၊ တိုက် ၂၅ ၊ မြကန်သာအိမ်ယာ ၊ ၅ ရပ်ကွက် ၊ လှိုင်မြို့နယ် ၊ ရန်ကုန်

အဖွဲ့ခေါင်းဆောင်

အမည်	အကြံပေးမှတ်ပုံတင်အမှတ်	အဖွဲ့အစည်း	လိပ်စာ	ကျွမ်းကျင်မှုနယ်ပယ်
ဒေါက်တာကျော်ငြိမ်းအေး	00053 (See in Appendix)	Enviro-Kiean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +9595108613 Email:kyawnyeinaye@gmail.com	Chemical Hazard Management, Project Management

			kyaw@ektaconsulting.com	
ဒေါက်တာလွဲလွဲဝင်း	00148 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd. Mobile: +959797241421 Email: lailaiwyn@gmail.com	Co-Leader in Project Management

EIA အကြံပေးအသင်းဝင်များ

အမည်	အကြံပေးမှတ်ပုံတင်အမှတ်	တာဝန်	အဖွဲ့အစည်း	လိပ်စာ	ကျွမ်းကျင်မှုနယ်ပယ်
ဒေါက်တာလွဲလွဲဝင်း	00148 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +959797241421 Email: lailaiwyn@gmail.com	Project Management, Wastewater Management, Biodiversity and Impact Assessment, Reporting,
ဦးသူရကျော်	00053 (See in Appendix)	Project Manager	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office):	Chemical Hazard and Risk Assessment

				01503447 Fax (office): 01503447	
ဒေါ်ခင်မာခိုင်	00053 (See in Appendix)	Hazard Assessment Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Biohazards Assessment and Socioeconomic survey
ဦးနေနိုင်	00053 (See in Appendix)	Legal Consultant No. 13814 (**တရားလွှတ်တော် ရှေ့နေ**)	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Legal Framework
ဦးကောင်းထက်စွမ်း	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Physical Baselines (Air, Water, Noise & Vibration, soil, etc.) and Environmental Health and Safety Management
ဒေါ်ဂျွန်ခိုင်ဝင့်ထွန်း	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Waste management and Public Health and Safety Management

ဦးကျော်စွာမြင့်သိန်း	00248 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		GIS and Geologist (Hydrology and Disaster)
ဦးမြတ်သူကျော်	00233 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Air Pollution Control
ဒေါက်တာခင်ငြိမ်းအေး	SaMa-17031	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Health Expert

၂) ဥပဒေမူဘောင်

YMI အနေဖြင့် အောက်ဖော်ပြပါဥပဒေ ၊ နည်းဥပဒေများ၏ သက်ဆိုင်ရာပုဒ်မများအလိုက် အတိအကျ လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။

1) The Myanmar Citizen Investment Law (2012)
2) The Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law, 1994
3) The Forest Law, 1992
4) The Private Industrial Enterprise Law, 1990
5) The Factories Act (2016)
6) The Export and Import Law (2012)
7) Industrial Use Explosive Substances (2018)
8) The Public Health Law (1972)
9) Prevention and Control of Communicable Disease Law (1995)
10) The Control of Smoking and Consumption of Tobacco Product Law (2006)
11) Labour Organization Law (2011)
12) Settlement of Labour Dispute Law, 2012

13) Employment and Skill Development Law (2013)

14) The Minimum Wages Law (2013)

15) The Leaves and Holiday Act (1951)

16) The Law Amending the Workmen' Compensation Act, 1923 (Amended in 2005)

17) The Payment of Wages Law (2016)

18) Myanmar Insurance Law

19) Occupational Safety and Health Law, 2018

20) The Conservation of Water Resources and Rivers Law 2006

21) The Biodiversity and Conservation of Protected Areas Law (2018)

22) National Environmental Policy (1994)

23) The Environmental Conservation Law (2012)

24) Environmental Conservation Rules (2014)

25) The EIA Procedure (2015)

26) Environmental and Social Impact Assessment Guidelines (2014)

27) National Environmental Quality (Emission) Guidelines (2015)

28) The Prevention of Hazard from Chemical and Related Substances Law (2013)

29) The Highways Law, 2015

30) The Motor Vehicle Law (2015) and Rules (1987)

31) Social Security Law

32) Protection the Rights of Ethnic Nationalities Law (2015)

33) Natural Disaster Management Law 2013

34) The Fire Force Law (2015)

35) The Fire Service Law (2015)

36) The Consumer Protection Law (2014)

37) IFC EHS Guidelines (2007)

၃) စီမံကိန်းအကြောင်းအရာဖော်ပြချက်များနှင့် အခြားနည်းလမ်းများ

YMI ကို ၂၀၁၄-၂၀၁၈ ကာလများတွင် တည်ဆောက်ပြီးစီးခဲ့ပြီး ၂၀၁၈ ခုနှစ်မှစတင်ကာ ယခုအချိန်ထိ ခဲသန့်စင်ထုတ်လုပ်ရေး လုပ်ငန်းအား ဆောင်ရွက်ခဲ့ပါသည်။ ခဲအရည်ကျိုသန့်စင်သည့်စက်ရုံအား ပုံ (၁) တွင် တွေ့မြင်နိုင်ပါသည်။

ဇယား (၁) : စီမံကိန်းနေရာရှိ အဆောက်အဦများ

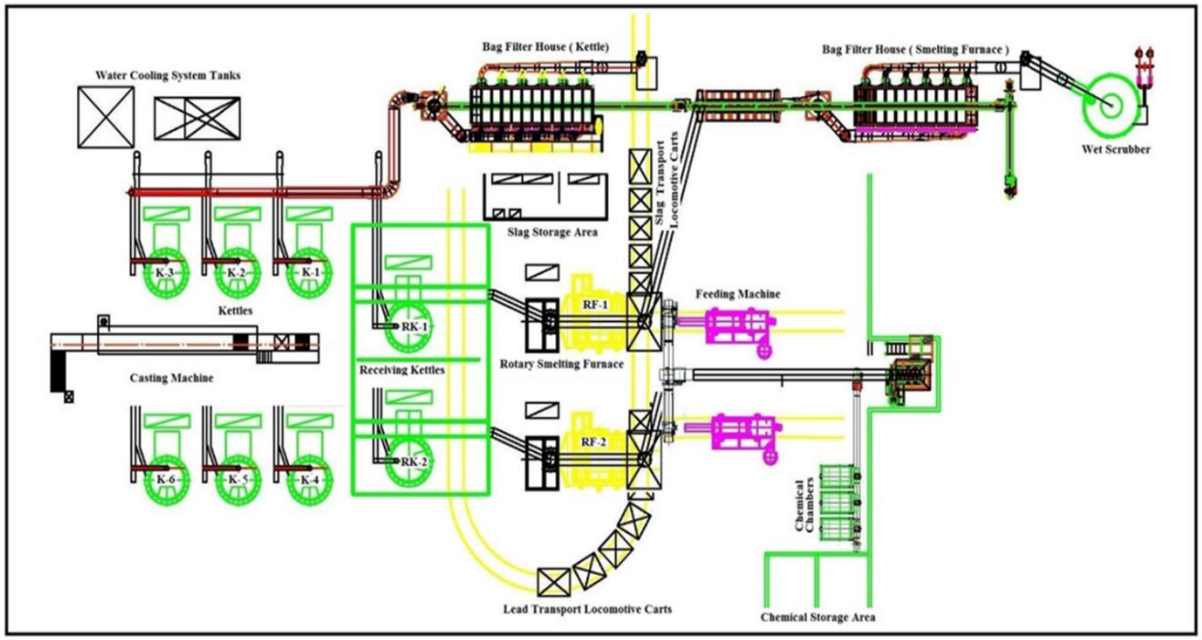
No	Description	Remark
1.	Storage Building	Completed
2.	Process Building	Completed
3.	Packing & Transfer Building	Completed
4.	Process Building	Completed
5.	Finished Storage Building	Completed
6.	Ingot Storage Building	Completed
7.	Roll Shop	Completed
8	Canteen	Completed
9	Packaging Area	Completed

Source: YMI Co., Ltd.

ပုံ (၁) ။ YMI ခဲအရည်ကျိုသန့်စင်စက်ရုံ

၃.၁) စက်ပစ္စည်းအပြင်အဆင်များ

စက်ပစ္စည်းများတွင် ကျိတ်ချေစက် (B 75 Breakers) ၊ မီးပေါင်းဖို (Rotary Furnace), အမှုန်စုလိုင်း (Dust Line), သတ္ထုကျိုစက်များ (Alloy and Refined Kettles) ၊ ရွှေ့လျားစက်တပ်သယ်ဆောင်ယာဉ်များ (Chain Scrap Conveyor) ၊ အရည်ကျိုစက် (Rotary Smelter Kettle) ၊ ခဲသန့်စင်စက် နှင့် ပုံသွင်းစက် (Lead Refining & Ingot Molding) ၊ သတ္တုဖြတ်စက် (Casting Machine) နှင့် ထုပ်ပိုးပြင်ဆင်သည့်စက် (Packing Machine) အစရှိသဖြင့် ပါဝင်ပါသည်။ စက်ပစ္စည်းအပြင်အဆင်ပုံစံအား ပုံ (၂) တွင် မြင်တွေ့နိုင်ပါသည်။



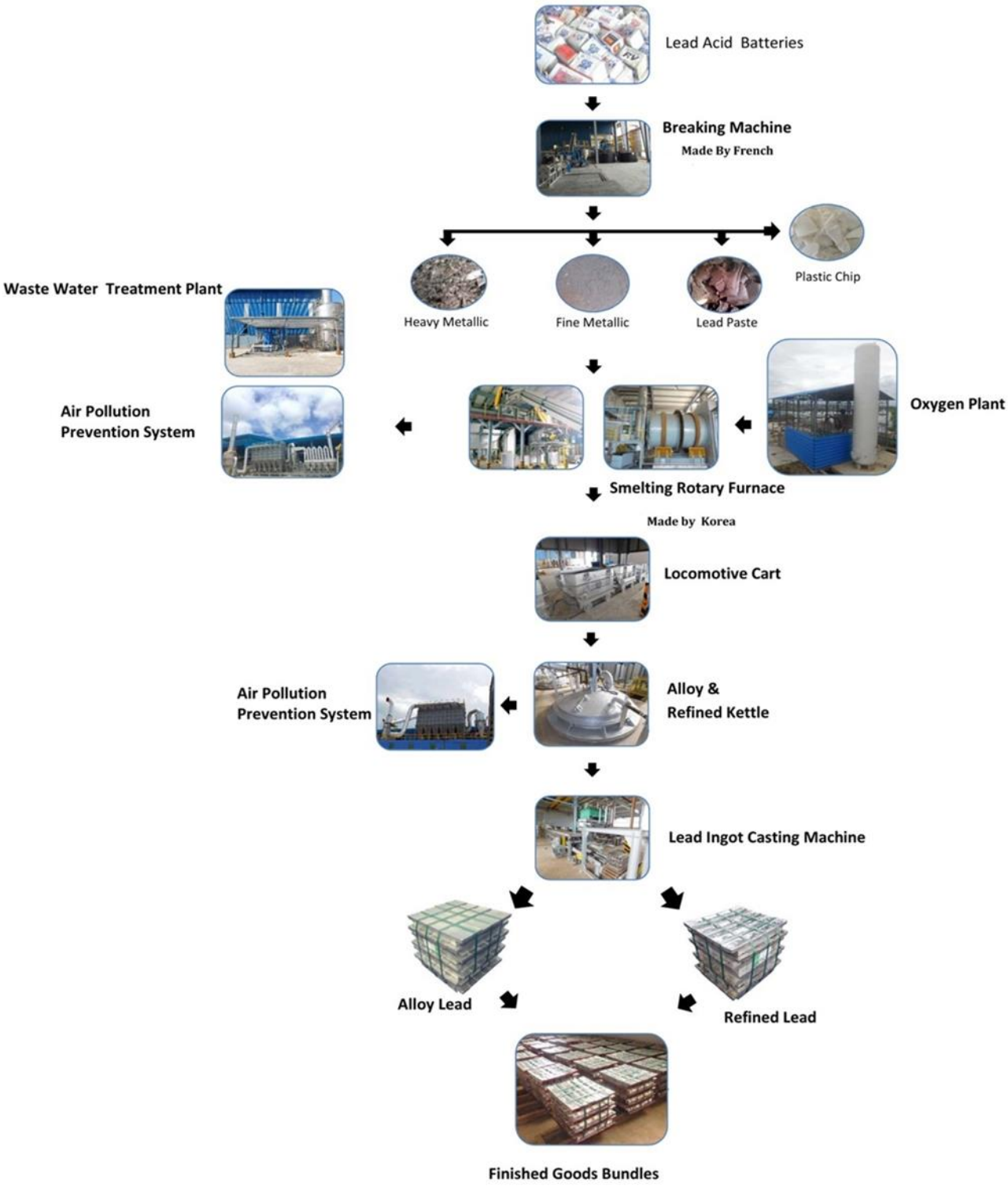
ပုံ (၂) ။ စက်ပစ္စည်းအပြင်အဆင်ပြပုံ

၃.၂) ကုန်ကြမ်းပစ္စည်းများနှင့် ထုတ်လုပ်မှုလုပ်ငန်းစဉ်များ

ကုန်ကြမ်းပစ္စည်းများတွင် အဓိကအားဖြင့် အသုံးပြုပြီးသား ဘက်ထရီပစ္စည်းများနှင့် ဘက်ထရီနှင့် ခဲနှင့် သက်ဆိုင်သော ပစ္စည်းများ ပုံတွင်ပြထားသည့်အတိုင်း ပါဝင်ပါသည်။

ပုံ (၃) ။ ကုန်ကြမ်းပစ္စည်းများ (Heavy Metallic, Fine Metallic and Lead Plates)

ကုန်ချောပစ္စည်းအနေဖြင့် ခဲ (အလွိုင်း) နှင့် သန့်စင်ခဲပစ္စည်းများ ပါဝင်ပါသည်။ ထုတ်လုပ်သည့်လုပ်ငန်းစဉ် အား ပုံ (၄) တွင် ပြထားပါသည်။



ပုံ (၄) ။ YMI ၏ ခဲထုတ်လုပ်သည့် လုပ်ငန်းစဉ်

ပုံ (၅) ။ ထုတ်ကုန်များ (Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot)

၃.၃) ရေနှင့်လျှပ်စစ်မီးအသုံးပြုမှု

စက်ရုံတွင်းရှိ မြေအောက်ရေတွင်း (tube well) မှ လူသုံး ၊ စက်ရုံသုံးအတွက် အသုံးပြုပြီး စုစုပေါင်း တစ်နေ့ လျှင် ၆၀၀ ကုဗမီတာခန့် အသုံးပြုပါသည်။

လျှပ်စစ်အသုံးပြုမှုမှာ အဓိကအားဖြင့် သဘာဝဓာတ်ငွေ့အားအသုံးပြုပြီး တစ်လလျှင် ၅.၅ mmcf ခန့်အသုံးပြု ပြီး တစ်လလျှင် ၅၀၀,၀၀၀ ကီလိုဝပ်ခန့် အသုံးပြုပါသည်။ လျှပ်စစ်ပြတ်လပ်မှု အရေးပေါ် အခြေအနေများအတွက်မူ ဂျင်နရေတာ ထားရှိအသုံးပြုပါသည်။ မီးသတ်ပစ္စည်းများအားလည်း စက်ရုံဝန်းထဲတွင် မီးဘေးအန္တရာယ် ကာကွယ်နိုင်ရန်အတွက် တပ်ဆင်ထားရှိထားပါသည်။

၃.၄) စီမံကိန်းအခြားနည်းလမ်းများ

နေရာပေါင်းများစွာတွင် စုံစမ်းစစ်ဆေးမှုများပြုလုပ်ပြီးနောက်တွက် လက်ရှိစက်ရုံနေရာအား အသင့်တော်ဆုံး နှင့် အဆင်ပြေဆုံးနေရာအဖြစ် ရွေးချယ်ခဲ့ပြီး စက်ရုံလုပ်ငန်းများအတွက် သီးသန့်သတ်မှတ်လုပ်ကိုင်ခွင့်ပေး ထားသော နေရာတစ်ခုဖြစ်ပါသည်။

YMI Co., Ltd. အနေဖြင့် ယခုလက်ရှိအဆောက်အဦများတွင် ခဲထုတ်လုပ်ခြင်းလုပ်ငန်းကို ဆောင်ရွက်နေ ပြီးလည်း ဖြစ်ပါသည်။ ထို့ကြောင့် ဤတစ်ခုတည်းသောနေရာ (**No-Action Alternative Option**) နှင့် သက်ဆိုင်နှင့် အခြေခံ အချက်အလက်များအား အောက်ပါအတိုင်း တင်ပြအပ်ပါသည်။

ဇယား (၂): No-Action Alternative Option အချက်အလက်များ

လေ့လာသည့် အချက်အလက်များ	စီမံကိန်းမရှိသည့် အခြေအနေများ	စီမံကိန်းအကောင်အထည်ဖော်ထားသည့် အခြေအနေများ
စီးပွားရေးဆိုင်ရာ ထည့်သွင်းစဉ်းစားမှု	• အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်မှု မရှိခြင်း • စီးပွားရေးဖွံ့ဖြိုးတိုးတက်မှု အခွင့်အလမ်း မရှိခြင်း	• ဒေသခံများအတွက် အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်ခြင်း • ဒေသတွင်း စီးပွားဖွံ့ဖြိုးတိုးတက်လာခြင်း
ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထည့်သွင်းစဉ်းစားမှု	• သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများ မရှိခြင်း • သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ကိစ္စရပ်ရှုပ်ထွေးမှုများ အပေါ်တွင် ကြုံသလိုဖြေရှင်းခြင်း	• ဆောက်လုပ်ရေးနှင့် စက်ရုံလည်ပတ်မှုလုပ်ငန်းများကြောင့် သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများ ရှိနိုင်ခြင်း • သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ကိစ္စရပ်များတွင် ထိရောက်သော ဖြေရှင်းမှုကို အသုံးပြုကာ စနစ်တကျ စီမံခန့်ခွဲခြင်း • ဒေသခံများအနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဗဟုသုတ အသိပညာများ တိုးတက်မြင့်မားလာခြင်း

Source: EIA Study Team

Zero option ၏ ရလာဒ်များအနေဖြင့် စီမံကိန်းအကောင်အထည်ဖော်ဆောင်ရွက်ရာတွင် ပိုမိုကောင်းမွန်သင့်လျော်သည့် အခြားနည်းလမ်းများအား ဒီဇိုင်းဆွဲကာ ပတ်ဝန်းကျင်နှင့် လုပ်သားများဘေးကင်းလုံခြုံကျန်းမာရေး စီမံခန့်ခွဲမှုများ ရေးဆွဲဆောင်ရွက်နိုင်မည်ဖြစ်ပါသည်။ သို့သော်ငြားလည်း ထိခိုက်မှုများအား လျော့ချပေးနိုင်မည့် သင့်လျော်သည့်နည်းလမ်းများလည်း လိုအပ်ပါသည်။

ဇယား (၃) ။ စီမံကိန်းနေရာအတွက် အခြားနည်းလမ်းများအား နှိုင်းယှဉ်ဖော်ပြမှု

နည်းလမ်းများ	YMI စက်ရုံနေရာ	ရန်ကုန်ရှိ အခြားနေရာများ
ပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ ကိစ္စရပ်များ	• စက်ရုံနေရာသည် စွန့်ပစ်အမှိုက်များ စနစ်တကျစွန့်ပစ်နိုင်မည့် အမှိုက်ပုံနေရာနှင့် လက်လှမ်းမီသောနေရာတွင် ရှိနေခြင်း နှင့် ပတ်ဝန်းကျင်နှင့် သဟဇာတပိုမို ဖြစ်မည့် ထုတ်လုပ်လည်ပတ်ရေးများလုပ်ကိုင်နိုင်ရန် အတွက် သင့်လျော်သောနေရာတွင် တည်ရှိနေခြင်း • ယာဉ်သွားလာမှုနှင့်သက်ဆိုင်သည့် ထိခိုက်မှုများ (ဥပမာ- မော်တော်ယာဉ်ဓာတ်ငွေ့ ထုတ်လွှတ်မှုများ ၊ ယာဉ်ကြောကြပ်တည်းမှု နှင့် လောင်စာသုံးစွဲမှု) ကို လျှော့ချနိုင်ခြင်း • လူမှုတာဝန်သိလုပ်ငန်းများအား အစီအစဉ်ချ လုပ်ကိုင်ခြင်း • ပုံမှန် နှင့် သီးသန့်ပေးသော အလုပ်ခွင် သင်တန်းများကြောင့် အလုပ်သမားများ စွမ်းရည် ပိုမိုတိုးတက်လာခြင်း နှင့် ကျွမ်းကျင်မှုဆိုင်ရာ အရည်အသွေးအသစ်များ ရရှိလာစေခြင်း။	• လူနေအိမ်ခြေများနှင့် နီးကပ်လွန်း၍ ထိခိုက်မှု များပြားခြင်း • ယာဉ်ကြောကြပ်တည်းမှု ဆိုင်ရာ ထိခိုက်မှုများ (ဥပမာ- မော်တော်ယာဉ်ဓာတ်ငွေ့ ထုတ်လွှတ်မှုများ ၊ ယာဉ်ကြောကြပ်တည်းမှု နှင့် လောင်စာသုံးစွဲမှု) ကို ကြုံတွေ့ရနိုင်ခြင်း။
စီးပွားရေးဆိုင်ရာ ကိစ္စရပ်များ	• ဒေသတွင်းအလုပ်သမားများကို အသုံးပြုခြင်းကြောင့် အလုပ်သမားခ သက်သာသော်လည်း အလုပ်ခွင်သင်တန်းများကြောင့် အပိုကုန်ကျစရိတ်များ ရှိနိုင်ခြင်း။ • ဒေသတွင်းအလုပ်သမားများ လုပ်ငန်းမကျွမ်းကျင်သေးသောကြောင့် ကုန်ကြမ်း	• မြေယာအသုံးချမှုတွင် စရိတ်ပိုမိုကုန်ကျခြင်းနှင့် အလုပ်သမားခ ကြီးမြင့်ခြင်း။

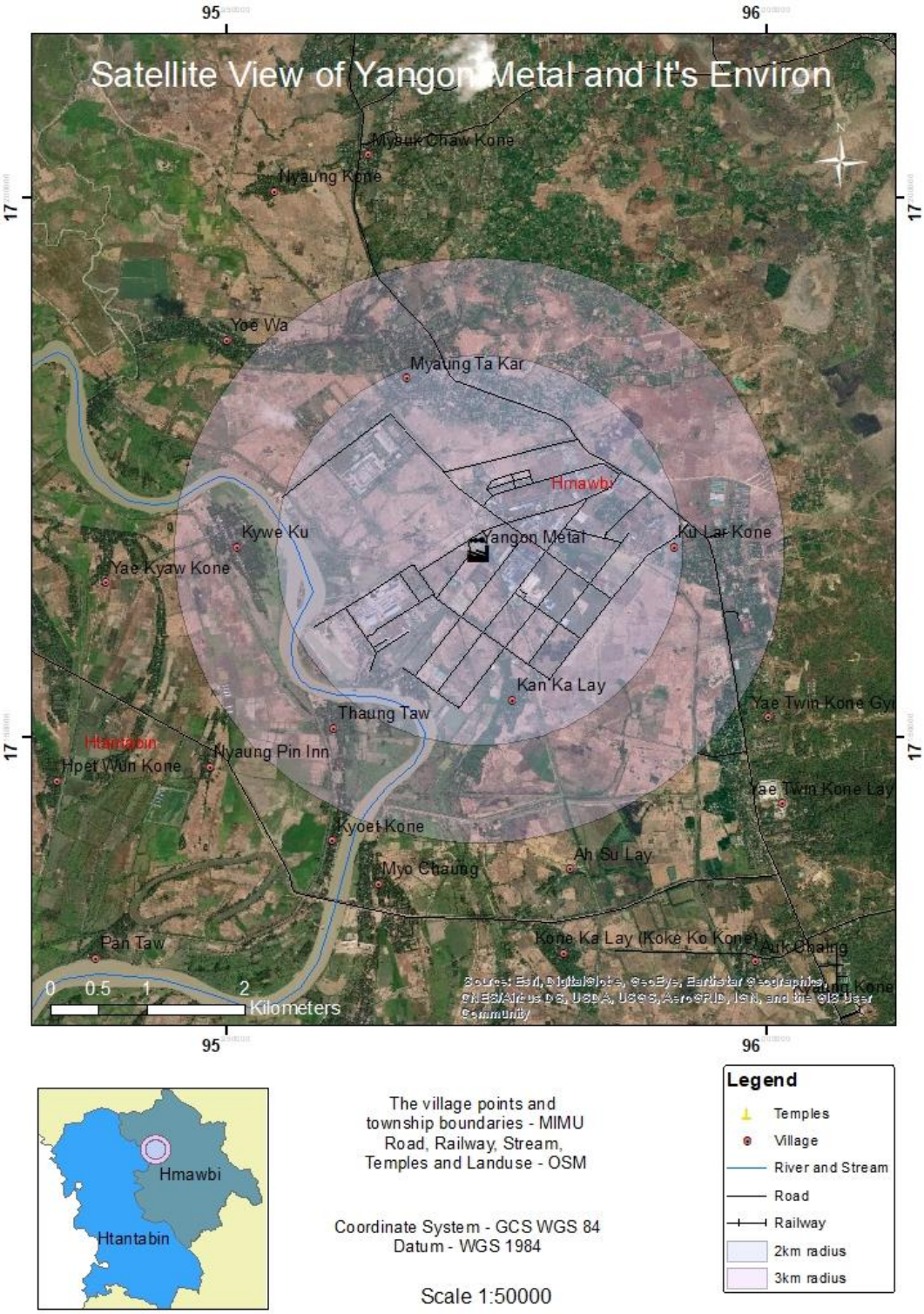
	ပစ္စည်း ပိုမိုအသုံးပြုရခြင်းနှင့် စွန့်ပစ်ပစ္စည်းများ ပိုမိုထွက်ရှိခြင်း။	

Source: EIA Study Team

အထက်ပါ နှိုင်းယှဉ်ချက်များအရ ဤစီမံကိန်းအနေဖြင့် လူမှုရေး ၊ ပတ်ဝန်းကျင်နှင့် စီးပွားရေးဆိုင်ရာ ကောင်းကျိုးရလာဒ်များ ဖြစ်ထွန်းစေနိုင်ကြောင်း ထင်ရှားပါသည်။

၄) ရှိရင်းစွဲ အခြေခံ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အခြေအနေများ

အဆိုပြုစီမံကိန်းဧရိယာမှာ မှော်ဘီမြို့နယ် မြောင်းတကာစက်မှုဇုန်အတွင်းတည်ရှိပြီး စီမံကိန်းအနီးတဝိုက်တွင်လည်း အခြား စက်မှုလုပ်ငန်းများတည်ရှိနေပါသည်။



ပုံ (၆)။ ။ YMI စီမံကိန်းနေရာပြ ကြိုဟ်တုပုံရိပ်

၄.၁) ရုပ်သွင်ပြင်ပိုင်းဆိုင်ရာ ပတ်ဝန်းကျင်

ရုပ်သွင်ပြင်ပိုင်းဆိုင်ရာ ပတ်ဝန်းကျင်တွင် -

(၁) လေထု ပတ်ဝန်းကျင်

(၂) ရေထုပတ်ဝန်းကျင်

(၃) မြေထုပတ်ဝန်းကျင်

(၄) အသံဆူညံမှုနှင့် တုန်ခါမှု

(၅) လမ်းအသုံးပြုမှုများ ပါဝင်မည်ဖြစ်ပါသည်။

၄.၁.၁) လေထုအရည်အသွေး

လေထုအရည်အသွေးအား အောက်ပါအတိုင်းတိုင်းတာစစ်ဆေးမည်ဖြစ်ပြီး စစ်ဆေးမည့် ပါရာမီတာများအား ဇယားတွင် ဖော်ပြထားပါသည်။ လေထုအရည်အသွေးစောင့်ကြည့်မည့်နေရာများအဖြစ် မြောင်းတကာစက်မှုဇုန် အတွင်းနေရာအား ထုတ်လွှတ်နေရာ (source) အဖြစ် သတ်မှတ်ထားပြီး အနီးဆုံးဖြစ်သည့် ဓမ္မရေအေးဘုန်းကြီးကျောင်းနေရာအား လက်ခံနေရာ (receptor) အဖြစ်သတ်မှတ်ကာ တိုင်းတာကောက်ယူသွားမည် ဖြစ်ပါသည်။

Survey/Sample Type	Sample ID	Location
လေထုအရည်အသွေး	AQ-1	Lat: 17°10'1.18"N Long: 95°58'26.11"E
လေထုအရည်အသွေး	AQ-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E

ဇယား ၄။ ။ လေထုအရည်အသွေးရလာဒ်များ

Parameter	Averaging Period	Unit	AQ-1	AQ-2	NEQG Guideline
Carbon Monoxide	1-hour	ppb	1.37	0.00007	-
Carbon Dioxide	8-hour daily maximum	ppm	240.14	153.05	5000
Particulate Matter PM10[a]	1-year 24-hour	µg/m^3	 27.28	 23.66	20 50
Particulate Matter PM2.5[b]	1-year 24-hour	µg/m^3	 18.70	 12.42	10 25
Sulfur Dioxide	24-hour 10-minute	ppb	1.73	2.96	20 500

Nitrox Oxide	1-year 1-hour	ppb	 23.83	 42.92	40 200
Volatile Organic Compounds	24-hour	ppm	0.44	1.57	20
Ozone	24-hour	ppm	0.0029	0.0009	100
Relative Humidity	24-hour	%	40.42	45.61	-

လေထုအရည်အသွေးတိုင်းတာစစ်ဆေးမှုရလာဒ်များအရ သတ်မှတ်စံချိန်စံညွှန်းကိန်းများထက် ကျော်လွန်မှုမရှိသည်ကိုတွေ့ရပြီး စီမံကိန်းအနေဖြင့် အနီးတဝိုက်ရှိ လေထုအရည်အသွေး၏ သန့်စင်မှုကို ဆက်လက်ရရှိရန် ထိန်းသိမ်းဆောင်ရွက်ရပါမည်။

၄.၁.၂) အသံဆူညံမှုနှင့် တုန်ခါမှု

နေ့အချိန်နှင့်ညအချိန် အသံဆူညံမှုအဆင့်များနှင့် တုန်ခါမှုအဆင့်များကို စက်ရုံလည်ပတ်ရာအနီးတဝိုက် စက်ပစ္စည်းများအနီးနှင့် စက်ရုံဝင်းတံခါးအနီး ဝင်ပေါက်နေရာတွင် dB ယူနစ်ဖြင့် တိုင်းတာခဲ့ပါသည်။ ရရှိလာသော စစ်ဆေးတိုင်းတာမှုရလာဒ်များအား NEQG (2015) အရ နှိုင်းယှဉ်ဖော်ပြသွားပါမည်။

လေထုအရည်အသွေးမှာကဲ့သို့ပင် မြောင်းတကာစက်မှုဇုန် အတွင်းနေရာအား ထုတ်လွှတ်နေရာ (source) အဖြစ် သတ်မှတ်ထားပြီး အနီးဆုံးဖြစ်သည့် ဓမ္မရေအေးဘုန်းကြီး ကျောင်းနေရာအား လက်ခံနေရာ (receptor) အဖြစ်သတ်မှတ်ကာ တိုင်းတာကောက်ယူသွားမည် ဖြစ်ပါသည်။

Survey/Sample Type	Sample ID	Location
Noise and Vibration	NV-1 (source)	Lat: 17°10'2.09"N Long: 95°58'24.92"E
Noise and Vibration	NV-2 (receptor)	Lat: 17°09'19.138"N Long: 95°58'43.386"E

ဇယား ၅။ ။ A-Weighted Loudness Equivalent Noise Level

Noise Level	Day-time (dBA)	Night-time (dBA)
Q-1	65.43	59.51
Q-2	59.26	55.72
NEQG standard (Residential and institutional area)	55	45
WHO for specific environment, Industrial, commercial, shopping and traffic areas, indoors and outdoors	70	

(Source: EKTA Survey Team, May 2021)

စီမံကိန်းဧရိယာအတွင်းရှိ ဆူညံသံအဆင့်ကို စက်မှုလုပ်ငန်းအဆင့်သတ်မှတ်ထားပါသည်။ အဘယ်ကြောင့်ဆိုသော် စီမံကိန်းမှာ စက်မှုဇုန်အတွင်း တည်ရှိနေသောကြောင့်ဖြစ်ပါသည်။ လူနေအိမ်ခြေ(ဘုန်းကြီးကျောင်းဝင်း) နေရာမှာ မူလကပင် သတ်မှတ်စံချိန်စံညွှန်းထက်ကျော်လွန်နေသည်ကို တွေ့ရှိရပြီး စီမံကိန်းအနေဖြင့် ရှိရင်းစွဲအသံဆူညံမှုအဆင့်ကို တိုးပွားစေမည့် သက်ရောက်မှုများ မဖြစ်နိုင်ပါ။

ဇယား ၆။ ။ Daily Average Vibration Level Results

Survey Result	Daytime (dBA)	Nighttime (dBA)
Q-1	45	36
Q-2	42	31
Standard (Standard)[II]	65-70	60-65

(Source: EKTA Survey Team, May 2021)

[II] : Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating (Japanese road side guideline standard).

စီမံကိန်းနေရာသည် ရန်ကုန်-ပြည် အဝေးပြေးလမ်းမနှင့် နီးကပ်သည်ဖြစ်ပါ၍ တုန်ခါမှုအနည်းငယ်မြင့်တက်သည်ကို တွေ့ရသော်လည်း သတ်မှတ်စံချိန်စံညွှန်းထက် ကျော်လွန်မှု မရှိပါ။

၄.၁.၃) မျက်နှာပြင်ရေနှင့် မြေအောက်ရေ အရည်အသွေး

မျက်နှာပြင်ရေနှင့် မြေအောက်ရေ ရေနမူနာကောက်ယူသည့်နေရာများအား အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။

Sample ID	Sample Type	Coordinate
GW-1	Ground Water	Lat: 17°10'7.17"N Long: 95°58'23.64"E
SW-1	Surface Water	Lat: 17°10'7.68"N Long: 95°58'24.30"E
SW-2	Industrial Effluent	Lat: 17°10'0.45"N Long: 95°58'26.88"E

ဇယား ၇။ ။ မျက်နှာပြင်ရေ အရည်အသွေး ရလာဒ်များ

No	Parameter	Unit	SW-1	SW-2	NEQG **Guideline***
1	Total Suspended Solids	mg/l	148	30	50

2	Zinc	mg/l	Nil	Nil	0.2
3	Temperature	°C	25.0	25.0	<3[b]
4	pH	S.U[a]	8.2	8.4	6-9
5	Lead	mg/l	Nil	Nil	0.1
6	Fluoride	mg/l	1.0	0.8	5
7	Copper	mg/l	Nil	Nil	0.1
8	Chemical oxygen demand	mg/l	64	32	50
9	Arsenic	mg/l	Nil	Nil	0.05
10	Aluminum	mg/l	<0.01	0.03	0.2
11	Cadmium	mg/l	0.02	0.3	0.05
12	Nickel	mg/l	0.6	0.4	0.1
13	Mercury	mg/l	< 0.1	< 0.1	0.01

***National Environmental Quality Guideline**

[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

ဒေသတွင်းရှိ မျက်နှာပြင်ရေအရည်အသွေးကို ပါရာမီတာ ၁၃ မျိုးစစ်ဆေးခဲ့ပြီး မူလကတည်းကပင် TSS, BOD, and Nickle ပမာဏများမှာ မြင့်မားနေကြောင်း တွေ့ရှိရပါသည်။ စက်မှုလုပ်ငန်းထွက်ရေမှာလည်း နီကယ်နှင့် မာကျူရီ ပမာဏများနေကြောင်း တွေ့ရှိပါသည်။ သို့သော်ငြားလည်း စီမံကိန်းအနေဖြင့် ဝန်းကျင်ရေထုထဲသို့ ရေဆိုးများ စွန့်ထုတ်မည်မဟုတ်ဘဲ စက်ရုံလည်ပတ်သည့်လုပ်ငန်းတွင် ပြန်လည်အသုံးပြုခြင်းနှင့် စက်ရုံတွင် အင်ဂျင်ပြန်စက်ကို ဆင်ထားကာ ရေငွေ့ပြန်စေခြင်းနည်းလမ်းကို အသုံးပြုလျှက် ရှိပါသည်။

၄.၁.၄) မြေအောက်ရေ

မြေအောက်ရေအရည်အသွေးပြပါရာမီတာများကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၈: မြေအောက်ရေအရည်အသွေးပြ ပါရာမီတာများကို တိုင်းတာစစ်ဆေးခြင်းရလာဒ်များ

No	Parameter	Unit	Result	WHO Drinking Water Guideline*
1	pH	S.U [a]	7.4	6.5 – 8.5
2	Turbidity	NTU	32	5
3	Total Dissolved Solid	mg/l	325	1000
4	Nitrate	mg/l	0.3	50
5	Chloride	mg/l	Nil	250
6	Iron	mg/l	1.60	0.3
7	Manganese	mg/l	5.7	0.05

8	Hardness ($CaCO_3$)	mg/l	36	500
9	Sulfate	mg/l	120	500
10	Arsenic	mg/l	Nil	0.01

***WHO Drinking Water Guideline (Geneva-1993)**

[a] Standard unit

စီမံကိန်းဧရိယာရှိ မြေအောက်ရေမှာ နောက်ကျိမှုများခြင်း၊ **, iron** နှင့် **manganese** ဓာတ်များခြင်းကြောင့် သောက်သုံးရန် လုံးဝမသင့်ပါ။

၄.၁.၅) မြေအရည်အသွေး

မြေနမူနာများကို ဘက်ထရီ ကုန်ကြမ်းပစ္စည်းများစုပုံထားရာအနီး မြေပြင်မှ ကောက်ယူစစ်ဆေးခဲ့ပါသည်။ စစ်ဆေးမှုရလာဒ်များအား အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၉: မြေအရည်အသွေး တိုင်းတာစစ်ဆေးမှုရလာဒ်များ

No.	Parameter	Unit	Result
1	pH	S.U [a]	9.76
2	Moisture	%	15.75
3	Lead	ppm	1692.00
4	Zinc	ppm	4.46
5	Mercury	ppm	0.03
6	Copper	ppm	8.59
7	Iron	ppm	24.22
8	Chromium	ppm	0.004

[a] Standard unit

မြေနမူနာကို ကုန်ကြမ်းပစ္စည်းများ စုပုံထားရာအနီးမှ ကောက်ယူခဲ့ပြီး ခဲဓာတ်များနေကြောင်း တွေ့ရှိရပါသည်။

၄.၁.၆) မော်တော်ယာဉ်သွားလာမှုများကို စစ်တမ်းကောက်ယူခြင်း

YMI စက်ရုံသည် စက်မှုဇုန်၏ အလည်ဗဟိုခန့်တွင် တည်ရှိပါသည်။ ကားလမ်းဖြင့်ရောက်ရှိနိုင်ပြီး အဝေးပြေးလမ်းမကြီးမှ ၁.၆ ကီလိုမီတာခန့်တွင် တည်ရှိပါသည်။ စက်ရုံမှ အနောက်ဘက် ၂ ကီလိုမီတာအကွာတွင် လှိုင်မြစ်နှင့် ရေဆိပ်တစ်ခု ရှိပါသည်။ ယာဉ်သွားလာမှုစစ်တမ်းများအား TS-1 နှင့် TS-2 နှစ်နေရာတွင် ကောက်ယူစစ်ဆေးမည်ဖြစ်ပါသည်။ ၁၂ နာရီအတွင်း ဖြတ်သန်းသွားလာသော မော်တော်ယာဉ်များအား မှတ်တမ်းယူကာ တစ်နာရီတွင် ယာဉ်ဖြတ်သန်းသွားလာမှုနှုန်းများအား တွက်ချက်စစ်ဆေးသွားမည် ဖြစ်ပါသည်။

ဇယား (၁၀) ။ ယာဉ်သွားလာမှုစစ်တမ်းအကျဉ်းချုပ်တင်ပြချက်

No. of Traffic Survey Points	▪ 2 points (TS-1 and TS-2)
Location of TS-1	▪ YMI စက်ရုံသို့ အဝင်လမ်းဆုံ

	▪ Located near the main entrance gate of the YMI, at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E. ▪ Vehicles passing the TS point in both directions (inbound and outbound) were counted. ▪ Number of Lane: 2 (1 lane for each direction)
Location of TS-2	▪ ရန်ကုန်-ပြေ ကားလမ်းမကြီး ▪ Located on the Yangon – Pyay Highway road, at the Latitude of 17°10'27.66"N and Longitude of 95°59'12.36"E. ▪ Vehicles travelling in both directions of Yangon – Pyay road were counted. ▪ Number of Lane: 4 (2 lanes for each direction)
Method	▪ Manual counting method was applied with the structured TS form. The TS form was designed based on the classified vehicles on hourly basis. Tally counters were utilized to record the volume of traffic volume in the study area. A total of 4 enumerators were used in this study.

ပုံ (၇): ယာဉ်သွားလာမှုစစ်တမ်း တည်နေရာပြပုံ

ဇယား (၁၁): ယာဉ်အမျိုးအစားများ

No.	Class*	Description
1	Motorcycle	All type of vehicles with two wheels

2	3-Wheeler	All type of vehicles with 3-wheels (eg. Chinese Made 3-wheelers used for transport of goods and materials)
3	Car	Car, Pick-up, Van
4	Bus	YBS Buses (Such as Line number 37, 90), Highway express and all types of buses
5	Truck (< 3 tons)	Truck with loading capacity of less than 3 tons
6	Truck (> 3 tons)	Truck with loading capacity of higher than 3 tons
7	Truck (Trailer)	Truck with trailer

***Vehicle classes are adapted from the Yangon – Pyay Highway toll plaza**

၄.၂) ယာဉ်များသွားလာမှု

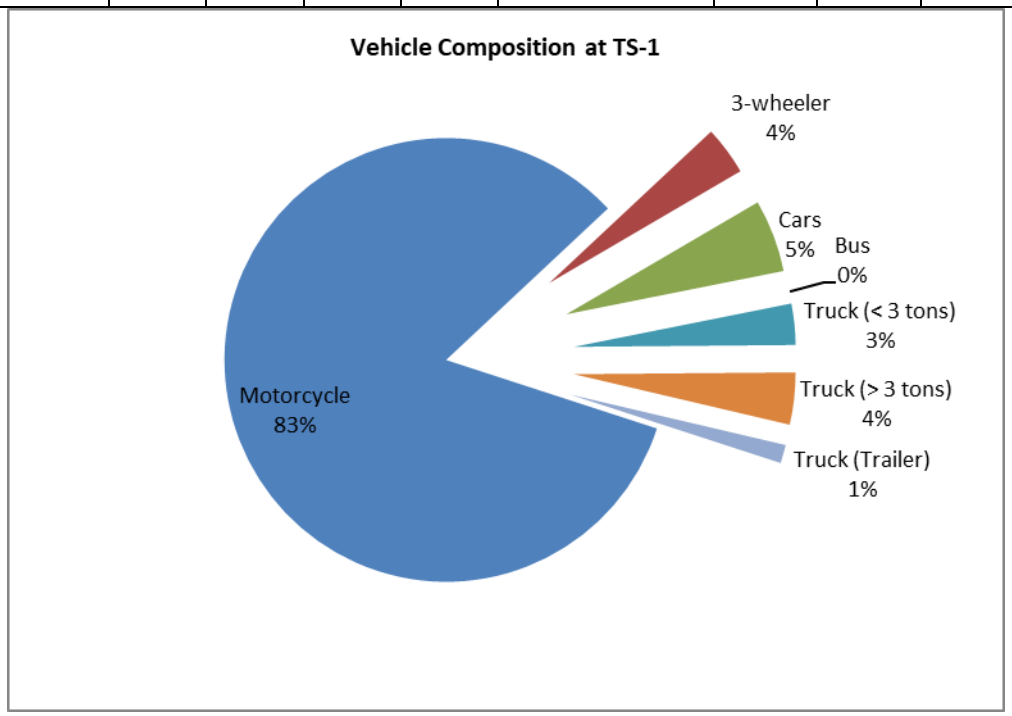
TS-1 တွင် စုစုပေါင်း ၁၂၆၇ ခါဖြတ်သန်းသွားလာပါသည်။ အားလုံးထဲတွင် မော်တော်ဆိုင်ကယ်အသုံးပြုမှု အများဆုံး ဖြစ်ပြီး ၈၃ ရာခိုင်နှုန်းအထိ ရှိပါသည်။ အခြားယာဉ်အမျိုးအစားများမှာ ၁-၅ ရာခိုင်နှုန်းအတွင်းသာရှိပြီး စစ်တမ်းကောက်ယူနေချိန်အတွင်းတွင် ဘတ်စ်ကားကြီးများ ဖြတ်သန်းသွားလာမှု မတွေ့ရှိခဲ့ပါ။ အသေးစိတ် အချက်အလက်များကို ဇယား ၁၂ နှင့် ပုံ ၈ တွင် ဖော်ပြထားပါသည်။

TS-2 **တွင် TS-1** ထက်ယာဉ်သွားလာမှု ပိုမိုမြင့်မားပြီး စစ်တမ်းကောက်ယူချိန်အတွင်းတွင် ၆၈၂၅ ကြိမ် ဖြတ်သန်းသွားလာခဲ့ပါသည်။ မော်တော်ဆိုင်ကယ်သွားလာမှု အများဆုံးဖြစ်ပြီး ၄၀ ရာခိုင်နှုန်း၊ သုံးဘီးယာဉ်နှင့် ထော်လာဂျီများမှာ ၂ ရာခိုင်နှုန်းစီ အသီးသီး ရှိပါသည်။ အခြားယာဉ်အမျိုးအစားများဖြစ်ကြသည့် အိမ်စီးကား၊ ဘတ်စ်ကား နှင့် ကုန်တင်ကား (၃ တန်အောက်နှင့် ၃ တန်အထက်) မှာ ၁၂ မှ ၂၁ ရာခိုင်နှုန်းအထိ ရှိပါသည်။ TS-2 အသေးစိတ်အချက်အလက်များအား ဇယား ၁၂ နှင့် ပုံ ၉ တွင် ဖော်ပြာထားပါသည်။

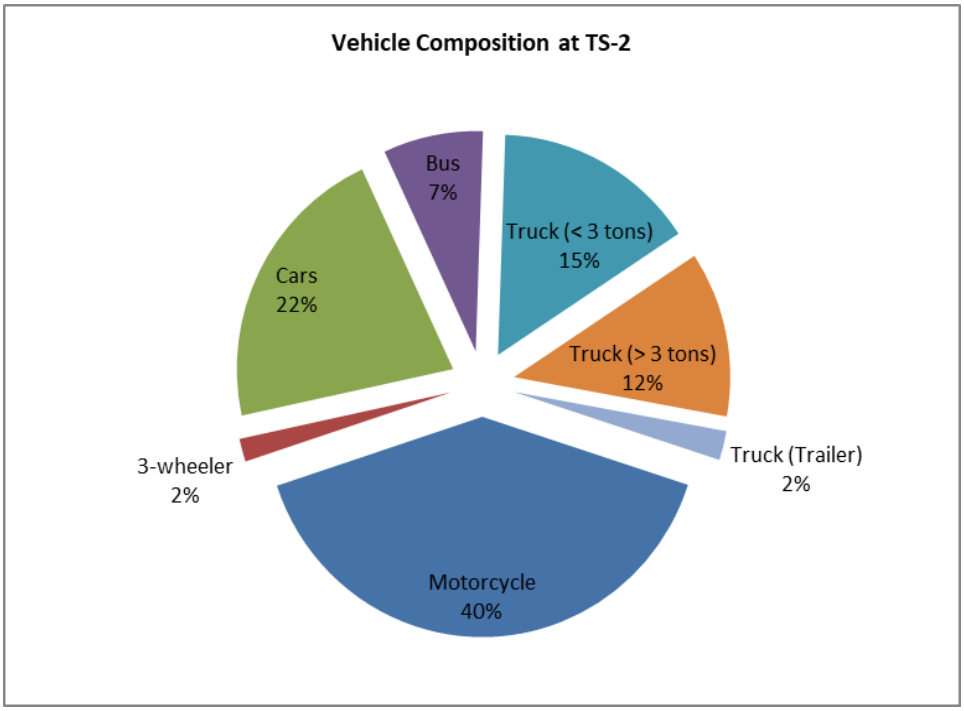
ဇယား (၁၂)။ စစ်တမ်းကောက်ယူသည့်နေရာများတွင် ယာဉ်သွားလာမှုများ

TS-1					**TS-2**				
Class	**In**	**Out**	**Total**	**Total (%)**	**Class**	**Pyay-Ygn**	**Ygn-Pyay**	**Total**	**Total (%)**
Motorcycle	535	517	1052	83	Motorcycle	1349	1376	2725	40
3-wheeler	20	25	45	4	3-wheeler	54	61	115	2
Cars	37	30	67	5	Cars	669	796	1465	21
Bus	0	0	0	0	Bus	246	263	509	7
Truck (< 3 tons)	24	14	38	3	Truck (< 3 tons)	488	548	1036	15
Truck (> 3 tons)	22	26	48	4	Truck (> 3 tons)	415	414	829	12

Truck (Trailer)	11	6	17	1	Truck (Trailer)	75	71	146	2
Total	**649**	**618**	**1267**	**100**		**3296**	**3529**	**6825**	**100**



ပုံ (၈)။ **Vehicle Composition at TS-1**



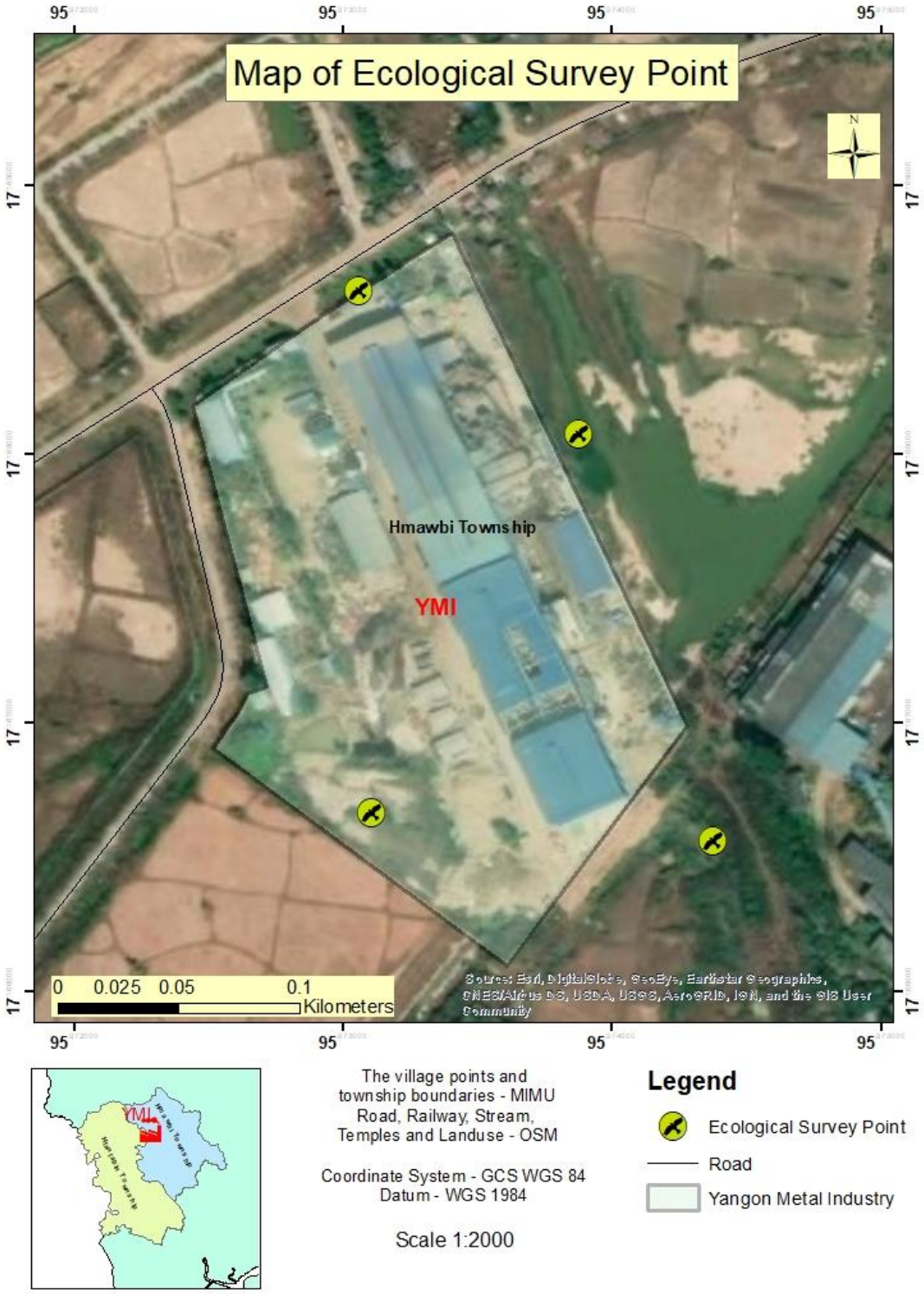
ပုံ (၉)။ **Vehicle composition at TS-2**

၄.၃) သက်ရှိ ဂေဟပတ်ဝန်းကျင်

စစ်တမ်းဧရိယာအား စက်ရုံပတ်ပတ်လည် ၁ ကီလိုမီတာအတွင်း သတ်မှတ်ခါ လေ့လာခဲ့ပါသည်။

ဇယား (၁၃)။ လေ့လာမည့်နေရာများ၏ တည်နေရာအမှတ်များ

No.	Latitude	Longitude
1	17°10'07.0"N	95°58'23.0"E
2	17°10'00.0"N	95°58'23.17"E
3	17°09' 59.62"N	95°58'27.74"E
4	17°10' 05.08"N	95°58'25.95"E



ပုံ (၁၀)။ ဂေဟစနစ်လေ့လာမှုတည်နေရာပြပုံ

၄.၃.၁) အပင်မျိုးစိတ်များ

မြက်ပင်များ၊ ချုံပုတ်ပင်များ နှင့် အခြားအပင်မျိုးစိတ်များအားလုံးကို စစ်တမ်းကောက်ယူကာ **IUCN** အညွှန်းကိုးကားပြီး တိုက်ဆိုင်စစ်ဆေး၍ စီမံကိန်းလုပ်ငန်းများ၏ သက်ရောက်နိုင်မှုအား ဆန်းစစ်ခဲ့ပါသည်။

စီမံကိန်းမှာ လည်ပတ်လျှက်ရှိနေပြီဖြစ်ပြီး စီမံကိန်းလုပ်ငန်းများကြောင့် အပင်များအပေါ် သက်ရောက်နိုင်မှု မရှိနိုင်တော့ပါဟု လေ့လာသုံးသပ်မိပါသည်။

အပင်မျိုးစိတ်များအပေါ် လေ့လာဆန်းစစ်မှုရလာဒ်များ

စီမံကိန်းဧရိယာတွင် အဓိကတွေ့ရသော အပင်မျိုးစိတ် ၂ ခုမှာ စိုက်ပျိုးထားသောအပင်များနှင့် ချုံပုတ်ပင်များဖြစ်ပါသည်။ စုစုပေါင်း အပင်မျိုးစိတ် ၄၀ အားတွေ့ရှိထားပါသည်။ **IUCN Globally Threatened Red List (2019-2)** အရ မျိုးသုဉ်းအန္တရာယ်ရှိသည့် အပင်မျိုးစိတ်များ မပါဝင်ပါ။ စိုက်ပျိုးအပင်များမှာ သရက် **(Mangifera indica),** နှင့် ငှက်ပျောပင် **(Terminalia catappa)** ကဲ့သို့သော သီးပင်စားပင်များဖြစ်ပါသည်။ အခြားအပင်မျိုးစိတ်များအနေဖြင့် လက်ပံ **(Bombax ceiba),** မို့ပင် **(Scaphium scaphigerum),** ကုက္ကိုပင် **(Albizia lebbek)** ကဲ့သို့သော အရိပ်ရအပင်များဖြစ်ပါသည်။ အတွေ့ရများဆုံးအပင်မျိုးစိတ်များမှာ ခရားပင် **(Manikara hexandra),** နှင့် ကန့်ကော် **(Albizia lebbek)** ပင်များဖြစ်ပါသည်။

၄.၃.၂) သတ္တဝါမျိုးစိတ်များ

စီမံကိန်းနေရာအနီးတွင် သတ္တဝါမျိုးစိတ်များမှာ ငှက်နှင့် အခြားအင်းဆက်ပိုးများ တွေ့ရပြီး ၎င်းတို့အပေါ်တွင် သက်ရောက်မှု မရှိနိုင်ဟု မျှော်မှန်းထားပါသည်။ သတ္တဝါမျိုးစိတ်များအား အုပ်စုကြီး ၅ ခုခွဲကာ နို့တိုက်သတ္တဝါ၊ တွားသွားသတ္တဝါ၊ အင်းဆက်၊ ငှက် နှင့် ငါးမျိုးစိတ်များပါဝင်ပါသည်။ မျိုးသုဉ်းအန္တရာယ်ကျလုနီးရှိသည့် မျိုးစိတ်များလည်း တွေ့ရှိနိုင်ပါသည်။ သို့သော်ငြားလည်း စက်မှုလုပ်ငန်းလည်ပတ်သည့်နေရာသည် စက်မှုဇုံအတွင်းတွင်ဖြစ်သဖြင့် ကြီးမားသည့် သက်ရောက်မှု မရှိနိုင်ပါ။

သတ္တဝါမျိုးစိတ်များအပေါ် လေ့လာဆန်းစစ်မှုရလာဒ်များ

လေ့လာသည့်နယ်ပယ်အတွင်းတွင် စုစုပေါင်း ၄၉ မျိုးအား တွေ့ရှိခဲ့ပြီး နို့တိုက်သတ္တဝါ (၂) မျိုး၊ တွားသွားသတ္တဝါ (၁၁) မျိုး၊ လိပ်ပြာ (၈)မျိုး နှင့် ပုစဉ်းရင်ကွဲ (၂)မျိုး၊ ငှက် (၂၂) မျိုး နှင့် ငါးမျိုးစိတ်များ (၄) မျိုးတို့ကို လေ့လာတွေ့ရှိခဲ့ပါသည်။ IUCN Red list of threatened species in fauna(2019-2) အရ မျိုးသုဉ်းအန္တရာယ်ခြိမ်းခြောက်ခံရသည့် မျိုးစိတ်များမပါဝင်ပါ။

၄.၄) လူမှုပတ်ဝန်းကျင်

Yangon Metal Industry (YMI) သည် စက်မှုဇုံအလယ်ထဲတွင် တည်ရှိပါသည်။ ကန်ကလေးရွာမှာ စက်ရုံနှင့် အနီးဆုံး တွင် တည်ရှိပါသည်။ မြောင်းတကာ၊ ကျွဲကူး၊ တောင်တော၊ ကန်ကလေးနှင့် ကုလားကုန်းကျေးရွာများမှာ စက်ရုံ၏ ၃ ကီလိုမီတာအတွင်းတွင် တည်ရှိပြီး သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ ဆန်းစစ်မှုများကို ပြုလုပ်သွားမည့် သက်ရောက်ခံကျေးရွာများ ဖြစ်ပါသည်။ သက်ရောက်ခံကျေးရွာများနှင့် စက်ရုံအကွာအဝေးအား ဇယား ၁၄ တွင် ဖော်ပြထားပါသည်။

ဇယား (၁၄) ။ စစ်တမ်းကောက်ယူမည့် ရွာများစာရင်း

No.	Name	Latitude	Longitude	Distance from YMI
၁	ကုလားကုန်း (အုပ်စုရွာ)	17.16769	95.99140	1.9 km
၂	ကျွဲကူး	17.16769	95.95097	2.4 km
၃	တောင်တော	17.15087	95.95989	2.3 km
၄	မြောင်းတကာ (အုပ်စုရွာ)	17.18330	95.96669	1.9 km
၅	ကန်ကလေး	17.15349	95.97642	1.6 km

လူမှုစီးပွားဆန်းစစ်မှုများတွင် အောက်ပါအချက်အလက်များ ပါဝင်ပါမည်။

Section/Title	Contents
A. Household Characteristics	·Primary information on survey respondents and households (name, gender, ethnicity, age etc.)
B. Income, Expenditure, and Lifestyles	·Average income and major income source ·Recent increase in income and its reason ·Average expenditure status ·Key areas of spending by household
C. Access to Utilities, Basic Social Infrastructure	·Drinking water supply and sanitation ·Sewage and waste management ·Power supply and main source of energy ·Medical and health status ·Status of education facilities such as schools ·Status of religious and cultural facilities
D. Impacts on Ecosystems and Communities	·Expected environmental and social impact (Impact on water

	resources, religious and cultural facilities etc.) ·Positive/Negative environmental/social impacts before and after construction ·Expected impact on vulnerable groups
E. Perceptions and Expectations	·Project perception and level of project info awareness ·Source of project information ·Level of expectations and concerns about the positive/negative impact of the project ·Feedback collections regarding the project
F. Health Condition	-History of Health problems at the study site -Survey of Lead-related issues

၄.၄.၁) စစ်တမ်းကောက်ယူမှုရလာဒ်များ

EKTA မှ စစ်တမ်းအဖွဲ့သည် ဖော်ပြပါကျေးရွာများတွင် လူမှုစီးပွားအခြေအနေများကို ဆန်းစစ်လေ့လာခဲ့သည့် အပြင် ကျန်းမာရေးစစ်တမ်းများကိုပါ ၂၀၂၀ ခုနှစ် ဩဂုတ်လ ၂၄ ရက်မှ ၂၇ ရက်အထိ ကောက်ယူခဲ့ပါသည်။ စစ်တမ်းကောက်ယူသည့်အဖွဲ့တွင် စီမံကိန်းစီမံကွပ်ကဲသူများ၊ စစ်တမ်းအဖွဲ့၏ ခေါင်းဆောင် နှင့် အားဖြည့်ကူညီသူ ၂ ဦးပါဝင်ပါသည်။ ကျန်းမာရေးစစ်တမ်းကောက်ယူမှုအတွက်လည်း ဆေးပညာဒေါက်တာတဦး ပါဝင်ကာ သက်ရောက်ခံကျေးရွာများတွင် စစ်တမ်းကောက်ယူခဲ့ပါသည်။

No.	Survey Area	Duration	Surveyor/Interviewer	Remarks
1	Myaung Ta Kar	25.8.2020	EKTA social survey team + a medical doctor	❖ Two responsible persons from the YMI factory also joined the team throughout the survey period. ❖ Medical doctor checked the basic health status of the respondents in village community and factory compound as well as conduct the interview survey on their health conditions using the health survey questionnaire.
2	Kular Kone	26.8.2020	EKTA social survey team + a medical doctor	
3	Kan Ka Lay	24.8.2020	EKTA social survey team + a medical doctor	
4	Kywe Ku	24.8.2020	EKTA social survey team + a medical doctor	
5	Industrial Zone	27.8.2020	EKTA social survey team + a medical doctor	
6	Other Places	24.8.2020	EKTA social survey team + a medical doctor	

ပုံ (၁၁)။ စက်ရုံနှင့် ကျေးရွာများတွင် လူမှုစီးပွားစစ်တမ်းကောက်ယူသည့် ပုံရိပ်များ

(၁) လူမှုစစ်တမ်းကောက်ယူရာတွင် ဖြေဆိုသူအရေအတွက်

လူမှုစီးပွားကောက်ယူချိန်တွင် စက်မှုဇုန်နှင့် အနီးအနားကျေးရွာများမှ စုစုပေါင်း ၁၁၄ ယောက် ပူးပေါင်းပါဝင်ခဲ့ကြပါသည်။ အောက်ပါရလဒ်များတွင်ပြထားသည့်အတိုင်း မြောင်းတကာကျေးရွာမှာ ပူးပေါင်းပါဝင်မှုအများဆုံးဖြစ်ခဲ့ပါသည်။

ကျေးရွာများ	ပါဝင်ဖြေဆိုသူအရေအတွက်	ကျား	မ
မြောင်းတကာ	၆၁	၄၉	၁၂
စက်မှုဇုန်	၂၁	၂၀	၁
ကုလားကုန်း	၁၀	၆	၄
ကျဲကူး	၅	၂	၃
ကန်ကလေး	၁၆	၁၅	၁

အခြား	၁	၁	၀
စုစုပေါင်း	**၁၁၄**	**၉၃**	**၂၁**

၄.၅) လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူခြင်း

လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူခြင်းအတွက် ဆေးဘက်ဆိုင်ရာဆရာဝန်တဦးဖြစ်သူ (ဒေါက်တာချမ်းမြေသူ၊ ဆမ-နံပါတ် ၄၈၅၁၇) ပါဝင်ဆောင်ရွက်ခဲ့ပြီး လူမှုစီးပွားစစ်တမ်းကောက်ယူသည့်ရက်များမှာပင် တပြိုင်နက်တည်း ဆောင်ရွက်ခဲ့ပါသည်။ လိုအပ်သည့် ဆေးဘက်ဆိုင်ရာအသိအမှတ်ပြုလက်မှတ်များကို နောက်ဆက်တွဲ ၈ တွင် ဖော်ပြထားပါသည်။ ကျန်းမာရေးစစ်တမ်းကောက်ယူမှုမေးခွန်းများကို ကျန်းမာရေးဆိုင်ရာ အကြံပေးပညာရှင်မှ ပြင်ဆင်ပေးထားခဲ့ပြီး နောက်ဆက်တွဲ ၅ တွင် ဖော်ပြထားပါသည်။

ပုံ (၁၂)။ YMI စက်ရုံတွင်းရှိဆေးပေးခန်းတွင် လုပ်သားကျန်းမာရေးစစ်တမ်းကောက်ယူမှု မှတ်တမ်းပုံရိပ်များ

ပုံ (၁၃)။ စီမံကိန်း သက်ရောက်ခံကျေးရွာများတွင် လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူမှု မှတ်တမ်းပုံရိပ်များ

၄.၅.၁) ဝန်ထမ်းများနှင့် လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူစစ်ဆေးမှု ရလာဒ်များ

EKTA ကျန်းမာရေးအကြံပေးမှ ခဲဆိပ်သင့်ခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော ကျန်းမာရေးချို့တဲ့မှုများနှင့် ဆက်နွယ်သည်များကို ဖြေဆိုသူများအား မေးမြန်းဆန်းစစ်ခဲ့ပါသည်။ လက်ရှိအခြေအနေတွင် YMI စက်ရုံဝန်ထမ်းများ အပါအဝင် ဖြေဆိုသူ ၉၀ ရာခိုင်နှုန်းကျော်ကျော်က ကျန်းမာရေးဆိုးရွားစွာထိခိုက်မှု မရှိပါကြောင်း ဆန်းစစ်တွေ့ရှိခဲ့ရပါသည်။ ဖြေဆိုသူ ၂၀ ရာခိုင်နှုန်းကျော်ကျော်က စီမံကိန်းလည်ပတ်စဉ်တွင် ကျန်းမာရေးထိခိုက်မှုဆိုးရွားစွာ ဖြစ်ပေါ်နိုင်ပါသည်ဟု ဖြေဆိုထားသော်လည်း ခဲစိမ့်ယိုခြင်း နှင့် ခဲဆိပ်သင့်ခြင်းအတွက် ဆိုးရွားသော အကြံပြုချက်များ ၊ ဖြေဆိုချက်များ မပါဝင်ခဲ့ပါ။ လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူချိန်တွင် ဖြေဆိုသူအနည်းငယ်က ခဲဆိပ်သင့်ခြင်းနှင့်သက်ဆိုင်သော အကြောင်းခြင်းရာများကို တွေ့ရှိခဲ့ဖူးသည်ဟု ဖြေဆိုသော်လည်း ၎င်းမှာ ဤစီမံကိန်းမလည်ပတ်ခင်က အကြောင်းအရာများ ဖြစ်ပါသည်။

စစ်တမ်းကောက်ယူမှုရလာဒ်များအရ စီမံကိန်းတည်ရှိရာဒေသသည် သာမာန်ဖျားနာခြင်း တုပ်ကွေးဖျားခြင်းများမှ လွဲ၍ အခြားသော ကူးစက်ရောဂါများ မရှိသည်ကို တွေ့ရပါသည်။ စီမံကိန်းနေရာတွင်လည်း ရောဂါကူးစက်ပြန့်ပွားခဲ့သည့် ဖြစ်ရပ်များ မရှိခဲ့ပါ။

၅) သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာထိခိုက်မှုများနှင့် လျှော့ချရေးနည်းလမ်းများ

၅.၁) ထိခိုက်မှုဆန်းစစ်ခြင်းနည်းလမ်းများ

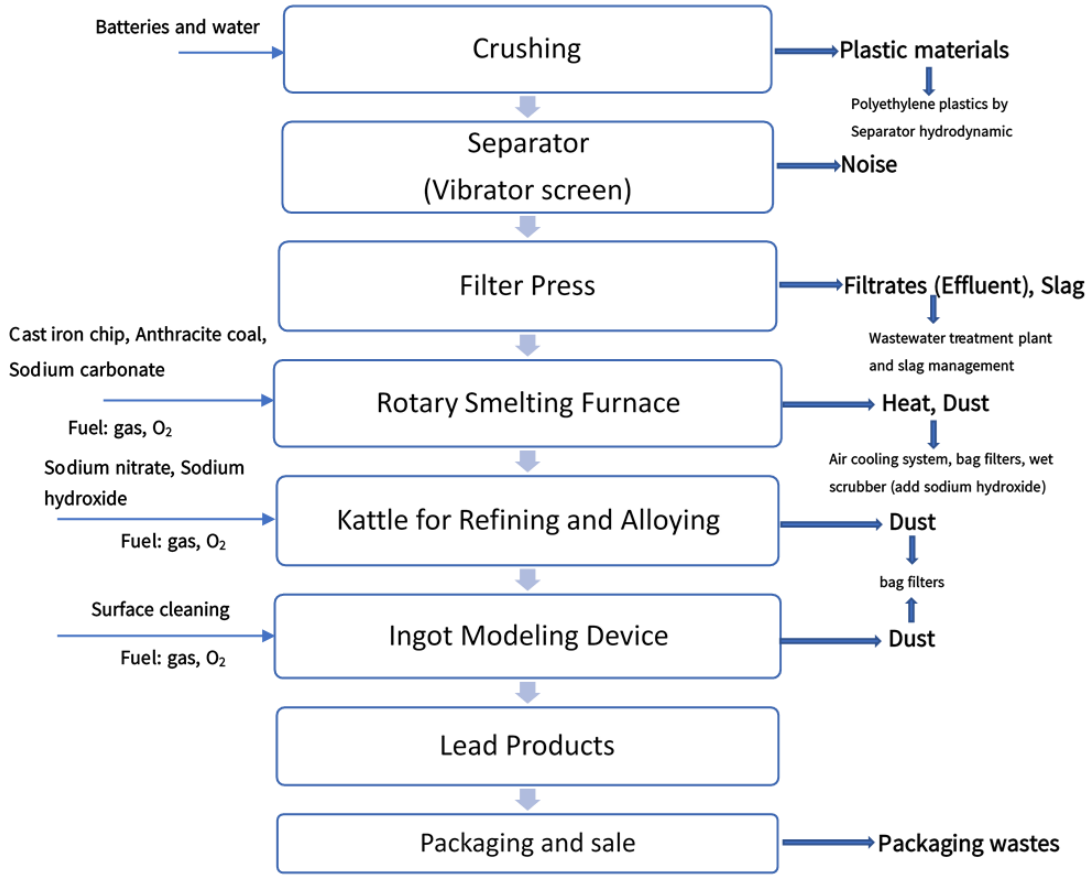
ဇယား (၁၅) ။ ဆန်းစစ်မည့်နည်းလမ်းနှင့်ချဉ်းကပ်မှုများ

ထိခိုက်မှုအဆင့်	ထိခိုက်ရသည့်အကြောင်းအရာများ	လျှော့ချရေးနည်းလမ်းများ	ကြွင်းကျန်ရစ်နိုင်သည့်ထိခိုက်မှုအဆင့်များ
Critical (A)	-impact is irreversible with extensive and severe damages to ecology and socioeconomic values -issues cannot be resolved	Cannot mitigate and should find the alternative approach.	Need to be changed, relocated or abandoned
Major (B)	-impact is substantial, but it can be reduced technically and/or adequate management measures	√	Residual impact will be minor.
Moderate (C)	-impact is moderate in terms of extent and severity -can effectively reduce using simple measures	√	Residual impact will be insignificant.
Minor (D)	-impact magnitude is small in a small area -easily manage through good implementation practices	Control measures	Residual impact will be negligible.
Insignificant (E)	-impact is very small compared to Level 2 -easily mitigate through good	x	Residual impact will never become significant.

	implementation practices		
Nature of Impact	Positive impact (+)	An interaction will possibly lead to positive impacts	
	Negative impact (-)	An interaction will possibly lead to negative impacts	

၅.၂) အဓိကထိခိုက်မှုများနှင့် လျော့ချမည့်နည်းလမ်းများ

စီမံကိန်းရေးဆွဲစဉ်ကာလ ၊ ဆောက်လုပ်ရေးကာလနှင့် ထုတ်လုပ်လည်ပတ်ရေးကာလများတွင် ဖြစ်ပေါ်လာနိုင်သော ထိခိုက်မှုများကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။ သို့သော် စက်ရုံမှာ ဆောက်လုပ်သည့် လုပ်ငန်းများအားလုံး ဆောင်ရွက်ပြီးစီးနေပြီဖြစ်ကာ ထုတ်လုပ်ရေးအဆင့်သို့ ရောက်ရှိနေပြီး ဖြစ်ပါသည်။



ဝန်ထမ်းများမှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းများနှင့် မီးဖိုချောင်စွန့်ပစ်ပစ္စည်းများလည်း ရှိနိုင်ပြီး စည်ပင်သာယာမှ သတ်မှတ်ပြဋ္ဌါန်းပေးထားသည့်အတိုင်း လိုက်နာဆောင်ရွက်မည် ဖြစ်ပါသည်။

ဇယား (၁၆) ။ ခဲအရည်ကျိုသန့်စင်စက်ရုံမှ ဖြစ်ပေါ်လာနိုင်သည့် ကောင်းကျိုးဆိုးကျိုးများ

Sr. No.	Aspect/Activity	Minor (D)	Moderate (C)	Major (B)	Insignificant (E)	Critical (A)	Need to be explored
1	**Investigation and design Phase**						
1.1	Soil Investigation				√		
2	**Construction Phase**						
2.1	Impact on fauna	√					
2.2	Impact on flora	√					
2.3	Impact on water resource	√					
2.4	Land value increase	√					
2.5	Influx of labour	√					
2.6	Dust		√				
2.7	Noise Nuisance		√				
2.8	Construction Accidents	√					
3	**Production & Operation Phase**						
3.1	Impact on Fauna				√		
3.2	Impact on Flora				√		
3.3	Impact on water availability for other uses		√				
3.4	Impact on groundwater	√					
3.5	Impact on surface water		√				
3.6	Employment Opportunities		√				
3.7	Influx of labour from other area	√					
3.8	Loss of historical and cultural assets				√		
3.9	air emissions		√				
3.10	Noise nuisance	√					

3.11	Solid waste		√				
3.12	Chemical Hazards			√			
3.13	Health Hazards			√			
3.14	Transportation	√					
3.15	Soil			√			

စီမံကိန်းဆောက်လုပ်ရေးကာလမှ ပြီးမြောက်သွားသည်ဖြစ်ပါ၍ လုပ်ငန်းလည်ပတ်ချိန်အတွင်း ပြောင်းလဲမှုများအား အောက်ပါပါရာမီတာများဖြင့် လိုအပ်သလို စစ်ဆေးတိုင်းတာသွားပါမည်။

(က) လွှင့်မြောအမှုန်နှင့်လေထုအရည်အသွေးစီမံခန့်ခွဲမှု

(ခ) အသံဆူညံမှုနှင့် တုန်ခါမှု

(ဂ) မြေဆီလွှာတိုက်စားခြင်းနှင့် စီးဆင်းရေ စီမံခန့်ခွဲမှု

(ဃ) စွန့်ပစ်အမှိုက်စီမံခန့်ခွဲမှု

(င) လူသုံးနှင့်စက်ရုံသုံး စွန့်ပစ်ရေဆိုးစီမံခန့်ခွဲမှု

(စ) ယာဉ်အသွားအလာစီမံခန့်ခွဲမှု

(ဆ) လုပ်ငန်းခွင်ကျန်းမာရေးနှင့်ဘေးကင်းစေရေး စီမံခန့်ခွဲမှု

(ဇ) သတင်းအချက်အလက်များထုတ်ပြန်မှုနှင့် ဆွေးနွေးတိုင်ပင်ခြင်း

၅.၃) အရေးပေါ်တုန့်ပြန်မှု အစီအစဉ်

အရေးပေါ်တုန့်ပြန်မှုအစီအစဉ်နှင့် ကယ်ဆယ်မှုအစီများတွင် အောက်ပါရည်ရွယ်ချက်များဖြင့် ဖွဲ့စည်းထားပါသည်။

- အလုပ်သမားများအား အရေးပေါ်အခြေအနေများတွင် ၎င်းတို့ဆောင်ရွက်ရမည့် လုပ်ငန်းစဉ်များအား သိရှိစေခြင်း။
- အရေးပေါ်အခြေအနေများနှင့်သက်ဆိုင်သည့် ဘေးအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်များအား ချမှတ်ကာ လိုက်နာဆောင်ရွက်စေခြင်း

လုပ်ဆောင်ရမည့်တာဝန်များတွင် ပါဝင်သည်များမှာ -

၁. အရေးပေါ်ဆက်သွယ်ရမည့်သူများ/ဖုန်းနံပါတ်များအား မှတ်တမ်းထားရှိခြင်း

က) အဓိကစီမံဆောင်ရွက်မည့်အဖွဲ့ဝင်များ

(ခ) ပြင်ပအရေးပေါ်ဝန်ဆောင်မှုလုပ်ငန်းများအား ဆက်သွယ်ရန်များ (မှော်ဘီမြို့မီးသတ်ဌာန ၊ မြို့နယ်ရဲစခန်း ၊ ကုမ္ပဏီနှင့်ချိတ်ဆက်ထားသည့် ဆေးခန်းများ ၊ ဆေးရုံများ ၊ တာဝန်ကျဆရာဝန်များ၏ ဖုန်းနံပါတ် များ)

၂. စီမံကိန်းနေရာရှိ ကြော်ငြာဘုတ်တွင် အန္တရာယ်သတိပေးချက်များအား အမြဲ ပြင်ဆင်ဖော်ပြထားခြင်း

(က) အရေးပေါ်ထွက်ပေါက်များ ၊ အရေးပေါ်အသက်ကယ်ပစ္စည်းများ ထားရှိရာနေရာ ၊ မီးသတ်ဆေးဗူးများနှင့် လုပ်သားများ စုဆုံရာနေရာ (စက်ရုံတွင်းတွင် အရေးပေါ်စုဝေးရာနေရာကို အတိအကျသတ်မှတ်ပေးပါမည်)

(ခ) အရေးပေါ်အသက်ကယ်ပစ္စည်းများ

(ဂ) ကုမ္ပဏီ လူနာတင်ယာဉ်ဖုန်းနံပါတ်များ

၅.၄) Covid-19 ကူးစက်ရောဂါအတွက် ကာကွယ်တားဆီးရေးနည်းလမ်းများ

စစ်တမ်းကောက်ယူချိန်တွင် **Covid-19** ကူးစက်ရောဂါအတွက် ကာကွယ်တားဆီးရေးနည်းလမ်းများ ပြုလုပ်ထားသည်ကို အောက်ပါအတိုင်း လေ့လာတွေ့ရှိရပါသည်။ စက်ရုံအနေဖြင့် **MOHS guidelines** များကို အတိအကျလိုက်နာဆောင်ရွက်ကာ လက်ဆေးကန်နေရာများ စီမံထားရှိခြင်းနှင့် လူလူချင်းထိတွေ့မှု မရှိစေရန် သတ်မှတ်ထားသည့်အကွာအဝေးအတိုင်း ရှိနေစေခြင်း အစရှိသည့်စီမံခန့်ခွဲမှုများကို စနစ်တကျပြုလုပ်ထားကြောင်းတွေ့ရပါသည်။ **Covid-19** ကူးစက်ရောဂါကာလအတွင်း အောက်ပါတုန့်ပြန်ဆောင်ရွက်မှုများကို တွေ့ရှိရပါသည်။

- ဝင်ပေါက်တခုတည်းသာထားရှိပြီး အပူချိန်နှင့် တကိုယ်ရေသန့်ရှင်းမှုကို စစ်ဆေးခြင်း
- စက်ရုံဝင်ပေါက်တွင် လက်ဆေးရန် ပစ္စည်းများထောက်ပံ့ကာ လက်ဆေးသည့်နေရာ သတ်မှတ်ပေးထားခြင်း
- လုပ်ငန်းခွင်နေရာအား သန့်ရှင်းအောင်ထားပြီး ပိုးသတ်ပေးထားပါသည်။ ဝန်ထမ်းနှင့် ထိတွေ့မှုအများဆုံးဖြစ်နိုင်သည့် မျက်နှာပြင်နေရာများ (စားပွဲခုံများ၊ တယ်လီဖုန်း၊ အလုပ်စားပွဲများ၊ တံခါးလက်ကိုင်များ အစရှိသဖြင့်) အား အဓိကထား ပိုးသတ်ခြင်း
- ဝန်ထမ်းများနှင့် စက်ရုံကို ရောက်လာသူများအတွက် PPE များ (face masks, hairnets, white coats, goggles) ဝတ်ဆင်ရန် ထားရှိသတ်မှတ်ပေးခြင်း
- အလုပ်သမားများ၊ ကန်ထရိုက်တာများ နှင့် စားသုံးသူများအကြား လက်ဆေးခြင်းကို နှိုးဆော်တိုက်တွန်းအားပေးမှုကို ပြုလုပ်ထားပါသည်။ သန့်ရှင်းမှုနှင့် ပိုးသတ်ခြင်းများအတွက် လိုအပ်သောပစ္စည်းများကိုလည်း ထောက်ပံ့ပေးထားခြင်း

- အရက်ပျံပါသော လက်သန့်ဆေးများကို အသုံးပြုရန် အားပေးခြင်း
- ဝန်ထမ်းများကို တကိုယ်ရေသန့်ရှင်းမှုနှင့် ဇီဝလုံခြုံမှု သင်တန်းများ စီမံပေးခြင်း
- COVID-19 ကူးစက်ရောဂါနှင့်သက်ဆိုင်သည့် လက္ခဏာရပ်တခုခုတွေ့ရှိပါက လုပ်ဆောင်ရမည့် လုပ်ငန်းစဉ်များကို အလုပ်သမားများ ရှင်းလင်းပြောကြားထားခြင်း
- စက်ရုံအတွင်း၌ Covid-19 ရောဂါအသိပေးစာစောင်များနှင့် ပြေလျော့စေသည့်နည်းလမ်း အစီအစဉ်များကို ကပ်ထားပေးခြင်း
- မလိုအပ်သည့် ကိုယ်ခန္ဓာချင်းထိတွေ့မှုများ တတ်နိုင်သမျှ မပြုလုပ်ရန် တင်းကြပ်ထားခြင်း
- MOHS မှသတ်မှတ်ပေးထားသည့်အတိုင်း စောင့်ကြည့်နေရာများ စီမံထားရှိခြင်းနှင့် ကုန်ကြမ်း/ ကုန်ချောများ သယ်ယူပို့ဆောင်ရေး စည်းကမ်းများကို လိုက်နာခြင်း

၆) ပြည်သူလူထုသို့ သတင်းအချက်အလက်ထုတ်ပြန်ခြင်းနှင့် ဆွေးနွေးတိုင်ပင်သည့် အစည်းအဝေးများ

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) အပိုဒ် ၆၁ အရ စီမံကိန်းပိုင်ရှင်များအနေဖြင့် ဆွေးနွေးတိုင်ပင်ခြင်းအစည်းအဝေးကို အချိန်ကိုက်ကျင်းပပေးခဲ့ပြီး စီမံကိန်းအကြောင်းအရာများ၊ ကောင်းကျိုးဆိုးပြစ်များ၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ ဆန်းစစ်တွေ့ရှိချက်များကို အကြံပေးများအကူအညီဖြင့် နည်းလမ်းတကျ ဆောင်ရွက်ခဲ့ပါသည်။

၆.၁) စီမံကိန်းသက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးသည့် အစည်းအဝေးများ

Covid-19 ကာလအတွင်း အစည်းအဝေးပြုလုပ်ရသည်ဖြစ်ပါသောကြောင့် ဖိတ်ကြားနိုင်သည့်ဦးရေ ကန့်သတ် မှု ပြုလုပ်ရသည်ဖြစ်ပါသောကြောင့် စီမံကိန်းပိုင်ရှင် ၊ ပတ်ဝန်းကျင်အကြံပေးများ နှင့် မြို့နယ် အုပ်ချုပ်ရေးမှူး ရုံးတို့ ပူးပေါင်းတိုင်ပင်ကာ တစ်နေရာတည်းတွင် လူစုလူဝေးမဖြစ်စေရန်ကာကွယ်ရင်း အခြေအနေနှင့် လိုက်လျောညီထွေဖြစ်မည့် အစည်းအဝေးတစ်ရပ် ဖြစ်မြောက်စေရန် ဆောင်ရွက်ရပါသည်။ အစည်းအဝေးတက်ရောက်သူများသို့ လက်ဆေးသန့်စင်ရည်များ ၊ မျက်နှာဖုံး (Masks) များကို ပေးဝေကာ အစည်းအဝေး ခန်းမအတွင်း တစ်ဦးနှင့် တစ်ဦး လုံလောက်စွာကွာဝေးစေရန် (social distancing) ချမှတ်ဆောင်ရွက်ချက်များအား အတိအကျ လိုက်နာကာ ပြုလုပ်ခဲ့ပါသည်။ တက်ရောက်သူများအား လိပ်မူ ဖိတ်ကြားကာ စုစုပေါင်း ၁၄ ယောက် တက်ရောက်ခဲ့ပါသည်။

အစည်းအဝေးတက်ရောက်သူများစာရင်း

No.	Name	Position	Department	Contact
1	U Khin Zaw	Sub department officer (Electric)	Directorate of Industrial Supervision and	09 795515827

			Inspection: DISI	
2	U Maung Nge	Security Officer/ Myaungtagar Industrial Zone	Police Station	09 970553663
3	U Hla Soe	Administrator	Forest Department (Hmawbi)	09 423669902
4	U Kyaw Htay	Administrator	Kularkone Village	09 5059798
5	U Kyaw Htoo	Factory Officer	Yangon Metal Industry	09 254043654
6	U Myo Thu	Safety Manager	Yangon Metal Industry	09 959560310
7	U Moe Kyaw Thu	Assistant Manager (QC)	Yangon Metal Industry	09 450063177
8	U Nyi Nyi Tun	Admin Manager	Yangon Metal Industry	09 420124349
9	U Myo Nyunt Aung	Deputy Factory Manager	KMN Galvanizing	09 979765226
10	U Tint Myo Naing	MD	Yangon Metal Industry	09 5103779
11	Dr. Kyaw Nyein Aye	Environmental Consultant	EKTA	09 5038656
12	Dr. Lai Lai Win	Environmental Consultant	EKTA	09 797241421
13	Daw Nan Thazin Oo	Social	EKTA	09 777006389
14	Daw Ei Ei Win Myat	Social	EKTA	09 777006391

အမေးအဖြေကဏ္ဍ

မေးမြန်းသူ	**မေးခွန်း**	**ဖြေကြားချက်များ**
ဦးကျော်ဌေး (ကုလားကုန်းကျေးရွာအုပ်စု အုပ်ချုပ်ရေးမှူး)	ကျွန်တော်တို့ဒေသမှာရှိတဲ့ Yangon Metal စက်ရုံမှာ သဘာဝပတ်ဝန်းကျင်နဲ့ ပတ်သက်တဲ့ အစည်းဝေးမှာ အခုလို လာရောက်ဆွေးနွေးခွင့်ရလို့ ကျေးဇူးတင်ပါတယ်။ ကျွန်တော်တို့ မြောင်းတကာစက်မှုဇုံထဲမှာဘဲ စက်ရုံတစ်ခုကြောင့် ခဲဆိပ်တက်ပြီးကလေးတစ်ယောက် ဆုံးသွားတဲ့ဖြစ်ရပ်ရှိခဲ့ပါတယ်။ အဲ့လိုဖြစ်သွားတဲ့အပေါ်မှ ကျွန်တော်တို့ အနေနဲ့ အများကြီးရှင်းလင်းရပါတယ်။ ကျွန်တော်ဒီစက်ရုံကို အရင်က သဘာဝပတ်ဝန်းကျင်နဲ့ပတ်သက်ပြီး လူကြီးလမ်းကြောင်းနဲ့တစ်ခေါက်ရောက်ဖူးပါတယ်။	ဦးတင်မျိုးနိုင် (MD, YMI) အခုလိုဆွေးနွေးပေးတာကျေးဇူးတင်ပါတယ်။ ကျွန်တော်တို့ကုမ္ပဏီစတည်ထောင်ကတည်းက ဝန်ထမ်းတွေကို မိသားစုတွေလို စောင့်ရှောက်ပါတယ်။ ဝန်ထမ်းတစ်ယောက်က စက်ရုံကိုဝင်လာတာနဲ့ အဝတ်အစားလဲဖို့ အဆင်သင့် ထားပေးထားပါတယ်။ ပြန်ရင်လည်း အဲ့အဝတ်ကို ချွတ်ထားခဲ့ရုံပါဘဲ။ စားသောက်ရေးအပိုင်းမှာလည်း အသီးရွက် ဟင်းရည်ငါးပိ တို့စရာနဲ့ တပတ်ကို အသားဟင်း ၆ ရက်ကျွေးပါတယ်။

	စက်ရုံအခြေအနေကို ကြည့်လိုက်တဲ့ အခါမှာ ကျွန်တော့်အနေအထားနဲ့ ပြောရရင် သန့်ရှင်းသပ်ရပ်မှုတွေ အများ ကြီးတွေ့ရပါတယ်။ ဒါပေမယ့် လိုအပ် ချက်ဆိုတာကတော့ ရှိလာ နိုင်ပါတယ်။ ကျွန်တော်တို့ကတော့ ပညာရှင် မဟုတ်တဲ့အတွက် လိုအပ် ချက်တွေကို မဆောင်ရွက် နိုင်ပါဘူး။ ပညာရှင်တွေအနေနဲ့ စနစ်တကျ ဆောင်ရွက်ပေးစေချင်ပါတယ်။ ယခ ုစက်ရုံကစွန့်ပစ်တဲ့ Battery တွေကို ပြန်လည်ထုတ်လုပ်တာ ဖြစ်တဲ့အ တွက် လုပ်သားများ၏ ကျန်းမာရေးနဲ့ ပတ်သက်ပြီး ဆေးစစ်မှု များကို ၆လ တစ်ကြိမ်လုပ်ဆောင် ပေးဖို့ ကျွန်တော် အနေနဲ့အကြံပြုချင် ပါတယ်။ ဝန်ထမ်း များအနေနဲ့က သူတို့စရိတ်နဲ့ သူတို့ ဆေးစစ်ဖို့ဆိုတာက မဖြစ်နိုင်ပါဘူး။ စက်ရုံအနေနဲ့ အလုပ်သမားများကို စနစ်တကျနဲ့ ဂရုစိုက်ပေးစေချင်ပါ တယ်။ ကျွန်တော်တို့ အုပ်ချုပ်ရေး အပိုင်းအနေနဲ့က ပြည်သူလူထုတွေ ထိခိုက်နစ်နာမှု မဖြစ်အောင် အမြဲ တမ်းကြိုးစားနေရတာပါ။ ကျွန်တော်တို့က အခြေခံလူတန်းစား တွေနဲ့ အမြဲထိတွေ့နေရတာဖြစ်ပါ တယ်။ ခုစက်ရုံအနေနဲ့လည်း အလုပ် သမားတွေနစ်နာမှုမရှိအောင် လုပ် ဆောင်ပေးပါလို့ အကြံပြုချင်ပါတယ်။	တစ်နေ့ကို ထမင်း ၃ နပ် ကျွေး ပါတယ်။ တစ်ပတ်တစ်ခါ နွားနို့ တိုက်ပါတယ်။ တစ်နေ့ကို ဌက် ပျောသီး ၂ လုံး မဖြစ်မနေ စားခိုင်း ပါတယ်။ ဆေးစစ်မှုအပိုင်းအနေနဲ့ကတော့ ရုံးဝန်ထမ်းတွေကို တစ်နှစ် ၁ ကြိမ် စစ်ဆေးပေးပါတယ်။ Operation လုပ်တဲ့ဝန်ထမ်းတွေ ကိုတော့ ၆ လ ၁ ကြိမ် စစ်ပေးပါတယ်။ ကုမ္ပဏီ စရိတ်နဲ့ဘဲ အားလုံးကို စစ်ပေးတာ ဖြစ်ပါတယ်။ ဝန်ထမ်း များအနေနဲ့ ကျန်းမာရေးစစ်ဆေး ချက်အရ သွေးတွင်းခဲပါဝင်မှု level နဲ့နဲ့ တက်တယ်ဆိုတာနဲ့ ဌာန ပြောင်းပေးတာတွေ လုပ်ပါတယ်။

	အခုလိုရှင်းပြပေးတာကျေးဇူးတင်ပါတယ်။ ကျွန်တော်အနေနဲ့လည်း အားလုံးရဲ့ ကောင်းကျိုးကို မျှော်မှန်းပြီး ဆွေးနွေးတာဖြစ်ပါတယ်။ အကောင်းဆုံးလုပ်နေတဲ့အတွက်လည်း ကျေးဇူးတင်ပါတယ်။ ယခုလိုစက်ရုံတွေ ကျွန်တော်တို့နိုင်ငံမှာ မြင်တွေ့ရတဲ့အတွက် ဝမ်းသာပါတယ်။	ဒေါက်တာလဲ့လဲ့ဝင်း (ပတ်ဝန်းကျင်အကြံပေး) ကျွန်မတို့အနေနဲ့ ကုမ္ပဏီကနေ အခုလို ကျန်းမာရေးစောင့်ရှောက်မှုများ ဆောင်ရွက်နေတာကို ကြားသိထားရပေမယ့် ခဲပါဝင်မှုအဆင့် သတ်မှတ်ချက်များ ၊ အသေးစိတ် လုပ်ဆောင်ချက်များကို မသိရှိရသေးပါသဖြင့် ယခုတင်ပြချက်တွင် မဖော်ပြခဲ့သော်လည်း ရှေ့ဆက် ဆောင်ရွက်မည့်လုပ်ငန်းစဉ်များ တွင် ဆန်းစစ်ဖော်ပြပေးရန် ထည့်သွင်းထားသည့်အတိုင်း အမှန်တကယ် စိစစ်ဖော်ပြပေးသွားမှာ ဖြစ်ပါတယ်။
ဦးတင့်မျိုးနိုင် (MD, YMI)	ကျွန်တော်တို့မှာ ယခုခဲထုတ်တဲ့စက်ရုံအပြင် **Battery** ထုတ်လုပ်တဲ့ စက်ရုံရှိပါတယ်။ ကုမ္ပဏီမှ ခဲစတင်ထုတ်လုပ်ရခြင်း ရည်ရွယ်ချက် ကတော့ ပြည်တွင်းအစားထိုးအတွက်ကိုစထုတ်တာပါ။ ပစ္စည်းတွေ ထုတ်ဖို့အတွက်ကိုးရီးယားကနေစက်ပစ္စည်းတွေကို ဝယ်ယူတာ ဖြစ်ပါတယ်။ အဲ့ဒီစက်နဲ့လည်ပတ်တော့ ခဲတွေကပိုထွက်လာပါတယ်။ အဲ့ဒါကြောင့် **export** စတင်ပို့ခြင်းဖြစ်ပါတယ်။ ကျွန်တော်တို့ စွန့်ပစ်ရေတွေကို **zero drain** ဆိုပြီး အပြင်ကိုလုံးဝမစွန့်ထုတ်ဘူးဆိုတဲ့ ဟာကို ကြိုးစားလုပ်ဆောင်နေပါတယ်။ အဲ့ဒီ **system** က အမေရိကန်နဲ့ ဥရောပမှာ အသုံးပြုတာဖြစ်ပါတယ်။ အခြားစက်ရုံတွေအနေနဲ့ အဲ့ဒီ **system** ကို အသုံးပြုချင်တယ်ဆိုရင် ကျွန်တော့်တို့အနေနဲ့ **design share** လို့ရပါတယ်။ ကျွန်တော်တို့အနေနဲ့ နိုင်ငံတကာ **secondary lead conference** ကိုနှစ်နှစ်တစ်ကြိမ်တက်ရောက်ပါတယ်။ အဲ့ဒီမှာက နည်းပညာ ပြောင်းလဲမှုတွေ၊ စက်ပိုင်းဆိုင်ရာပြောင်းလဲမှုတွေ၊ ပတ်ဝန်းကျင်ကို ဘယ်လိုတိုးတက်အောင်	

	လုပ်မယ်ဆိုပြီး ဆွေးနွေးတာတွေရှိပါတယ်၊ အဲ့ဒါတွေကို ကြိုးစားပြီး အားလုံးအတွက် ရေရှည်မှာ အကျိုးရှိအောင် လုပ်ဆောင်ပါတယ်။
ဒေါက်တာကျော်ငြိမ်းအေး (EKTA)	အလုပ်သမားဝန်ကြီးဌာနကလည်း စည်းကမ်းထုတ်ထားတာရှိပါတယ်။ အလုပ်ခွင်ကျန်းမာရေး၊ အလုပ်ခွင် အန္တရာယ်ကင်းရှင်းရေးတွေ ရှိပါတယ်။ ကျွန်တော်တို့ရေးသားမယ့် အစီရင်ခံစာထဲမှာလဲ ထည့်သွင်းရေးသား မှာ ဖြစ်ပါတယ်။ စက်ရုံကလည်း နိုင်ငံတကာနည်းပညာတွေနဲ့ တည်ဆောက်ထားတာဖြစ်တဲ့အတွက် အဲ့စည်းကမ်းတွေက ပါပြီးသားဖြစ်ပါတယ်။ ယခုလို စက်ရုံမျိုးဆိုတာက စွန့်ပစ်ပစ္စည်းတွေကို ပြန်လည်သန့်စင်တဲ့ recycle industry လို့ခေါ်ပါတယ်။ ကျွန်တော်တို့အနေနဲ့ ယခုလိုစက်ရုံတွေကို ကြိုဆိုရမှာပါ။ စွန့်ပစ်ပစ္စည်းတွေဆိုတာက အန္တရာယ်များပါတယ်။ ကျွန်တော်တို့နိုင်ငံမှာက နည်းပညာတွေခေတ်မမီသေးပါဘူး။ ယခုထက်ပိုမိုခေတ်မီလာရင် စွန့်ပစ်ပစ္စည်းတွေထဲက တန်ဖိုးမြင့်သတ္ထုတွေပြန်ထုတ်တာတွေ ရှိပါတယ်။ အဆင်မြင့်တဲ့ Battery နည်းပညာဟာလည်း ကျွန်တော်တို့ သဘာဝပတ်ဝန်းကျင်အတွက် လောင်စာဆီ လျှော့ချတဲ့နေရာမှာ လိုအပ်ပါတယ်။ ကျွန်တော်တို့နိုင်ငံမှာ ခဲသတ္ထုစက်ရုံတွေဖွံ့ဖြိုးလာမှ ဒါတွေကဖြစ်လာ မှာပါ။ ခုလိုဆွေးနွေးကြတာကလည်း ကောင်းပါတယ်။ ကျွန်တော်တို့နိုင်ငံအနေနဲ့လည်း ခုလိုလုပ်ငန်းရှင်များကိုကြိုဆိုမှ ကမ္ဘာကိုရင်ဘောင်တန်းနိုင်မှာ ဖြစ်ပါတယ်။
ဦးမျိုးညွန့်အောင် (Khin Maung Nyunt Steel Products & Galvanizing Co.,Ltd)	ကျွန်တော်တို့စက်ရုံလည်း **EIA** လုပ်ဆောင်နေတာဖြစ်တဲ့အတွက် လုပ်ငန်းစဉ်ကို နားလည်သဘောပေါက်ပါတယ်။ အခုလို ပတ်ဝန်းကျင်ကို အလေးထားလုပ်ဆောင်တဲ့ကုမ္ပဏီများကို ကြိုဆိုပါတယ်။ မြောင်းတကာစက်မှုဇုံမှာ အဓိကပြဿနာက **air pollution** ဖြစ်ပါတယ်။ ကျွန်တော်တို့တဦးတယောက်ထဲအနေနဲ့လည်း ဒါကိုထိန်းလို့ မရပါဘူး။ အားလုံးဝိုင်းဝန်းလုပ်ဆောင်မှရမှာဖြစ်ပါတယ်။
ဒေါက်တာလဲ့လဲ့ဝင်း (ပတ်ဝန်းကျင်အကြံပေး)	အခုလိုအစည်းဝေးတက်ပေးတာကျေးဇူးတင်ပါတယ်။ ဒေသခံတွေရဲ့ အကြံပေးချက်များကလည်း အရေးပါပါတယ်။ အစည်းအဝေး တက်ရောက်လာတဲ့ သက်ဆိုင်ရာဌာနဆိုင်ရာများ၏ အကြံပြုချက်များကလည်း အရေးပါတဲ့အတွက် အကြံပြုပေးစေချင်ပါတယ်။ ကျွန်မတို့အနေနဲ့ အကြံပြုချက်များ

	ကို စိစစ်ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနကိုတင်ပြသွားမယ့် အစီရင်ခံစာထဲမှာ ထည့်သွင်းပေးသွားမှာ ဖြစ်ပါတယ်။

ရှင်းလင်းချက် presentation file များနှင့် အကြံပြုတင်ပြချက်များကို အောက်ပါဇယားတွင် ဖော်ပြထားပြီး အသေးစိတ်အချက်အလက်များကို နောက်ဆက်တွဲ ၅ တွင် ဖော်ပြထားပါသည်။

ဇယား (၁၇)။ အကြံပြုဆွေးနွေးတင်ပြချက်များ

စဉ်	အမည်	အကြံပြုချက်များ
၁။	ဦးခင်ဇော်	▪ လေအရည်အသွေး၊ မြေအောက်ရေအရည်အသွေး၊ မြေမျက်နှာပြင်ရေအရည်အသွေးများကို အမြန် ဆုံးစစ်ဆေးသင့်ပါသည်။ ▪ အန္တရာယ်ရှိသောစွန့်ပစ်ပစ္စည်းပုံးများတွင် Label များအား အရောင်ခွဲခြားသတ်မှတ်သင့်ပါသည်။ ▪ ကြိတ်ခွဲစက်များတွင်Battery အိုးအဟောင်းများမှာ အက်စစ်အကြွင်းအကျန်များရှိနိုင်သဖြင့် ဝန်ထမ်းများအားထိခိုက်နိုင်၍ PPE ဝတ်စုံထုတ်ပေးသင့်ပါသည်။ ▪ ဝန်ထမ်းများအားကျန်းမာရေးစစ်ဆေးမှုများကို အခါအားလျော်စွာ စစ်ဆေးပေးသင့်ပါသည်။
၂။	ဦးကျော်ဌေး ကုလားကုန်းအုပ်စု၊ အုပ်ချုပ်ရေးမှူး	စည်းကမ်းချက်များနှင့် ပြုလုပ်ဆောင်ရွက်ခြင်းများ အထူးကောင်းမွန်ပါသည်။
၃။	ဦးလှစိုး သစ်တောဦးစီးဌာန၊ မှော်ဘီမြို့နယ်။	သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုမရှိစေရန် အဓိကအားဖြင့် ရေ၊ မြေ၊ လေ သန့်ရှင်းစေရန် အဓိကကျပါသည်။ မြို့ပြများခေတ်မီဖွံ့ဖြိုးလာသည်နှင့်အမျှ အလုပ်ရုံ၊ စက်ရုံများမှ စွန့်ပစ်ပစ္စည်များ စနစ်တကျစွန့်ပစ်ရန်လိုအပ်ပါသည်။ စက်ရုံ၊ အလုပ်ရုံမှစွန့်ပစ်သောရေဆိုးများအား စနစ်တကျ ရေစစ်ကန်များဖြင့်စွန့်ပစ်ခြင်း၊ မြေများမပျက်စီးရန်စွန့်ပစ်ပစ္စည်းများအား ကျင်း

		များတူး၍ စနစ် တကျစွန့်ပစ်ခြင်း၊ လေထုမညစ်ညမ်းစေရန် သစ်တော သစ်ပင်များအားစိုက်ပျိုးသွားပါက သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုအား လျော့ကျသွားမည်ဖြစ်ပါသည်။
၄။	ဦးမျိုးညွန့်အောင် **KMN Galvanizing Co,.Ltd**	စီမံဆောင်ရွက်ထားသည်များ (သဘာဝပတ်ဝန်းကျင်) ထိခိုက်မှုအနည်းဆုံး ဖြစ်စေရန်ဆောင်ရွက်ထားသည်မှာ ပြည့်စုံကောင်းမွန်ပါသည်။ ရေရှည် ထိန်းသိမ်းဆောင်ရွက်သွားရန်အကြံပြုအပ်ပါသည်။
၅။	ဦးမောင်ငယ် (ရဲကင်းမှူး)	ကျွန်တော် (ရဲကင်းမှူး) အနေအထားအရ စက်ရုံဆောက်လုပ်ထားသည့် ပတ်သက်နေသည့်အနေအထား ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအနေအထား ကောင်းပါသည်။

၆.၃) EIA ဆန်းစစ်လေ့လာမှုကာလတွင် ပြုလုပ်သော စီမံကိန်းသက်ရောက်ခံများနှင့် ဆွေးနွေးတိုင်ပင်မှုများ

EKTA မှအကြံပေးအဖွဲ့များနှင့် စက်ရုံမှ တာဝန်ရှိသူများ၊ စီမံကိန်းသက်ရောက်ခံကျေးရွာများမှ အမျိုးသား/အမျိုးသမီးအုပ်စုများသည် **Covid-19** ကာလ ချမှတ်ထားသည့်စည်းမျဉ်းများကို လိုက်နာကာ ဆွေးနွေးပွဲတခုတွင် လူ ၅ ဦးမှ ၁၀ ဦးအတွင်း တွေ့ဆုံကာ ဆွေးနွေးမှုများပြုလုပ်ခဲ့ပါသည်။ **EIA scoping report** ကို သက်ဆိုင်ရာ ဝန်ကြီးဌာနသို့ တင်ပြပြီးသကာလ အစီရင်ခံစာအကျဉ်းချုပ် (မြန်မာဘာသာ) ကို ဖြန့်ဝေကာ ဆွေးနွေးမှုများ အကြံပြုချက်များကို ရယူခဲ့ပါသည်။


ပုံ (၁၄) ။ EKTA Consultants များ၊ စက်ရုံတာဝန်ရှိသူများ နှင့် စီမံကိန်းသက်ရောက်ခံပြည်သူလူထု၏ တွေ့ဆုံဆွေးနွေးမှု မှတ်တမ်းပုံရိပ်များ

၆.၄) ပြည်သူလူထုသို့ သတင်းထုတ်ပြန်ခြင်း

EKTA social consultant team မှ စစ်တမ်းမေးခွန်းလွှာကို ပြင်ဆင်ပြီး YMI စက်ရုံကိုယ်တိုင် နှင့် အနီးအနားမှ စက်ရုံ ၅ ခု၊ မြောင်းတကာ၊ ကုလားကုန်း နှင့် ကန်ကလေးရွာမှ ကျေးရွာအုပ်ချုပ်ရေးမှူးများ၊ အဖွဲ့ဝင်များ အသီးသီးထံမှ အဓိက သတင်းအချက်အလက်များကို ကောက်ယူခဲ့ပြီး အကြံပြုဆွေးနွေးချက်များကို မှတ်တမ်းတင်ထားခဲ့ပါသည်။ ကျွဲကူးကျေးရွာမှာ လှိုင်မြစ်တဖက်ကမ်းတွင် တည်ရှိပြီး စစ်တမ်းကောက်ယူသူများအနေဖြင့် Covid-19 ကာလ သွားလာဆက်သွယ်ရေးခက်ခဲပါသောကြောင့် ကျေးရွာအုပ်ချုပ်ရေးမှူးနှင့် ဆက်သွယ်၍ မရခဲ့ပါ။ အစီရင်ခံစာအကျဉ်းချုပ်ကို ကျေးရွာအုပ်ချုပ်ရေးမှူးရုံးများတွင် ဖြန့်ဝေကာ EIA အစီရင်ခံစာရေးဆွဲစဉ်ကာလတွင် စီမံကိန်းသက် ရောက်ခံများ၏ သဘောထားများ၊ မှတ်ချက်များကို အိမ်တိုင်ရာရောက်စနစ်ဖြင့် ကောက်ယူဖြည့်စွက်တင်ပြထားပါသည်။

ဇယား (၁၈)။ အကြံပြုတင်ပြလွှာများဖြင့် ဖြေဆိုသူများစာရင်း

No.	Participants	Position	Work Place
1	U Kyaw Htay	Village Tract Administrator	Administrative office, Kular Kone village
2	U Kyaw Myo Naing	Village Tract Administrator	Administrative office, Myaung Ta Kar village
3	U Than Shwe	Village Administrative member	Administrative office, Kan Ka Lay village
4	U Kyaw Htoo	Factory Manager	Myaung Ta Kar Industrial Zone
5	U Moe Myint Win	General Manager	Myanmar Smelting & Refining Co., Ltd.
6	U Ye Kyi	Management Officer	Han Steel
7	U Nyi Nyi Tun	Admin Manager	YMI
8	U Zaw Min Yu	Admin Officer	Japfa Comfeed Mill
9	Admin Manager	Admin Office	Sogo Steel Industry
10	U Myo Nyunt Aung	Deputy Factory Manager	Khin Maung Nyunt Steel Production & Galvanizing

၆.၅) ကျေးရွာနေပြည်သူများနှင့် စက်မှုဇုံ နေထိုင်သူများမှ အဓိကအကြံပြုချက်များ

ကျေးရွာနေပြည်သူများနှင့် စက်မှုဇုံ နေထိုင်သူများမှ အဓိကဆွေးနွေးတင်ပြချက်မှာ စက်ရုံအနေဖြင့် စနစ်တကျ မလည်ပတ်သော် ခဲဆိပ်သင့်မှုအန္တရာယ်ကို ကြုံတွေ့နိုင်ပါကြောင်းနှင့် စက်ရုံလုပ်ငန်းများကြောင့် ဒေသတွင်း စီးပွားရေးနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများတိုးတက်လာခြင်းကြောင့် လက်ခံပါကြောင်း အဓိက ဆွေးနွေးတင်ပြခဲ့ကြပါသည်။

၆.၆) EIA ဆန်းစစ်လေ့လာမှုကာလတွင် ပြုလုပ်သော အစိုးရအဖွဲ့ဝင်များနှင့် တွေ့ဆုံဆွေးနွေးမှုများ

လူထုတွေ့ဆုံပွဲ အစည်းအဝေးကို ၂၀၂၃ ခုနှစ် ဇန်နဝါရီလ ၂၀ ရက်နေ့တွင် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း ဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) ၏ အပိုဒ် ၆၃ (စ္ဈ) အရ ပြုလုပ်ခဲ့ပါသည်။ ရန်ကုန်သတ္တုစက်မှုလုပ်ငန်း ကုမ္ပဏီလီမိတက် (**YMI**) အတွက် **EIA** လေ့လာမှုအတွင်း လူထုညှိနှိုင်းအစည်းအဝေး တက်ရောက်သူများစာရင်း၊ နှင့် ရှင်းလင်းတင်ပြချက်များ၊ အကြံပြုလွှာများအား နောက်ဆက်တွဲတွင် ဖော်ပြထားပါသည်။

EKTA မှ အကြံပေးပုဂ္ဂိုလ်များသည် ပရောဂျက်နောက်ခံ၊ လုပ်ငန်းစဉ်အဆင့်များ၊ ထုတ်ကုန်များနှင့် သဘာဝပတ်ဝန်း ကျင်နှင့် လူ့အဖွဲ့အစည်းအပေါ် ဖြစ်နိုင်ခြေရှိသော သက်ရောက်မှုများ စီမံခန့်ခွဲမှုနှင့် ကြီးကြပ်မှု၊ စီမံကွပ်ကဲမှုဖြင့် လိုက်နာဆောင်ရွက်ခြင်း၊ စက်ရုံ၏လှုပ်ရှားမှုများ ကို ရှင်းလင်းတင်ပြကာ အစည်းအဝေးကို ဦးဆောင်ပြီး ကျင်းပခဲ့ပါသည်။

စုစုပေါင်း ၂၀ ဦးတက်ရောက်ခဲ့ပြီး အကြံပြုလွှာ ၁၂ စောင် ရရှိခဲ့ပါသည်။ တက်ရောက်သူများမှ ယနေ့ တင်ပြဆွေးနွေးသော စီမံကိန်း အစီရင်ခံစာအပေါ် ရှင်းလင်းတင်ပြချက်များမှာ ကောင်းမွန်ပါကြောင်းနှင့် စက်ရုံ အနေဖြင့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်များအတိုင်း လိုက်နာဆောင်ရွက်သင့်ပါကြောင်း နှင့် အလေးထား ဆောင်ရွက်သင့်ပါကြောင်း အကြံပြု ဆွေးနွေးကြပါသည်။

ယနေ့တင်ပြချက်နှင့် ပတ်သက်၍ မှတ်ချက်များ ပေးကြသည်မှာ လုံလောက်ကောင်းမွန်ပြီး စက်ရုံ၏ ပတ်ဝန်းကျင် အရည်အသွေး ကောင်းမွန်စေရန်အတွက် စက်ရုံသည် EIA စည်းမျဉ်းများကို လိုက်နာရမည်ဟု အကြံပြုလိုပါသည်။

လူထုတွေ့ဆုံဆွေးနွေးပွဲအစည်းအဝေးမှ အဓိက အကြံပြုချက်အချို့မှာ-

- စက်ရုံသည် လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေးဆိုင်ရာ အလေ့အကျင့်ကောင်းများကို ထိန်းသိမ်းထား သင့်သည်။

- အကြံပေးပုဂ္ဂိုလ်၏ အကြံပြုချက်အတိုင်း စက်ရုံရှေ့ရှိ အကြံပြုချက်ပုံးထားခြင်းကို တတ်နိုင်သမျှ အမြန်ဆုံး အကောင် အထည်ဖော်သင့်သည်။
- စက်ရုံသည် YCDC ၏ စည်းကမ်းများကို လိုက်နာဆောင်ရွက်သင့်ပြီး YCDC (မှော်ဘီဌာန) သို့ အချိန်မရွေး ဆက်သွယ်နိုင်ပါသည်။
- Covid-19 ကာကွယ်ဆေးအတွက်၊ စက်ရုံသည် အလုပ်သမားအားလုံးအတွက် ကာကွယ်ဆေး အပြည့်အစုံ ပေးသင့်သည်။

ရန်ကုန်သတ္တုစက်မှုလုပ်ငန်းကုမ္ပဏီလီမိတက် (YMI) မန်နေးဂျင်းဒါရိုက်တာ မှ PCM အစည်းအဝေးသို့ တက်ရောက်လာသူအားလုံးကို ကျေးဇူးတင်ရှိပါကြောင်းနှင့် ECD မှ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လမ်းညွှန်ချက်များကို လိုက်နာပြီး ၆ လတစ်ကြိမ် စောင့်ကြည့်အစီရင်ခံတင်ပြရန် ကတိပြုပါကြောင်း ပြောကြားခဲ့ပါသည်။
ထို့နောက် အစည်းအဝေးကို ၂၀၂၃ ခုနှစ် ဇန်နဝါရီလ ၂၀ ရက်နေ့ နံနက် ၁၁း၃၀ နာရီတွင် ပိတ်သိမ်းခဲ့ပါသည်။

၇) ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြည့်စစ်ဆေးရေး အစီအစဉ်များ

၇.၁) အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်း

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) ၏ အပိုဒ်ခွဲ ၁၀၃ အရ စီမံကိန်းပိုင်ရှင်သည် အားလုံးသော ကတိကဝတ်များ နှင့် အခြေအနေအရပ်ရပ်များအပါအဝင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များအား အပြည့်အဝအကောင်အထည်ဖော်ဆောင်ရွက်ရမည်။ ကန်ထရိုက်တာ နှင့် လက်အောက်ခံ ကန်ထရိုက်တာရုံးများ (ရှိခဲ့ပါက) တွင်လည်း တည်ဆဲဥပဒေများ ၊ စည်းမျဉ်းစည်းကမ်းများ ၊ လမ်းညွှန်ချက်များ ၊ လုပ်ထုံးလုပ်နည်းများ အားလုံးကို လေးစားလိုက်နာစေရမည် ဟု ဖော်ပြထားပါသဖြင့် အတိအကျလိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါ သည်။

၇.၂) ပတ်ဝန်းကျင်နှင့် လူမှုရေးလုပ်ငန်းများ စီမံခန့်ခွဲမှုနှင့် စောင့်ကြည့်စစ်ဆေးမှုများအတွက် ရံပုံငွေ လျာထားချက်များ

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုကုန်ကျစရိတ်များတွင် အောက်ပါတို့ ပါဝင်ပါသည်။

Sr No.	Activities / Scope for Environment protection and management	Approx. Capital Cost (USD)
1	Fire Fighting & Emergency Services	2,000,000
2	Green Belt	25,000
3	Activities in the area of Environment and Safety during	100,000

	construction activities	
4	Septic Tanks and associated development	100,000
5	Air pollution Preventive Measures	200,000
6	Industrial Wastewater Treatment Facilities	50,000
7	Parking Area	5,000
8	Transporting Vehicles	100,000
9	Environmental Monitoring & EMP (breakup in the below table 7.5-1)	39,000
	Total	**2,619,000**

၇.၃) ပတ်ဝန်းကျင်စောင့်ကြည့်စစ်ဆေးမှုအစီအစဉ်များအတွက် ရံပုံငွေလျာထားချက်များ

လုပ်ငန်းတည်ဆောက်ခြင်းနှင့် လည်ပတ်ရေးကာလများအတွင်း ပတ်ဝန်းကျင်စောင့်ကြည့်စစ်ဆေးမှုအစီအစဉ်များ ၏ အဓိကကုန်ကျစရိတ်များတွင် လေထု ၊ ရေထု ၊ အသံဆူညံမှုနှင့် မြေဆီလွှာအရည်အသွေး ထိန်းသိမ်းလျော့ချမှု ဆောင်ရွက်ချက်များအတွက် ပါဝင်ပါသည်။

ဇယား (၁၉) ။ လည်ပတ်ရေးကာလများအတွင်း ပတ်ဝန်းကျင်စောင့်ကြည့်စစ်ဆေးမှုအစီအစဉ်များအတွက် ရံပုံငွေ ခန့်မှန်းလျာထားချက်များ

Indicator (Survey item)	**Location of Data Collection**	**Method and Frequency**	**Institution**	**Annual Cost (USD)**
Monitoring EMP implementation Mitigation measures Enhancement measures Contingency Compensation	Project area	Daily monitoring and documenting, and quarterly reporting	Site Manager and Operation Department of YMI	1,000
Air quality (NO_2, SO_2, CO, Ozone, $PM_{2.5}$, PM_{10})	1 location	Twice a year	Third Party	1,000
Noise	2 locations	Twice a year	Third Party	500

Surface Water Quality Analysis (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location	Twice a year	Third Party	500
Effluent Water (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location (From storage pond)	Twice a year	Third Party	500
Ground Water Quality Analysis (pH, Turbidity, Total Dissolved Solid, Nitrate Chlorine, Iron, Manganese, Hardness, Sulfate, Arsenic, Total Coliform, etc.)	1 Location	Twice a year	Third Party	500
Soil Quality	1 Location	Twice a year	Third Party	1000
Implementation of Ecosystem Management plan	Within project area	Regular monitoring and quarterly reporting	Operation Department	500
Occupational Health and Safety	YMI Compound (Work site and offices)	Twice a year Record of accidents and infectious diseases, blood testing for lead concentration, Medical checkup	EHS Department	5,000
Community Health and Safety	Resident area nearby the project sites	once a year Record of accidents and infectious diseases related to the community	EHS Department	1000

EMP Monitoring Report Preparation		Twice a year	Third Party	5000
The implementation status for CSR activities such as community support program	community nearby the project site	Once a year	Operation Department	Upto 2 % of annual net profits

၇.၃) လူမှုတာဝန်သိလုပ်ငန်းများအစီအစဉ်

YMI စက်ရုံအနေဖြင့် စီမံကိန်းတည်ရှိရာ ဒေသတွင်းပညာရေးနှင့် အလုပ်အကိုင်ကျွမ်းကျင်ရေးတို့အတွက် အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ YMI စက်ရုံအနေဖြင့် အောက်ပါလူမှုတာဝန်သိလုပ်ငန်းများအား အဓိကထား ဆောင်ရွက်သွားပါမည်။

(၁) လုပ်ငန်းခွင်ကျွမ်းကျင်မှု လိုအပ်သောနေရာများတွင် ဖွံ့ဖြိုးတိုးတက်စေရန် လေ့ကျင့်ရေးစင်တာများ ထားရှိပေးခြင်း (အသားတင်အမြတ်ငွေ၏ ၀.၅ ရာခိုင်နှုန်းအထိ)

(၂) စက်ရုံလုပ်ငန်းများနှင့် သက်ဆိုင်သည့် နယ်ပယ်အသီးသီးရှိ ကျွမ်းကျင်ဝန်ထမ်းများ ၊ လုပ်သားများ ၊ အလုပ်ကြီးကြပ်များ ၊ အရည်အသွေးတာဝန်ခံများ ၊ လုံခြုံရေးများ၊ အင်ဂျင်နီယာများ ၊ သတင်းအချက်အလက်နည်းပညာရှင်များ အစရှိသဖြင့် ဒေသတွင်း လုပ်ငန်းခွင်စွမ်းရည်တိုးတက်မြင့်မားစေရန် သင်တန်းကျောင်းများ ဖွံ့ဖြိုးတိုးတက်စေခြင်းအတွက် တွန်းအားပေးဆောင်ရွက်ခြင်း (အသားတင်အမြတ်ငွေ ၏ ၁ ရာခိုင်နှုန်းအထိ)

(၃) မြန်မာနိုင်ငံ ဥပဒေမူဘောင် ၊ တည်ဆဲဥပဒေများနှင့်အညီ ပညာရေးလုပ်ငန်းများအား ထောက်ပံ့ပေး ခြင်း (အသားတင်အမြတ်ငွေ၏ ၀.၅ ရာခိုင်နှုန်းအထိ)

YMI စက်ရုံအနေဖြင့် အသားတင်အမြတ်ငွေ၏ ၂ ရာခိုင်နှုန်းအထိ လူမှုတာဝန်သိလုပ်ငန်းများအတွက် သုံးစွဲကျခံသွားမည်ဖြစ်ပြီး ဒေသအတွင်း စီမံကိန်းသက်ရောက်ခံနေရာများတွင် အဓိက ကျခံသုံးစွဲသွားပါ မည်။

၈) နိဂုံးချုပ် အကြံပြုချက်များ

အဆိုပါ YMI ၏ ခဲ အရည်ကျိူ စက်ရုံသည် သာမန်မိရိုးဖလာ ခဲ ပြန်ကျိူသည့် စက်မှုလုပ်ငန်းတစ်ခုထက် ပိုမိုသည့် နည်းပညာသုံး စနစ်တကျ စီမံခန့်ခွဲမှု ပါရှိသည့် စက်မှုသုံး စွန့်ပစ်အမှိုက်များ၊ ဘေးထွက်ပစ္စည်းများ ကို ကျယ်ပြန့်သည့် နည်းစဥ်များဖြင့် ကုန်ထုတ်လုပ်မှုဆောင်ရွက်နေသော စက်ရုံတစ်ခု ဖြစ်ပါသည်။ ဘက္ထရီအိုးများမှ ခဲ သတ္တုစင်များ အဖြစ်သို့ ပြန်လည် သန့်စင်ရာတွင် သဘာဝပတ်ဝန်းကျင် ညစ်ညမ်းမှုကို ထိန်းချုပ်ထားသည့် နည်းစနစ်များကိုလည်း အပြည့်အဝပေါင်းစပ် ထည့်သွင်းထားသည်ကိုလည်း တွေ့ရှိရပါ သည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် စီမံကိန်းသက်ဆိုင်သူများ ၊ အနီးတွင် နေထိုင်သူပြည်သူများ နှင့်အတူ စီမံကိန်းအားစိတ်ဝင်စားသူပုဂ္ဂလိကအကြံပြုချက် ၊ ဆွေးနွေးတင်ပြချက်များအားလုံးအား စီမံကိန်းအတွက် အထောက်အကူပြုမည်ဆိုပါက ထည့်သွင်းစဉ်းစားပေးသွားပါမည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပြည်သူလူထု ၊ ထိခိုက်ခံ ပုဂ္ဂိုလ်များ အားလုံး၏ ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ဆွေးနွေးတင်ပြချက်များ ပါဝင်စေပါမည်။ တွေ့ဆုံဆွေးနွေးပွဲများမှ ရရှိလာသော အချက်အလက်များအား ထိခိုက်မှုများကို လျှော့ချစေရန်နည်းလမ်းများ နှင့် စီမံခန့်ခွဲမှုများ ၊ စောင့်ကြည့်စစ်ဆေးခြင်းများတွင် ထိခိုက်မှုလျော့နည်းစေရန်အတွက် ထည့်သွင်းစဉ်းစားကာ ဆောင်ရွက်ပါမည်။

CHAPTER 1

INTRODUCTION

1.1 Introduction

This EIA (Environmental Impact Assessment) scoping report is prepared for **"Lead Smelting and Refining Process"** (herein refers "the Project") which was implemented by **Yangon Metal Industry Co., Ltd. (YMI)**, (refers as "the Project Proponent"). **Enviro-Klear Techno-Associates Co., Ltd. (EKTA)** is responsible as "the EIA Consultant" on behalf of YMI to prepare the EIA report including the services for investigations of the existing environments, environmental and social impacts assessment whichever positive and/or negatives, environmental management and monitoring plans and the public consultations.

1.2 Project Proponent and Project Background

Yangon Metal Industry Co., Ltd. (YMI), the largest and the first licensed lead secondary smelter in Myanmar, located in Myaung Ta Kar Industrial Zone located in Hmawby Township, the northwest of the commercial city, Yangon. YMI has been established in 2008 to enter the secondary metal smelting industry and had been constructed and set up during 2008-2018. From 2018, the mass production was started and YMI offers the quality products which are categorized as 99.99% pure lead ingot and various lead alloys such as antimony and calcium-based lead ingots.

Figure 1.2-1: Factory Area and its Environments of Yangon Metal Industry Co., Ltd

1.2.1 Contact Detail of Project Proponent

YMI Co., Ltd is located in No. (261/262/263), Parrami Road, Myaung Ta Kar Industrial Zone, Hmawby Township.

Contact Person:	U Kyaw Htoo
Position:	Project Manager, YMI
Phone (Office):	+95-098600157
Mobile:	+ 95-09254043654
Email:	admin@yangonmetal.com
Website:	https://yangonmetal.com/
Address:	No. (261/262/263), Parrami Road, Myaung Ta Kar Industrial Zone, Hmawby Township

1.3 EIA Consultant

Enviro-Klean Techno-Associates Co., Ltd. (EKTA) company was registered in Environmental Conservation Department for organization consultant license in 2018.

Enviro-Klean Techno-Associates Co., Ltd is a multi-disciplined environmental organization that provides a broad spectrum of services to local clients with a lot of experiences in providing technical aids to conflict and natural disaster suffered area in recently periods, since 2008. EKTA has tried to get the peer recognition for our extensive experience in environmental issues and commitment to quality from project planning through completion.

For each and every project, EKTA adheres to stringent quality assurance and quality control protocols that are applicable, relevant, and appropriate for the success of the assignment. The development and implementation of project specific Standard Operating Procedures coupled with staff training are routine at EQI and ensure consistent superior performance and results.

The Global Environment was deteriorated by population growth, economic growth and many other factors. Our lives are significantly affected by ecological destruction, environmental pollution, water scarcity and increasingly frequent natural disasters. The vision of EKTA as an environmental conservation organization is to improve the global environment, protect people's lives and achieve healthier lives.

1.3.1 Contact Details of EIA Consultant

Contact Person:	Dr. Kyaw Nyein Aye
Position:	Managing Director
Telephone (Office):	+95-01503447
Fax (Office):	+95-1503447
Mobile:	+9595108613
E-mail:	services01.ekta@gmail.com
Address:	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar.

1.3.2 EIA Consultant Team

Team Leader

Name	Consultant Registration No.	Organization	Contact Address	Field
Dr. Kyaw Nyein Aye	00053 (See in Appendix)	Enviro-Kiean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +9595108613 Email:kyawnyeinaye@gmail.com kyaw@ektaconsulting.com	Chemical Hazard Management, Project Management

EIA Consultant Members

Name	Consultant Registration No.	Organization	Contact Address	Field	Name
U Thura Kyaw	00053 (See in Appendix)	Project Manager	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.	No. 203, Bid. 25, Mya Kan Thar Housing Ward (5), Hlaing Township, Yangon, Myanmar. Telephone (office): 01503447 Fax (office): 01503447 Mobile: +9595108613 Email: kyaw@ektaconsulting.com lailaiwyn@gmail.com	Chemical Hazard and Risk Assessment
Daw Khin Mar Khaing	00053 (See in Appendix)	Hazard Assessment Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Biohazards Assessment and Socioeconomic survey
U Nay Naing	00053 (See in Appendix)	Legal Consultant No. 13814 (တရ ားလႊတ္ တ် တ တ ုေ႐ွ႕ေတ)	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Legal Framework
U Kaung Htet Swam	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Physical Baselines (Air, Water, Noise & Vibration, soil, etc.) and Environmental Health and Safety Management
Daw June Khine Wint Tun	00053 (See in Appendix)	Environmental Consultant	Enviro-Klean Techno-Associates		Waste management and Public

			(EKTA) Co., Ltd.		Health and Safety Management
Dr. Lai Lai Win	00148 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Wastewater Management, Biodiversity and Impact Assessment, Reporting, Project Management
U Kyaw Swar Myint Thein	00248 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		GIS and Geologist (Hydrology and Disaster)
U Myatthu Kyaw	00233 (See in Appendix)	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Air Pollution Control
Dr. Khin Nyein Aye	SaMa-17031	Freelance Consultant	Enviro-Klean Techno-Associates (EKTA) Co., Ltd.		Health Expert

1.4 Tentative Schedule of Overall EIA Implementation

	2020											2021												2022			
	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12				
Scoping Stage																											
Submission of Project Proposal and getting selected third party approval from MONREC																											
Public Consultation Meeting (PCM) and Public Disclosure (PD)																											
Draft Scoping Report Preparation and Submission																											
Final Scoping Report Preparation and Submission and getting approval																											
EIA Investigation Stage																											
Baseline Survey/Analysis																											
Health Survey																											
Draft EIA Report Preparation																											
Public Consultation Meeting (PCM) and Public Disclosure (PD)																											
Final EIA Report Preparation and Submission and waiting EIA approval																											
Approval by ECD																											

CHAPTER 2

OVERVIEW OF THE POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Legislation of Myanmar and international standards for the issues of interest are presented in the following sections in order to figure out a set of regulatory or reference limits and to address the best management practices for each considered environmental and social aspects relevant for the Project.
Legislation will be required or chosen for the implementation of a policy if:

- existing rights and obligations are to be modified
- the policy is to have long term operation
- the policy is of a very high level of importance.

2.1 Myanmar Law and Regulation (Background)

Myanmar already had some legislations and regulations which are, the more or the less, relating to natural environmental aspects since before its independence. The Forest Act and the Burma Wildlife Protection Act, for example, have been enacted respectively in 1902 and 1936 for the sustainability of the forest products. Amended versions of such earlier act and newly promulgated one are briefly outlined to give a perspective on the existing legal and administrative framework concerning the environmental affairs in Myanmar.
National Commission on Environmental Affairs (NCEA) was formed in 1990 with the purposes of setting environmental standards and creating environmental policies for utilizing natural resources and controlling environmental pollutions.
NCEA has adopted a National Environmental Policy in 1994 to ensure the incorporation of environmental concerns in planning for economic development. The NEP emphasizes "the responsibility of the State and every citizen to preserve its natural resources in the interest of present and future generations". In accordance with Notification No. 26/94 made in 1994, National Environmental Policy was stated as follows.
"To establish sound environment policies, utilization of water, land, forests, mineral, marine resources and other natural resources in order to conserve the environment and prevent its degradation, the Government of the Union of Myanmar hereby adopts the following policy: The wealth of the nation is its people, its cultural heritage, its environment and its natural resources. The objective of Myanmar's environmental policy is aimed at achieving harmony and balance between these through the integration of environmental considerations into the development process to enhance the quality of the life of all its citizens. Every nation has the sovereign right to utilize its natural resources in accordance with its environmental policies; but great care must be taken not to exceed its jurisdiction or infringe upon the interests of other nations.
It is the responsibility of the State and every citizen to preserve its natural resources in the interests of present and future generations. Environmental protection should always be the primary objective in seeking development".
The commission also formulated a blueprint, the Myanmar Agenda 21, in 1997 in response to the call of the Earth Summit to develop national strategies to implement the Global Agenda 21. This document may serve as a framework for integrating environmental considerations in future national development plans as well as sectorial and regional development plans in Myanmar with the purpose of securing the aims of sustainable development.
The *Myanmar Agenda 21* is divided into 4 Parts and 19 Chapters and encompasses a broad range of sectors and issues. Building on the National Environment Policy, the agenda takes into consideration the programme guidelines found in the *Global Agenda 21* and is aimed at strengthening and promoting systematic environmental management in the country.
Most importantly, the *Myanmar Agenda 21* makes recommendations for the drafting and promulgation of a framework law which can further promote the integration of environmental and developmental concerns in the decision-making processes of the country.

Environmental management in Myanmar is founded on the National Environmental Policy (1994), the Constitution of the Union of Myanmar (2008), and the Environmental Conservation Law (2012).

Table 2.1-1: Associated International Convention, Protocol and Agreements

No	*Name of Convention/Protocol/Agreement*	*Date of Rectification*
1	Plant Protection Agreement for the South-East Asia and the Pacific Region, Rome, 1956	4-11-1959 (Adherence)
8	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)	25-11-1994 (Ratification)
	The Kyoto Protocol (international agreement linked to the UNFCCC), Kyoto, 1997	13-08-2003 (Ratification)
9	Convention on Biological Diversity, Rio de Janeiro, 1992	25-11-1994 (Ratification)
	The Paris Agreement, Paris, 2015	19-09-2017 (Ratification)
12	International Tropical Timber Agreement (ITTA), Geneva, 1994	31-1-1996 (Rectification)
13	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985	24-11-1993 (Rectification)
14	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987	24-11-1993 (Rectification)
15	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990	24-11-1993 (Rectification)
16	The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972	29-4-1994 (Acceptance)
20	Agreement on the Networks of Aquaculture Centres in Asia and the Pacific, Bangkok, 1988	22-5-1990 (Accession)
21	South East Asia Nuclear Weapon Free Zone Treaty, Bangkok, 1995	16-7-1996 (Rectification)
22	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and / or Desertification, Particularly in Africa, Paris, 1994 (UNCCD)	02-01-1997 (Accession)
23	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)
28	ASEAN Agreement on Transboundary Haze Pollution	13-3-2003 (Rectification)
30	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997	13-8-2003 (Accession)
31	Stockholm Convention on Persistent Organic Pollutants (POPs), 2001	18-4-2004 (Accession)

2.2 National Applicable Laws by Yangon Metal Industry

YMI will strictly follow the following national applicable laws along with the attached articles, rules and regulations in details.

Table 2.2-1: Existing National Applicable Laws/Regulations

Legislation Section	Laws/Rules/ Guidelines	Commitments	Project Relevant Sections
Administrative			
1	The Constitution of Union of Myanmar (2012)	The project will act to be a good citizen in compliance with the duties.	Sect. 24, 37 (a, b,c), 42 (a, b), 390 (a, b, c, d)
Land			
1	National Land Use Policy (2016)	The project shall obtain relevant government permissions.	Objectives
Finance & Revenue			
1	Myanmar Investment Law (2016)	The project shall obtain relevant government permissions or endorsement accordance with the law.	MIL(2016): Sect. 48 (d)-(f), 49 (a), 50 (a)-(c), 52 (g)
1	The Myanmar Citizen Investment Law (2012)		
Forestry			
1	The Protection of Wild Life and Wild Plants and Conservation of Natural Areas Law, 1994	The project shall not cause unacceptable impacts to Protected Area protected habitats and species.	Sect. 35, 36
2	The Forest Law, 1992	The project proponent will obtain the approval of Ministry if the project area is included in the forest land or the land administrated by the government which covers the forest.	Sect. 12 (a) (b)
Industrial Sector			
1	The Private Industrial Enterprise Law, 1990	The project shall understand to obey the prohibitions, offences and penalty for industrial operation process.	Sect. 3 (a), (b), (d)-(g) Sect. 26 Sect. 28 (a), (h), (c), 29 (a), (h), (c)
2	The Factories Act (2016)	The project proponent will keep clean and kept free from effluvia arising from any drain, privy or other nuisance and provide the canteen for foods and sheds for rest time and the particular room while the workers are sick.	Sec. 13 (a-e), 15 (1), 16 (1), 18 (1), -19 (1), 20, 21, 23 (1), 36, 40 (4,5), 48, 49, 50
3	The Export and Import Law (2012)	No the project shall export or import restricted, prohibited and banned goods.	Sec. 5,6,7

4	Industrial Use Explosive Substances (2018)	The project proponent shall get the relevant Departmental permissions for import, usage, storage and transportation of mining explosive substances for industrial production purpose.	Section: (4-9), (10-14), 15, 16, 17, (18-21)
Health			
1	The Public Health Law (1972)	The project proponent makes sure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department.	Sect. 3, 5
2	Prevention and Control of Communicable Disease Law (1995)	The proponent makes ensure the healthy work environment and prevention the communicable diseases by the cooperation with the relevant health department.	Sect. 3 (a-c), 4, 9, Sect. 11
3	The Control of Smoking and Consumption of Tobacco Product Law (2006)	The project owner will arrange the specific place for smoking in the operation area and keep the caption and mark in accordance with the stipulations.	Sec: 7, 9 (Sub sect: a, b,c,d)
Labour			
1	Labour Organization Law (2011)	The project owner will give the right to the labour organization to carry out freely in drawing up their constitution and rules, in electing their representatives, in organizing their administration and activities or in formulating their programmes.	Sec. 17, 18, 19, 20, 21, 22, 23
2	Settlement of Labour Dispute Law, 2012	The project owner shall not fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause and no alter the conditions of service relating to workers concerned in such dispute at the consecutive period.	Sec. 38, 39, 40, 51
3	Employment and Skill Development Law (2013)		Sect. 5 (a)-(h), 14, 30

4	The Minimum Wages Law (2013)	The project proponent shall not pay wage to the worker less than the minimum wage stipulated under the law.	Sect. 12 (a-e), 13 (a-g)
5	The Leaves and Holiday Act (1951)	The project proponent will follow the prescriptions for the rights of the workers in a private enterprise which are granted the following leaves and holidays' 6 days casual leave, 30 days medical leave, 10 days earned leave, and 21 public holidays in a year with wages. In addition, women workers in private enterprises covered by the Social Security Act 1954 are granted maternity leave with paid wages.	
6	The Law Amending the Workmen' Compensation Act, 1923 (Amended in 2005)	This act is to provide for the payment by certain classes of employers to their workmen of compensation for injury by accident.	
7	The Payment of Wages Law (2016)	The project proponent shall pay wages to the workers employing as stipulations of Central Bank of Myanmar with the necessary to pay particular benefit, profits and opportunities for workers working in commerce, production and service businesses and overtime wages.	Sec. 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 18
8	Myanmar Insurance Law	The project will compensate for all the general damages to the environment and injuries to public to ensure the needed insurances such as making insurance for the project owned vehicles and injured person.	Sec: 15 and 16
9	Occupational Safety and Health Law, 2018	To obtain the right to continued medical treatment, family assistance benefit, invalidity benefit, superannuation benefit, survivors' benefit, unemployment benefit, the right to residency and ownership of housing after retirement in addition to healthcare and pecuniary benefit for sickness, maternity, death, employment injury of the workers.	
Natural Resources			
1	The Conservation of Water Resources and Rivers Law 2006	The project shall not carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks and cause the wastage	Sec. 8, 11, 12, 13, 14, 21, 22, 23, 24, 26, 27, 28, 29, 30

		of water resources willfully without disposing any harms to water resources.	
2	The Biodiversity and Conservation of Protected Areas Law (2018)	The objectives of the Law are to: Implement the Government's biodiversity strategy and policy; implement the Government's policy on Protected Areas Protect wild animals, plants, ecosystems and migratory animals in accordance with International Conventions Regulate trade of wild animals, plants and their derivatives or products Protect geo-physically unique areas, endangered plants and animals and their natural habitats Protect wild animals and plants through the establishment of zoological and botanical gardens	
Environment			
1	National Environmental Policy (1994)	The project proponent will follow any stipulaions of the law to achieve harmony and balance between socio-economic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens.	
2	The Environmental Conservation Law (2012)	The project will comply the duties and powers relating to the environmental conservation of relevant Ministry and follow any stipulation to conserve the environments.	Sec.7 (d), (o), Sec. 10, 12, 14,15, Sec. 24, Sec. 29
3	Environmental Conservation Rules (2014)	carry out any activity which can damage the ecosystem and the natural environment	69 (a, b)
4	The EIA Procedure (2015)	The project proponent will prepare EIA report with the relevant sections and fully commitments, correctly and timely action to build a suitable EMP framework for the project impacts and monitoring and management plan that will meet to approve from relevant department.	32, 33, 24, 35, 77, 78, 79, 82, 83, 84, 86, 87, 88, 91, 92, 93, 94, 95, 96, 100, 102-110, 113, 115, 117, 123, 128
5	Environmental and Social Impact Assessment Guidelines (2014)	The project proponent will submit a standalone document with the required identification and management of impacts from the project on affected	Chap. 1 and 2

		communities and stakeholders and the preparation of an international standard ESIA.	
6	National Environmental Quality (Emission) Guidelines (2015)	The project proponent will follow and comply the following target level of each component. Each quantitative target value to be applied is described below. 1. Air Quality 2. Water Quality 3. Noise 4. Vibration	
7	The Prevention of Hazard from Chemical and Related Substances Law (2013)	The project proponet will strictly follow when chemicals and related substances is to be transferred, stored, used, or disposed, operating approval certificate in accordance with the regulations based on the international treaties.	
Transportation Sector			
1	The Highways Law, 2015	The proponent shall comply an interactive general guides and regulations that citizens shall follow when using the Highway for various purposes	Article 8, 9, 17
2	The Motor Vehicle Law (2015) and Rules (1987)	The project proponent promises to abide by the nearly all provisions of said law and rules, especially, the provisions related to air pollution, noise pollution and life safety.	
Socioeconomic Sector			
1	Social Security Law	The Project owner will create the social security for the employees and ensure the social security for employees of the project and register to the social security offices and to pay the prescribed funds.	Sect. 11 (a), 15 (a), 18 (b), 48 (a, b, c), 49 (a, b), 75 (a,b,c)
2	Protection the Rights of Ethnic Nationalities Law (2015)	The project proponent will make ensure to disclose to the resident ethnic nationalities about the project fully, moreover, to ensure cooperate with them.	Sect. 5, 14, 22, 23, 24
Natural Disaster			
1	Natural Disaster Management Law 2013	The objectives of this Law are as follows: a. To implement natural disaster management programmes systematically and expeditiously in order to reduce disaster risks;	

		b. To form the National Committee and Local Bodies in order to implement natural disaster management programmes systematically and expeditiously; c. To coordinate with national and international government departments and organizations, social organizations, other non-government 3 organizations or international organizations and regional organizations in carrying out natural disaster management activities; d. To conserve and restore the environment affected by natural disasters; (e) to provide health, education, social and livelihood programmes in order to bring about better living conditions for victims.	
2	The Fire Force Law (2015)	The project proponent will get the granting permission and trainings from the relevant department.	Fire Precaution and Prevention Works, Sect. 18 (c), (d), (f), Prohibitions, Sect. 25, Penalties, Sect. 35
3	The Fire Service Law (2015)		Sec. 18 (c, d, f), 25, 35
Consumer Protection			
1	The Consumer Protection Law (2014)	The project will cause fulfillment of goods or services that enable to ensure the high quality for safety, health, satisfaction of the consumer and not carry out the production, trade of illegal and prohibited goods.	Sec. 8 (a,b,c,d,e,f,g,h,I,j) Sec. 9 (a,b,c,d,e,f,g,h) Sec. 11, 12, 15
Myanmar Engineering Council Law			
Myanmar Engineering Council Law (2013)	The project will hire the registered engineers and technician for the industrial processing related with engineering work.	Section 31, 37	
International Law			
1	IFC EHS Guidelines	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.	

2.3 National Environmental Quality (Emission) Guidelines (2015)

MONREC formulated the National Environmental Quality (Emission) Guidelines (NEQG) in coordination with ADB in December 2015. The NEQG determines 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 generation.
Emission guideline and target values of ambient air quality, air emission, wastewater, and noise levels were set in NEQG, while other standards have not been set yet by MONREC.
YMI will follow and comply the following target level of each component. Each quantitative target value to be applied is described below.
1. Air Quality
2. Water Quality
3. Noise
4. Vibration

2.3.1 Air Quality

(1) Target Value of Ambient Air Quality
On the basis of the above standards, the target value for air quality in the Project, as shown in **Table 2.3.1-1** has been set with the following considerations:
Target parameters of ambient air quality in Myanmar's standards are applied if it has set (SO_2, NO_2, $PM_{2.5}$, and PM_{10}).
The averaging period adopted is 24 hours, which could be measured using the available equipment in Myanmar whereas currently it is impossible to implement continuous measurement for one month or one year at the project site due to battery/electrical capacities.
The power transmission and distribution sector does not typically give rise to significant effluents or air emissions. The major emission during construction period is only dust and exhaust gas from vehicles. Therefore, YMI will comply with General Guidelines for air quality.

Table 2.3.1-1: Air Emission Level Set in NEQG

Parameter	Averaging Period	Guideline Value µg/m³
Nitrogen Dioxide	1-year 1-hour	40 200
Ozone	8-hour daily maximum	100
Particulate Matter PM10[a]	1-year 24-hour	20 50
Particulate Matter PM2.5[b]	1-year 24-hour	10 25
Sulfur Dioxide	24-hour 10-minute	20 500

[a] Particulate matter 10 micrometers or less in diameter
[b] Particulate matter 2.5 micrometers or less in diameter

2.3.2 Industrial Specific Guidelines for Wastewater Discharges

Industry-specific guidelines apply during the operations phase of projects and cover direct or indirect discharge of wastewater to the environment. They are also applicable to industrial discharges to sanitary (domestic) sewers that discharge to the environment without any treatment. Wastewater generated from project operations includes process wastewater, wastewater from utility operations, runoff from process and storage areas, and miscellaneous activities including wastewater from laboratories, and equipment maintenance shops. Projects with the potential to generate process wastewater, sanitary sewage, or storm water should incorporate the necessary precautions to avoid, minimize, and control adverse impacts to human health, safety or the environment. Industry-specific guidelines summarized hereinafter shall be applied by all projects, where applicable, to ensure that effluent emissions conform to good industry practice.
For project types where industry-specific guidelines are not set out in these Guidelines, the following general guideline values, or as stipulated on a case-by-case basis, apply during project operations.

This guideline applies to base metal smelting and refining of lead, zinc, copper, nickel, and aluminum. It does not include the mining and concentration of the raw materials.

Table 2.3.2-1: Effluent Levels (for nickel, copper, lead, zinc and aluminum smelting and refining),

Parameter	Unit	NEQG Guideline Value
Aluminum	mg/l	0.2
Arsenic	mg/l	0.05
Cadmium	mg/l	0.05
Chemical oxygen demand	mg/l	50
Copper	mg/l	0.1
Fluoride	mg/l	5
Hydrocarbons	mg/l	5
Lead	mg/l	0.1
Mercury	mg/l	0.01
Nickel	mg/l	0.1
Ph	S.U [a]	6-9
Temperature increase	˚C	<3[b]
Total suspended solids	mg/l	20
Zinc	mg/l	0.2

[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

2.3.3 Noise Level Set in NEQG

In NEQG, the noise level is set as shown in Table 2.3.3-1 and noise prevention and mitigation measures will be taken by all projects where the 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 impact should not exceed the levels shown below or result in a maximum increase in background levels of three decibels at the nearest offsite receptor location.

Table 2.3.3-1: Target Noise Level Set in NEQG

Receptor	One Hour LAeq (dBA)	
	Daytime (7:00-22:00) (10:00-22:00 for public holidays)	Nighttime (22:00-7:00) (22:00-10:00 for public holidays)
Residential, institutional, educational	55	45
Industrial, commercial	70	70

Source: NEQG (December 2015)

2.4 International Standards

In addition to the applicable host Country Laws, this ESIA Report presents the Project impacts and mitigation measures with explicit reference to the following international standards and guidelines:

1. World Health Organization (WHO)
2. Environmental Protection Agency (EPA)
3. IFC Performance Standards - PS (2012);
4. WB Group's EHS Guidelines, as applicable to the Project, including EHS General Guidelines;

Table 2.4-1: WHO Ambient Air Quality Guidelines

Parameter	Averaging Period	Period Guideline value in mg/m^3
Sulfur dioxide (SO_2)	24-hour	125 (Interim target -1) 50 (Interim target-2) 20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter, PM_{10}	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target -1) 100 (Interim target -2) 75 (Interim target-3) 50 (guideline)
Particulate Matter $PM_{2.5}$	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target -1) 100 (guideline)

Table 2.4-2: Indicative Values for Treated Sanitary Sewage Discharges[a]

Pollutants	Units	Guideline Value
pH	pH	6 – 9
BOD	mg/l	30
COD	mg/l	125
Total Nitrogen	mg/l	10
Total Phosphorus	mg/l	2
Oils and Grease	mg/l	10
Total Suspended Solids	mg/l	50

Total Coliform Bacteria	MPN[b] / 100 ml	400[a]

Notes: [a] Not applicable to centralized, municipal, wastewater treatment systems which are included in EHS Guidelines for Water and Sanitation.
[b] MPN = Most Probable Number

2.5 Policy Framework on Environment, Health and Social Aspects

YMI has established its culture of corporate social responsibility and it will use 2 percent of net profit in following areas:

1. Occupational safety and health, compensation, hours or work and benefits
2. Regional development
3. Benefits for workers
4. Leadership standards

The company will specifically commit itself for emergency.

Emergency: Water-buckets, fire-extinguishers and other fire protection equipment will be ready in the factory. Fire-extinguishers will be placed in every wall of the factory. There will be strong discipline in notification of the work site and all people inside the firm have to strictly follow it. Staff will be trained for emergency fire-safety procedures. Smoking is prohibited inside or around the factory. Electrical equipment will be examined throughout for power-shock problems.

Environmental Protection

1. Protection of human-induced wastewater and air

- Wastewater by employees in the factory has to go through wastewater treatment instrument, or to drain into waste-water pond, before discharging to outside.
- The waste and by product from engine oil, diesel and other industrial oil will be stored in grease trap and other by products are kept in designated land fill.
- The company will protect air environment from impacts of odour, dust and other toxic gas.

2. Other Management

- According to Company's management plan, there will be plantation and gardening around the factory so it will result good environment for the employees and also for protection of environment.

2.6 Environmental, Health & Safety Policy Statement of the Project Factory

The project factory will be compromised according to their factory policy statements about environment, health and safety concerning about their products, packaging, facilities and their business decisions as mentioned as below.

"At our metal factory, we are committed to conducting ourselves in a responsible manner to protect people and the environment in every area of the world in which we operate.

The following Environmental Health & Safety principles guide all of our decisions on products, packaging, facilities and our business. Our metal factory people are expected to incorporate environmental health & safety considerations into their daily activities; training will be provided to further their understanding of these considerations.

1. <u>Our Products</u>

We will provide the public with good quality and effective products and will strive to produce products that have the lowest practical impact upon the environment.

Product Standards

- We will comply with applicable government rules and regulations in the formulation, manufacture, labeling and marketing of our products.

Continuous Evaluation

- We will continuously evaluate the impact of our products and processes upon the environment.

Risk Minimization

- We will consider and minimize environmental risks as part of our product formulation and development procedures.

Consumer Communication

- We will communicate with consumers regarding the environmental impact of our products, including their potential abuse or mishandling.

Resource Efficient Formulations

- We will strive to develop products that meet or exceed consumers' expectations based on resource efficient and environmentally sensitive technologies.

2. <u>Our Packaging</u>

We will work to reduce the impact of our product packaging on environment and to improve the environmental compatibility of our packaging materials. At the same time, we will continue to ensure the safety and efficacy of our products and packaging. We endorse the worldwide hierarchy of solid waste management: source reduction, recycling (including reuse), incineration and landfilling.

Ongoing Examination & Impact Quantification – We will examine and, where appropriate, quantify the environmental impacts of the volume and toxicity of our packaging.

Heavy Metals Elimination - We will eliminate from our processing those heavy metals that may leave hazardous residues when incinerated or disposed of in landfills.

Source Reduction & Waste Management - We will strive to reduce the volume and weight of our packaging and use the minimum amount of packaging required to label our products and protect their contents.

Recycling - We will utilize recycled and recyclable materials in our packaging, including paperboard and plastics, whenever practical.

Coding - We will code our plastic packaging with recycling symbols, where appropriate.

Public Awareness - We will support efforts to educate consumers to become part of the recycling solution through changes in use and disposal habits.

Research - We will contribute to research in the area of solid waste management.

3. <u>Our Facilities</u>

Our Metal factory is committed to the health and safety of our employees, and the communities in which we operate, as well as the protection of the environment. We will establish and maintain programs for the operation and design of our facilities to meet or exceed applicable Environmental, health and safety laws and regulations.

Periodic Reviews - We will conduct periodic reviews of the potential impact of our operations on the environment, and health and safety of our people.

Ongoing Evaluation & Improvement -We will evaluate the potential impact to the environment as well as the health and safety of our people, in the design, construction and improvement of our facilities and processes.

Hazardous Waste Minimization - We will work to minimize the generation of and strive to eliminate the discharge of hazardous materials into the air, water and land.

Employee & Community Safety - We will seek to minimize environmental, health and safety risks to our people, and the communication in which we operate by employing safe technologies, operating procedures, and emergency plans, including training of employees.

Community Awareness - We will communicate with local communities on the environmental safety of our operations.

Safe Disposal – We will dispose of all hazardous wastes through safe and responsible methods.

Safe Energy - We will strive to utilize environmentally, safe and sustainable energy sources to meet our needs.

Raw Material & Waste Reduction – We will strive to improve our processes to use less raw materials and produce less waste.

Employee Participation & Training – We encourage our all people to identify potentially hazardous environmental, health and safety conditions.

Training will focus on giving our people the skills and knowledge to work safety and promote Sound environmental practices.

4. Our Business Decisions

Protecting and enhancing the company's reputation is vitally important. Accordingly, our metal factory considers environment, health and safety to be key business issues. We consider these issues in all business decisions including acquisitions, divestitures, discontinuance of operations, and entry into joint ventures. We will act in a responsible manner with respect to the environmental protection of the lands under our management and ownership.

Environmental, Health & Safety Issues & Liabilities Review - We will review potential environmental, health and safety issues and liabilities prior to any acquisition, divestiture and discontinuance of operations, leasing, or entry into joint ventures.

Property Evaluation - We will evaluate owned and operated property to identify any significant environmental, health, and safety issues.

Voluntary Identification & Cleanup – We will participate in the voluntary identification and cleanup of environmentally contaminated locations involving the Company, as may be appropriate.

Address of Past Practices – We will act responsible to address identified risks to public health or the environment and will cooperate with regulatory agencies and other interested groups in achieving acceptable solutions.

Preserve and Create Value – We will communicate to our people that sound environmental health and safety practices will preserve and create value for our company worldwide."

CHAPTER 3

PROJECT DESCRIPTION AND ALTERNATIVES

3.1 Project Background

Yangon Metal Industry Co., Ltd. (YMI), the largest and the first licensed lead secondary smelter in Myanmar, located in Myaung Ta Kar Industrial Zone located in Hmawby Township, the northwest of the commercial city, Yangon. YMI has been established in 2008 to enter the secondary metal smelting industry and had been constructed and set up during 2008-2018. It produces 99.99% pure lead and other various lead alloys which recycles from used lead acid batteries into refined lead or various lead alloys. It has been planning to export its products to Asia and European countries. It has obtained ISO 9001:2015 Certificate (attached in Annex: 2) for its quality management system (QMS) to reflect the process activities on staff's trust and customer and the quality guaranteed lead and alloy products.

YMI Co., Ltd. is always trying to promote sustainable growth of recycling practices in Myanmar. Lead recycling reduces the release of lead waste amount to the environment. Complying with international standards for lead recovery, YMI's metallurgical know-how and approach to lead waste provides a new lease of life for spent batteries. It collects the majority of scrap batteries through its own collection network throughout Myanmar which are then sorted, smelted, and refined into quality lead products for our industrial partners.

3.2 Objectives of Project Implementation

In order to become one of the Myanmar's leading industrial skilled and environmentally friendly lead smelter which sets an example of sustainable lead recycling, YMI Co., Ltd. sets the following objectives.

(1) To deliver greater value through sustainable practices, maintaining operations that are in accordance with international standards for lead recovery and minimizing environmental impacts;

(2) People are at the heart of our business and their safety is our concern. Our operators and facility staffs are equipped and trained on proper usage of personal protective equipment and the safe handling of lead materials; and

(3) To build sustainable businesses that help customers by providing top quality products and help them achieve long-term growth.

3.3 Project Location

YMI Co., Ltd. is located in Myaung Ta Kar Special Foundry Industrial Zone, Hmawbi township, the northern part of Yangon Division. YMI is located at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E.

The total project area is 8 Acres. The location map of the project is shown in Figure 3.3-1.

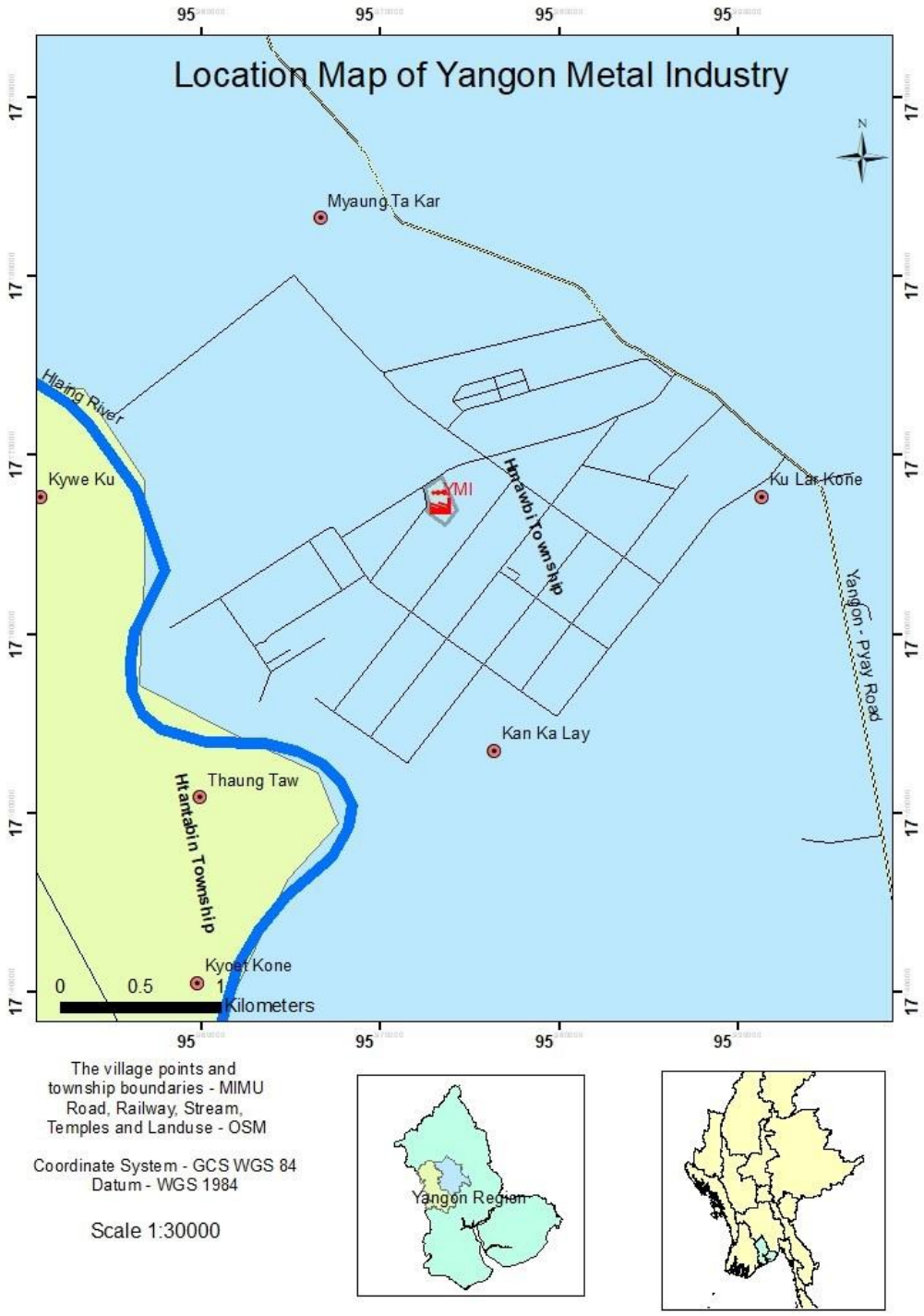


Figure 3.3-1: Location of Myaung Ta Kar Industrial Zone in Hmawbi Township

3.4 Project Layout

The buildings are constructed in the project area. Each building area is described in Table 3.4-1. The layout of project site is presented in Figure 3.4-1.

Table 3.4-1: Building Area of the Project Site

No	Description	Remark
1.	Storage Building	Completed
2.	Process Building	Completed
3.	Packing & Transfer Building	Completed
4.	Process Building	Completed
5.	Finished Storage Building	Completed
6.	Ingot Storage Building	Completed
7.	Roll Shop	Completed
8	Canteen	Completed
9	Packaging Area	Completed

Source: YMI Co., Ltd

Figure 3.4-1: Lead Smelting and Refinery Factory, Yangon Metal Industry Co., Ltd

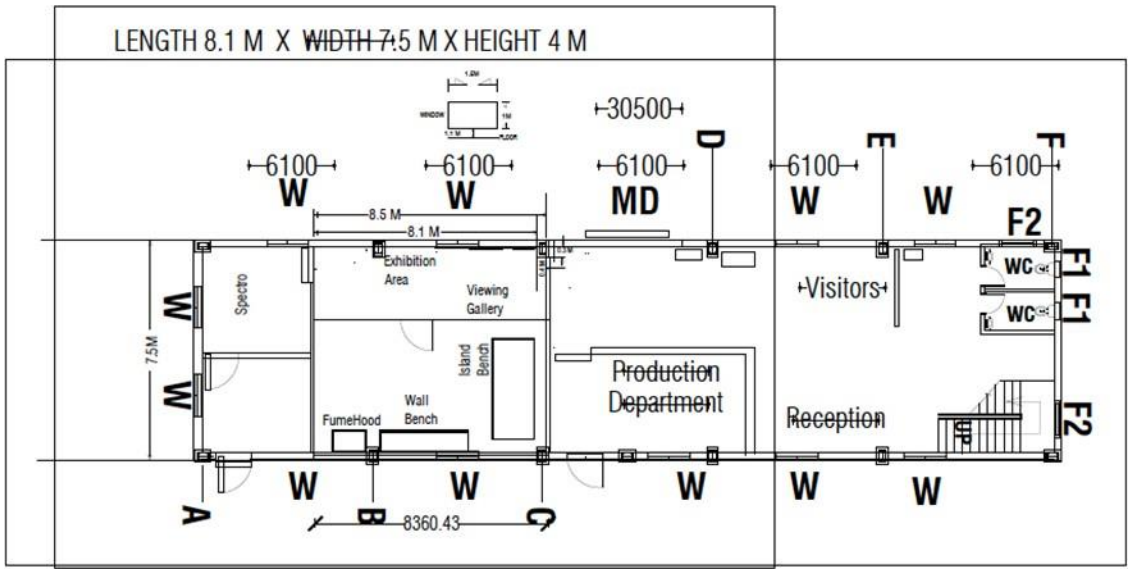


Figure 3.4-2: Laboratory Layout Plan

3.5 Machinery Facilities

The following images describe used machines for lead recycling process.

Figure 3.5-1: Breaking Machine (B 75 Breaker)

(Country of Origin: French)

Figure 3.5-2: Chain Scrap Conveyor

Figure 3.5-3: Rotary Smelting Furnace (Front View)

(Country of Origin: Korea)

Figure 3.5-4: Locomotive Cart & 60 Tons Kettle

Figure 3.5-5: 50 Tons Kettles

Figure 3.5-6: Casting Machine

Figure 3.5-7: Packing Machine

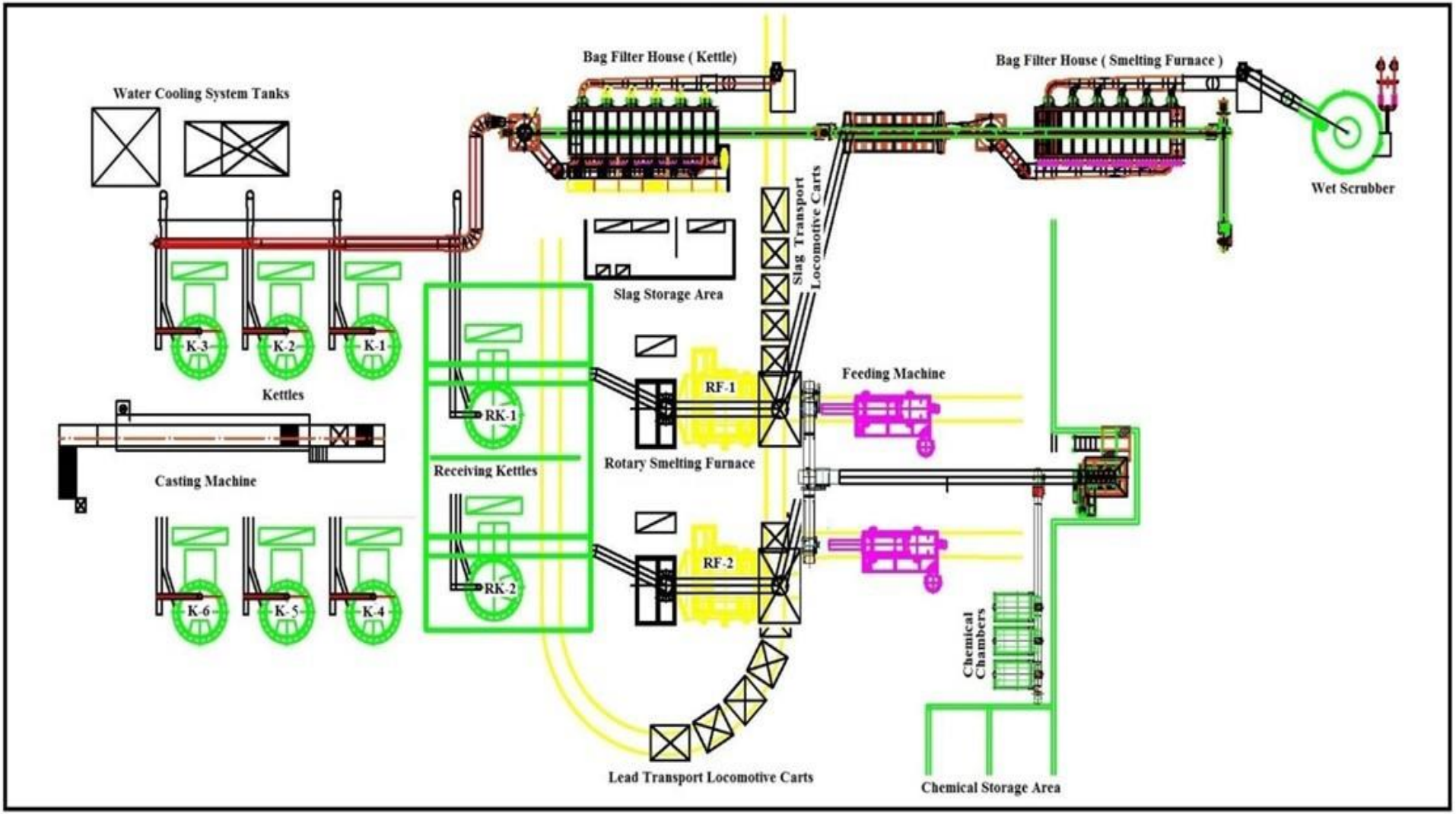


Figure 3.5-8: Machinery Layout Plan

3.6 Raw Materials and Production Process

Lead recycling process is used to produce pure lead and other lead alloys. The recycling process starts by breaking lead acid batteries. Battery breaking is the crushing of batteries, followed by manual separation of the lead from nonmetallic materials. Heavy metallic, fine metallic and lead plates are collected and put in smelting rotary furnace. The crude lead from the smelting rotary furnaces is refined and casted. Alloy and Refined Kettle is used for refining the crude lead and Lead Ingot Casting Machine is used for casting the refined lead. Finally, pure lead ingot, antimony lead ingot and calcium lead ingot are produced. YMI produces lead in 38.5 ton/day, 10,00 tons per month and 12,000 ton per year respectively.

Figure 3.6-1: Raw Materials (Heavy Metallic, Fine Metallic and Lead Plates)

Figure 3.6-2: Raw Materials from the Local Market

Figure 3.6-3: Battery Materials Collection and Battery Breaking Section at the Factory Compound

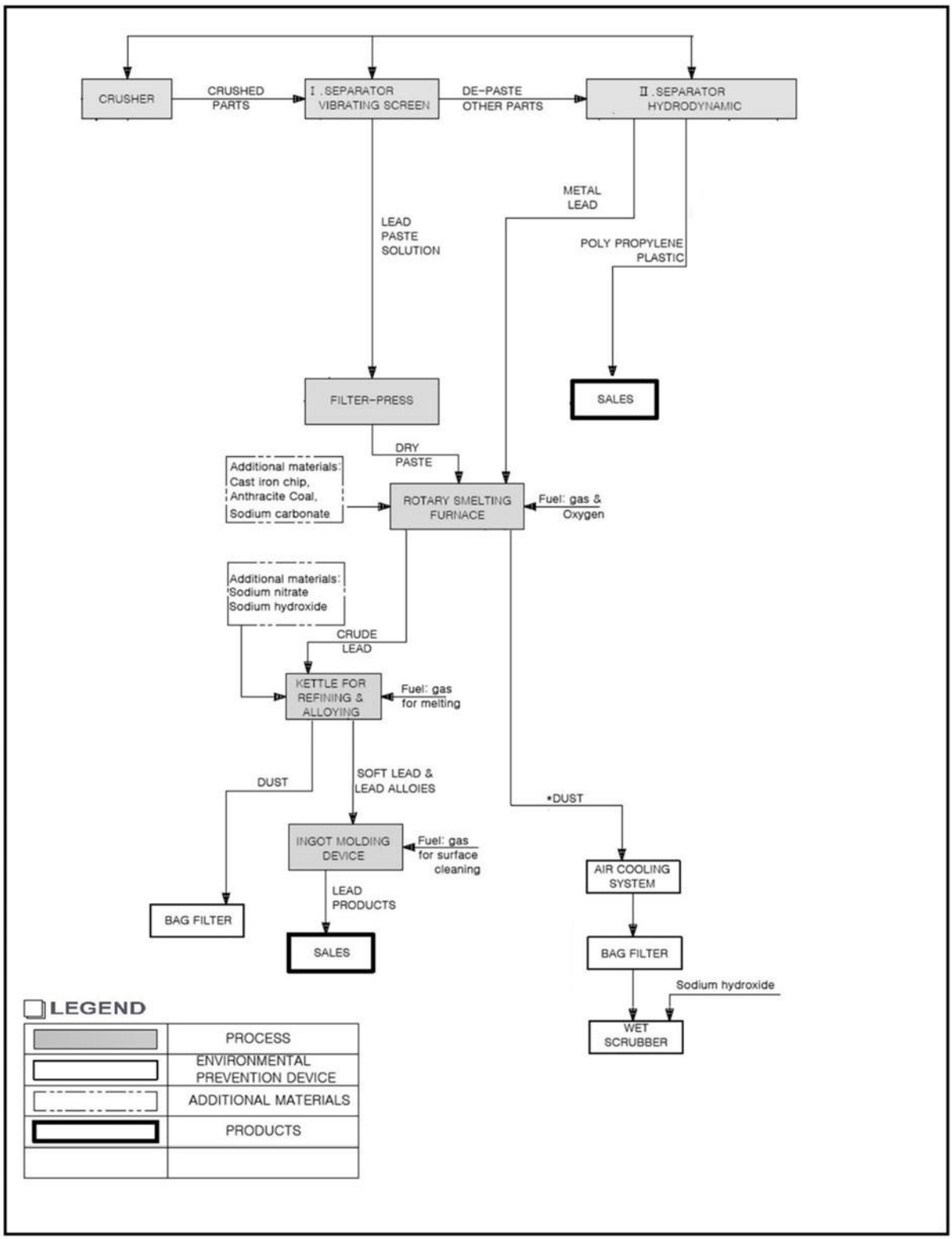


Figure 3.6-4: Process Flow Chart (Source: YMI Co., Ltd.)

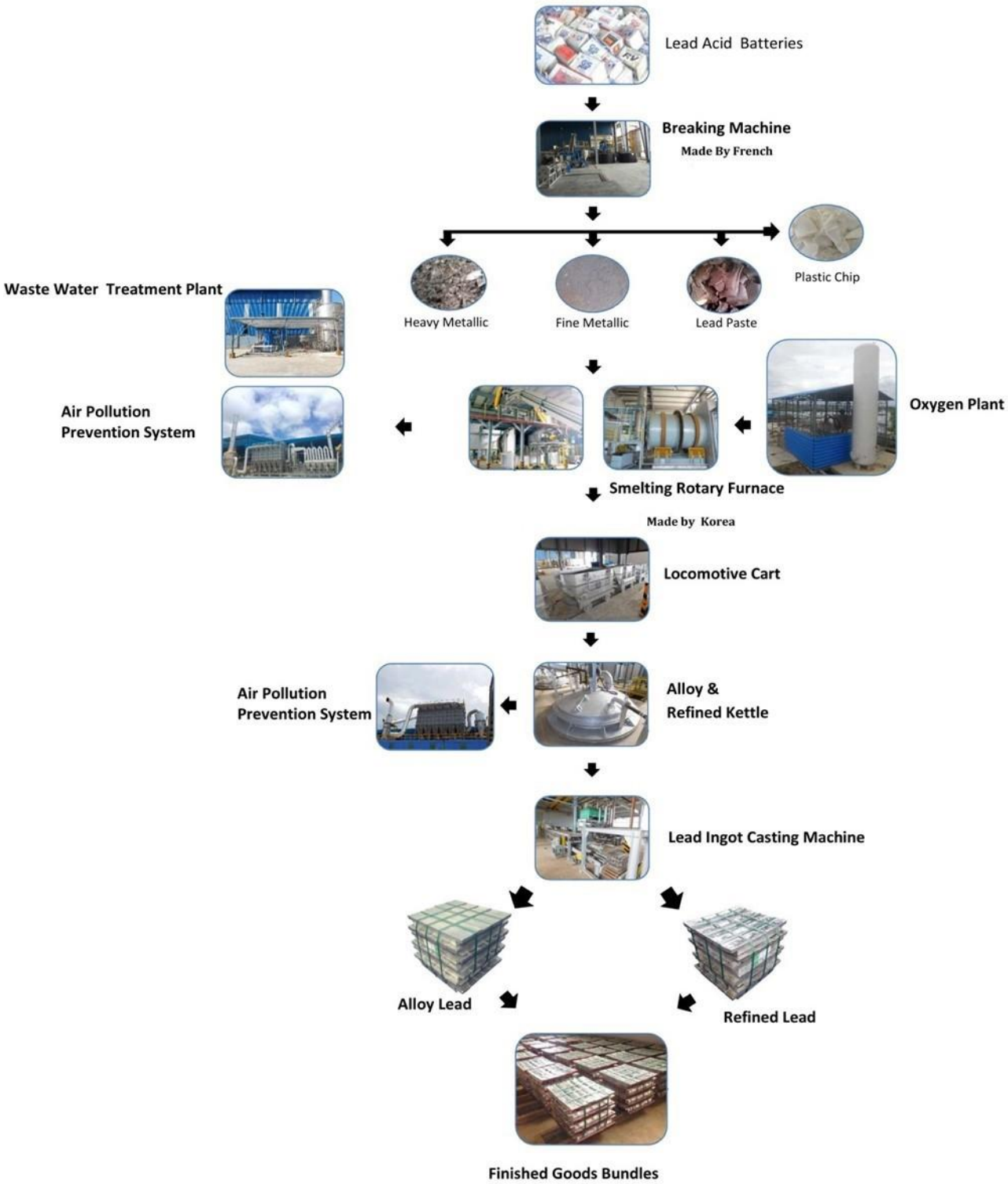


Figure 3.6-5: Overall Process Chart (Source: YMI Co., Ltd.)

Figure 3.6-6: Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot

Table 3.6-1: Elemental Compositions of Each Product

Description	Pure Lead Ingot	Antimony Lead Ingot	Calcium Lead Ingot
Content	Pb 99.97% (Min)	Sb 1.7% ~ 3.5%	Ca - 0.08 ~ 0.1% (Min) Al – 0.02 ~ 0.03% Sn – 0.7 ~ 0.9%
Weight (kg)	25 ± 1	25 ± 1	25 ± 1
Dimension (mm)	570 x 80 x 65	570 x 80 x 65	570 x 80 x 65
Packing (kg / Bundle)	1050 ± 50	1050 ± 50	1050 ± 50

Figure 3.6-7: Packing Process

Figure 3.6-8: Bundle Weighting System with Printer

3.7 Transportation and Loading/Unloading on Site

Cranes and forklifts are used for transportation raw materials, finished products and other materials.

Table 3.7-1: List of Transportation Equipment on Site

No	Items	Capacity
1	Crane No.1	5 T
2	Crane No. 2	5 T
3	Crane No. 3	5 T
4	Crane No. 4	3 T
5	Crane No.5	10 T
6	Crane No. 6	7.5 T
7	Crane No. 7	3 T
8	Crane No. 8	3 T

Source: YMI Co., Ltd.

There will be (2) forklifts in project site with the following details.

Table 3.7-2: List of Loading/Unloading Equipment on Site

No	Items	Capacity	Fuel Consumption	Usage (hour/day)
1	Forklift -1	3 T	2.25 L/hr	8 hours
2	Forklift -2	3 T	2.25 L/hr	8 hours
3	Forklift -3	5 T	3 L/hr	8 hours
4	Forklift -4	3 T	2.25 L/hr	8 hours
5	Forklift -5	3 T	2.25 L/hr	8 hours

Source: YMI Co., Ltd.

3.8 Water Supply and Electricity Consumption

3.8.1 Chemical Uses

YMI have certified to use and store the chemicals from the concerned ministry. The list of chemicals used in the YMI are the followings:

- Sodium Carbonate 3000 Ton per year.
- Sodium Nitrate 130 Ton per year.
- Sodium Hydroxide 150 Ton per year.
- Antracite 850 Ton per year.
- Iron II Sulfide 50 Ton per year.
- Sulphur 50 Ton per year

3.8.2 Water Supply

The available water for industrial and domestic use is underground water from tube well and approximately 600 m^3/day of water consumption for 450 gallons for industrial use and 150 gallons for domestic use respectively.

3.8.3 Power Supply

Power supply mainly depends on the natural gas with the amount of approximately 5.5 mmcf/month. However, an emergency generator is used on project site not to occur electricity outage. Fire hose and fire extinguishers are placed around the factory to prevent fire.

3.8.4 Electricity Consumption

The monthly power consumption during operation stage is estimated as 500,000 KW per month and the power layout plan is described in Figure 3.8.4-1.

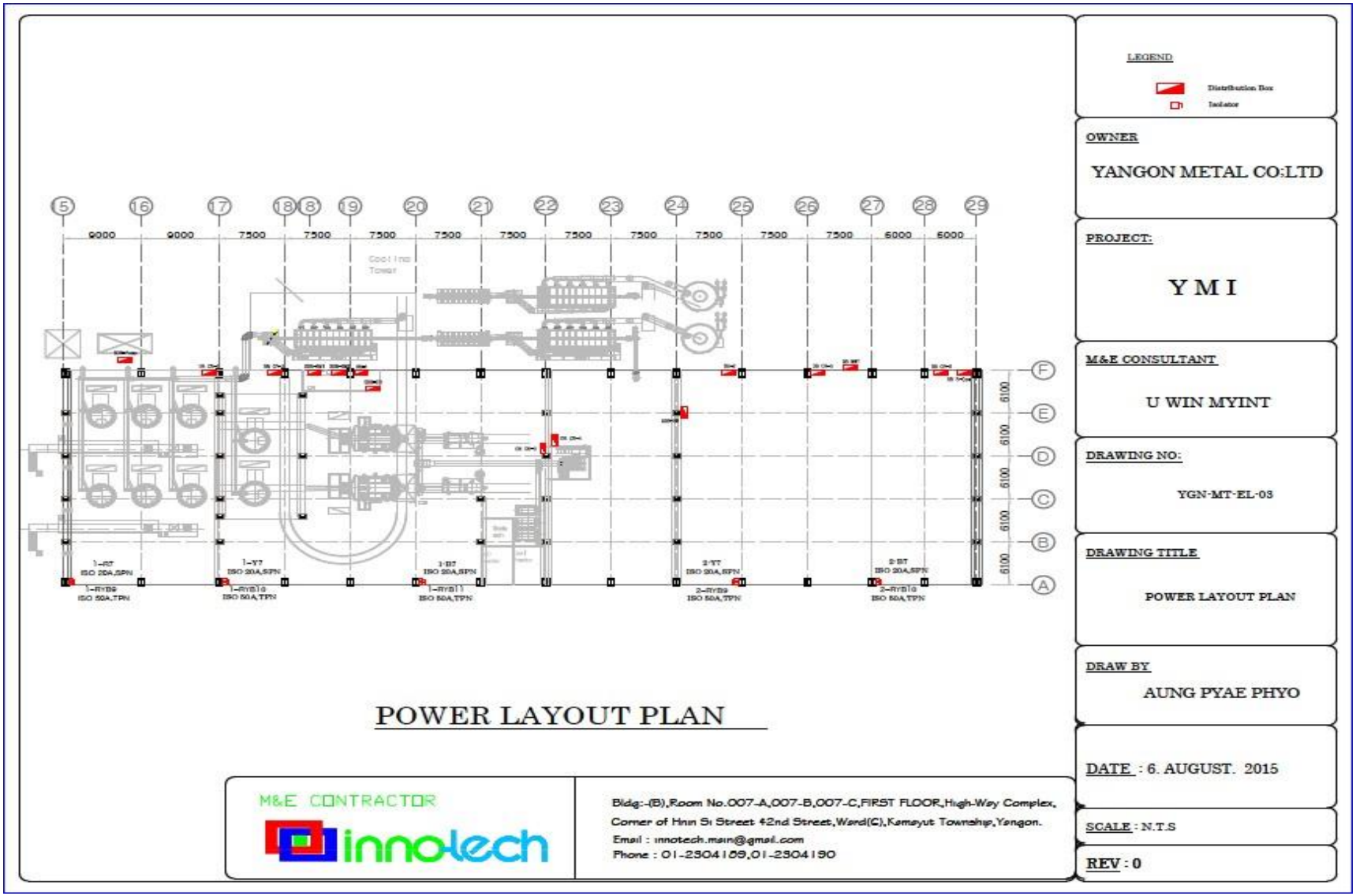


Figure 3.8.4-1: Power Layout Plan

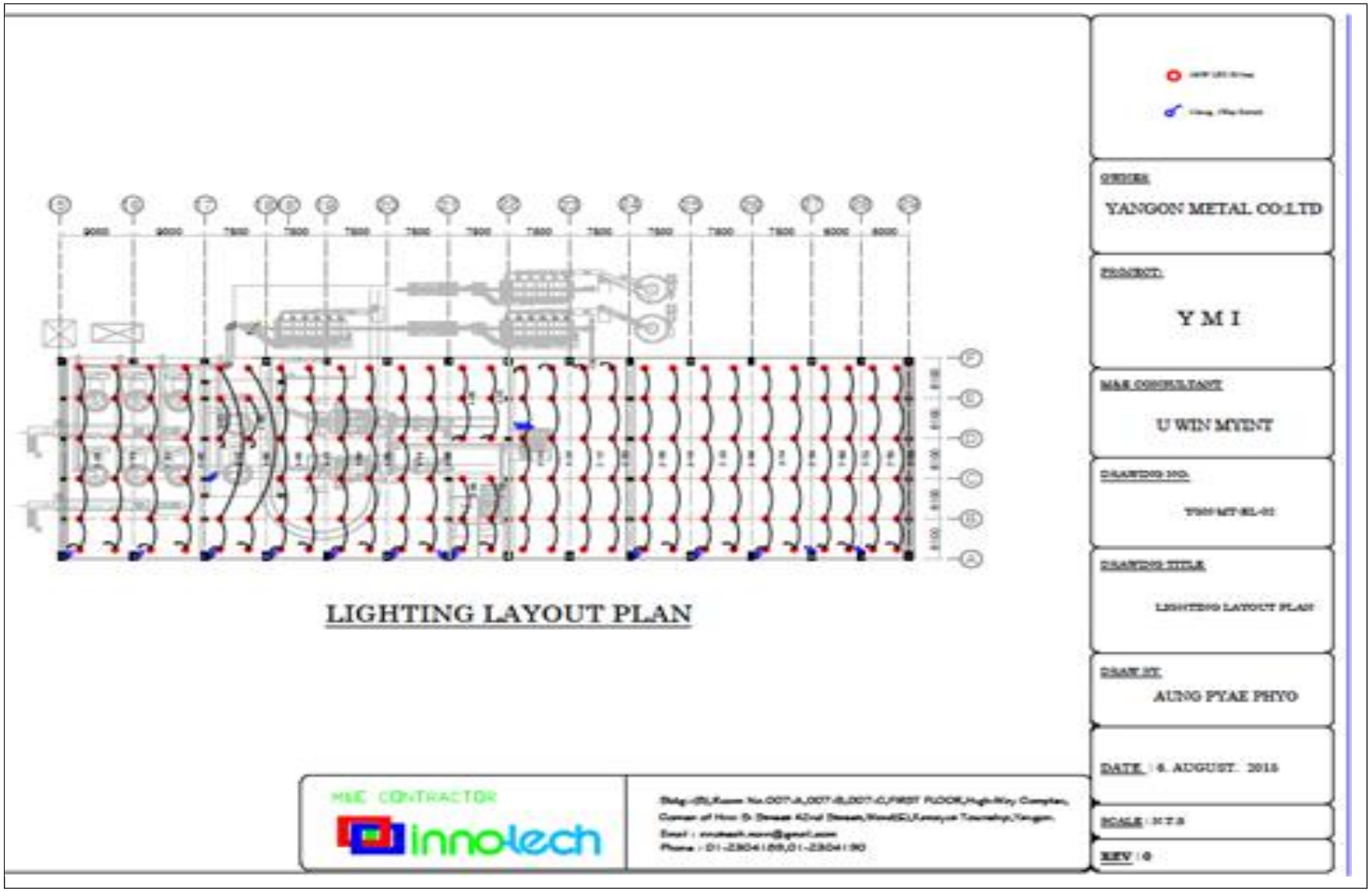
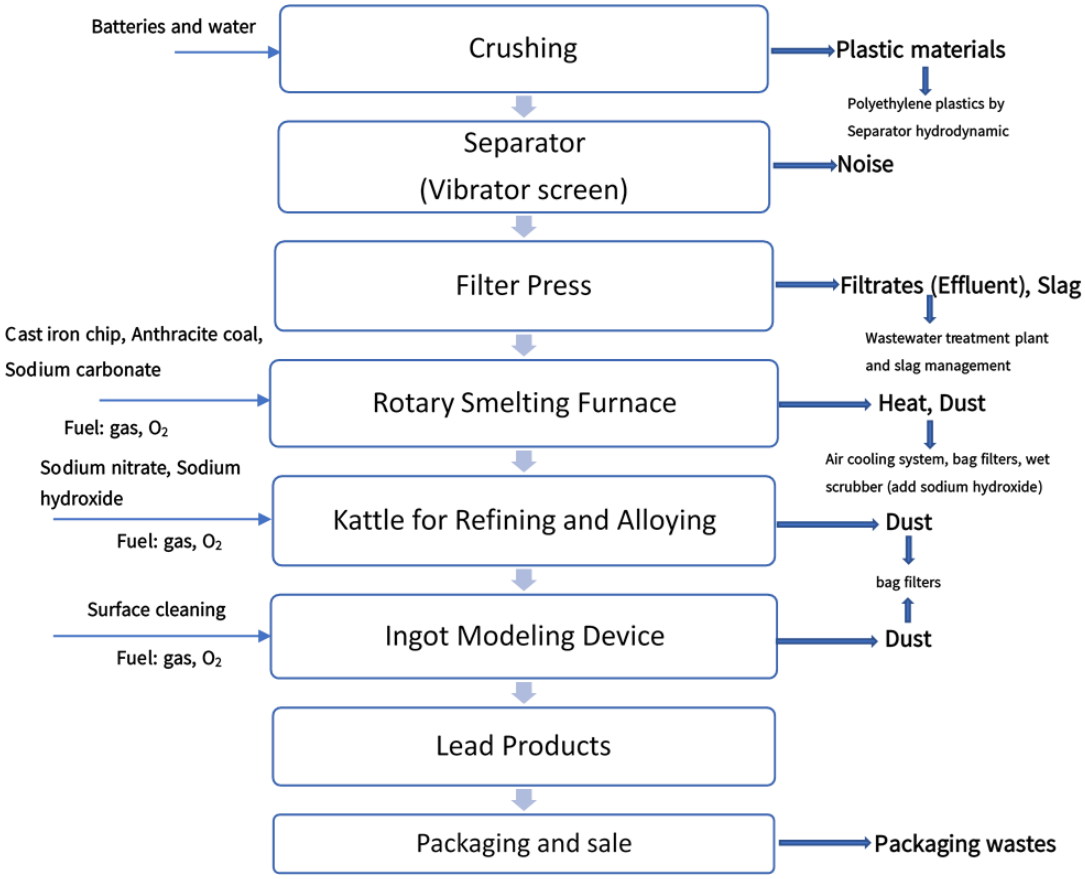


Figure 3.8.4-2: Lighting Layout Plan

3.9 Emissions and Effluent Control

Emissions from batteries braking are mainly sulfuric acid mist and dusts. Emissions from crushing are also mainly dusts. Smelting rotary furnace emits particulate, sulfur oxides and nitrogen. Wet scrubbers are sometimes used to reduce SO_2 emissions. Baghouse filters are set to control the particulate emissions. Kettle furnaces for melting, refining and alloying are relatively minor emission sources. The kettles are hooded, with fumes and dusts typically vented to baghouse.

The overall process emission and effluents are illustrated as in the flow chart.



Staff wastes and kitchen wastes are also expected to be occurred and managed according to the municipality guidelines.

Figure 3.9-1: Rotary Furnace & Dust Line

Figure 3.9-2: Air Pollution Preventing System

Figure 3.9-3: Exhausted (Dust & Gas) Setting & Cooling Chamber

Figure 3.9-4: Filtering Bag House for Lead Dust of Rotary Smelter

Figure 3.9-5: Blowing Fan and Wet Scrubber

Figure 3.9-6: Dust Line, Blowing Fan and Motor

A cooling tower is a heat rejection device that rejects waste heat to the atmosphere through the cooling of a water stream to a lower temperature. Cooling tower is used to keep the temperature of the water constant. Specifications of the Cooling Tower are:

Unit Length	m
Unit Width	m
Unit Height	m
Air Flow	m^3/h
Noise Level	Maximum 90 dB (A) at 1.5 m, 55 dB (A) at 15 m

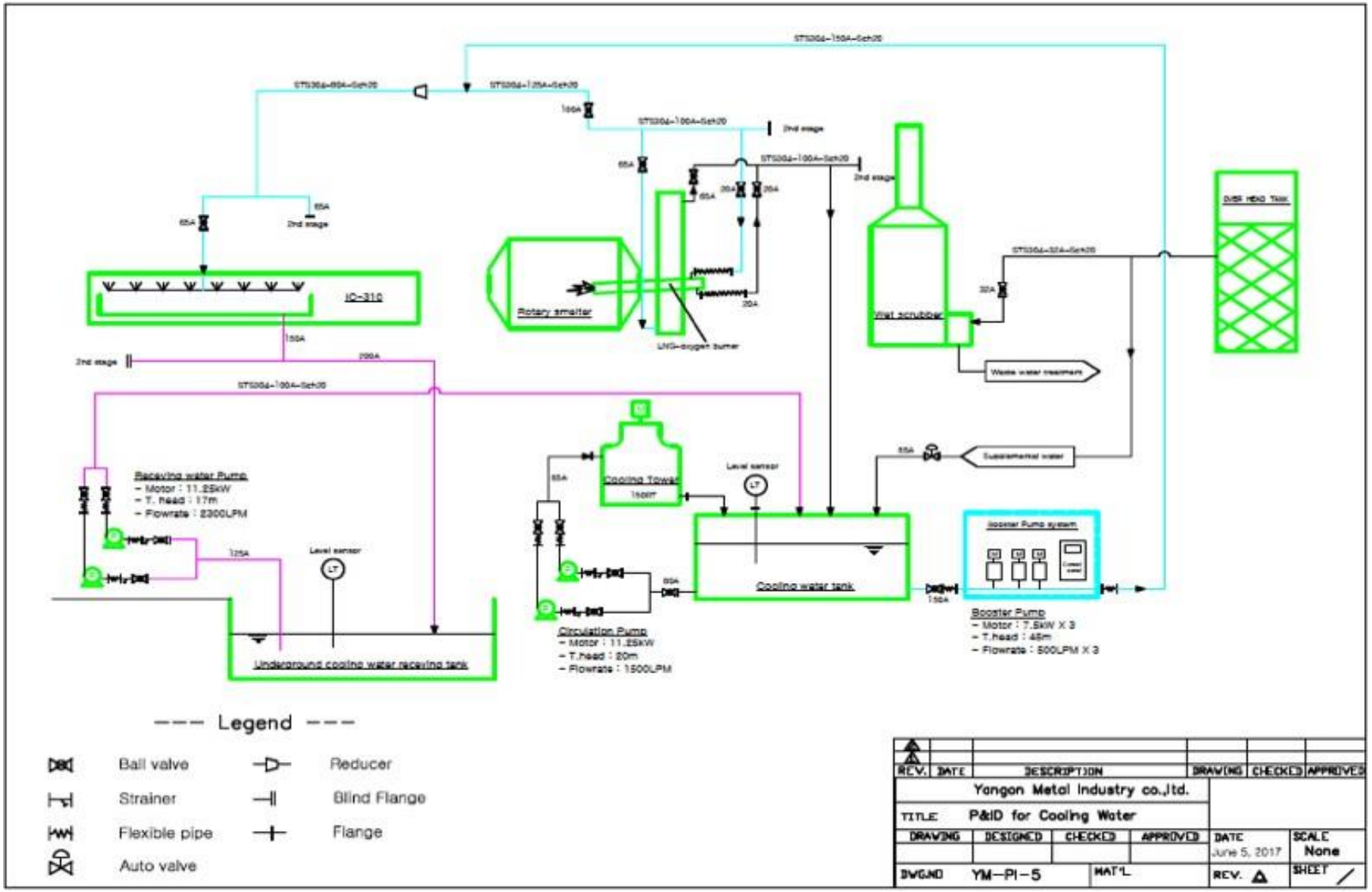


Figure 3.9-7: Cooling Tower

Industrial wastewater from lead recycling processes will be treated by circular wastewater treatment units and sewage from toilets, showers, canteen, hand basins and offices will be collected by using septic tank system. The sludge will be sent to at the designated area for disposal. The available treatment rate from the Main Holding Tank is 600 m^3/day. All surface runoff water from factory will flow through proper drain lines with gravity flow to the designated sedimentation pit.

Step 1. The discharged water from the Breaking Section, Filter Press and wet scrubber directly into the Tank No.1.

Step 2. The effluent water from the Tank No. 1 pumped and settled into the settling tanks A & B, then pumped into the Tank No.2.

Step 3. The mixer was set up in the Tank No.2 and added the Sodium Hydroxide or Sodium Carbonate as necessary for treatment process.

Step 4. Then the treated water are pumped into the Tank No.3 through the filter press.

Step 5. The filtrated water from Tank No.3 are passed through the flocculation and sedimentation process and then pumped into the clean water tank.

Step 6. Then the treated water flow through the Filter, Cylinder No. 1 and No. 2 and then pumped into the water storage tank.

Step 7. The treated water are reused in the Breaking Section and some are evaporated through the Evaporator.

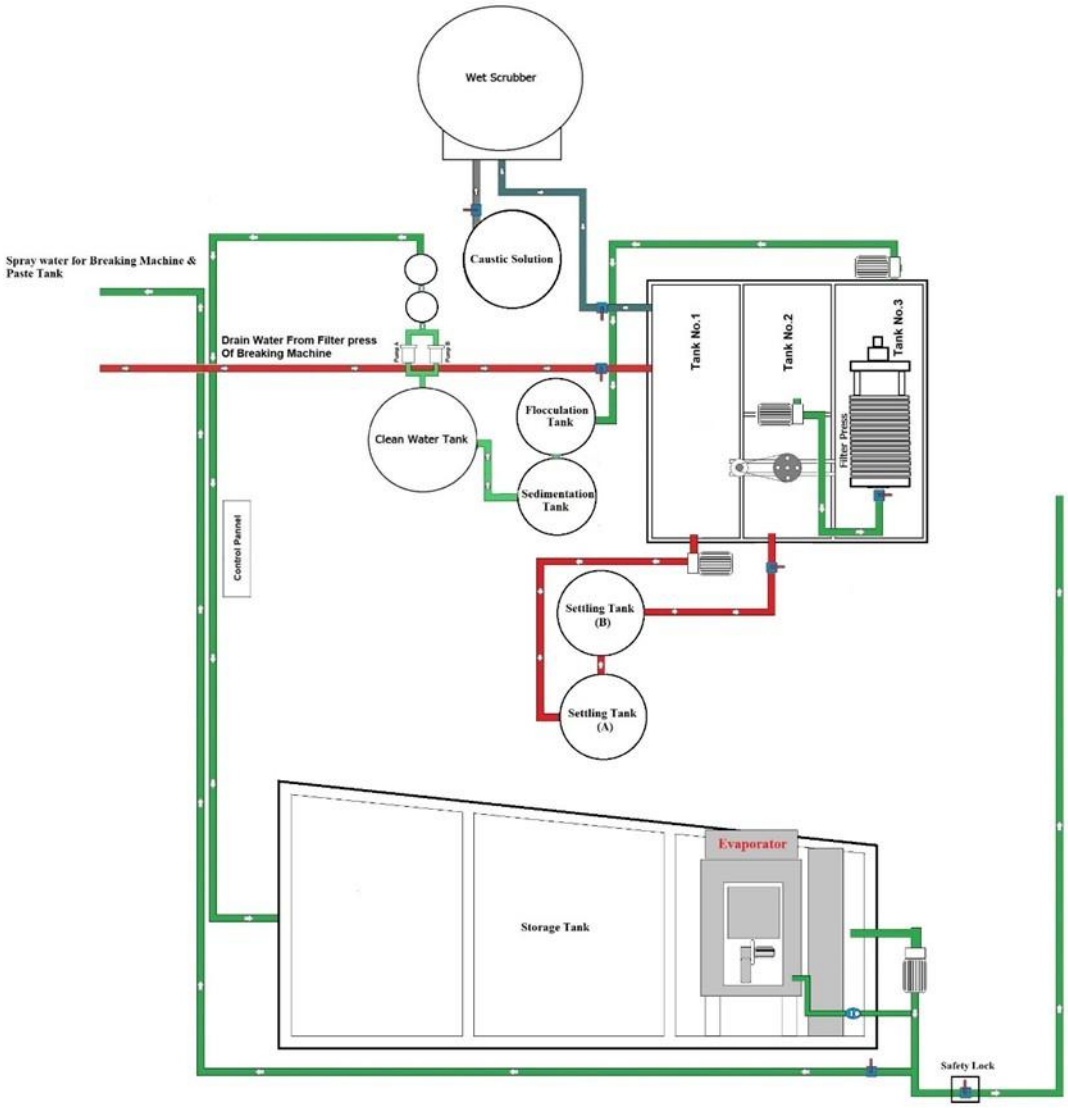


Figure 3.9-8: Industrial Wastewater Treatment (Wastewater Treatment Plant)

Figure 3.9-9: Thermal Evaporator

List of chemicals used in wastewater treatment process are shown in Table 3.9-1.

Table 3.9-1: Chemicals Consumption for Wastewater Treatment System

No	Chemical
1	Sulphuric Acid
2	Ferrous Sulphate
4	Lime Slurry
5	Anionic
6	Cationic

The solid wastes are separated into 3 types: recyclable, non-recyclable and hazardous wastes which are in separation by bin color and label are also described as figure.

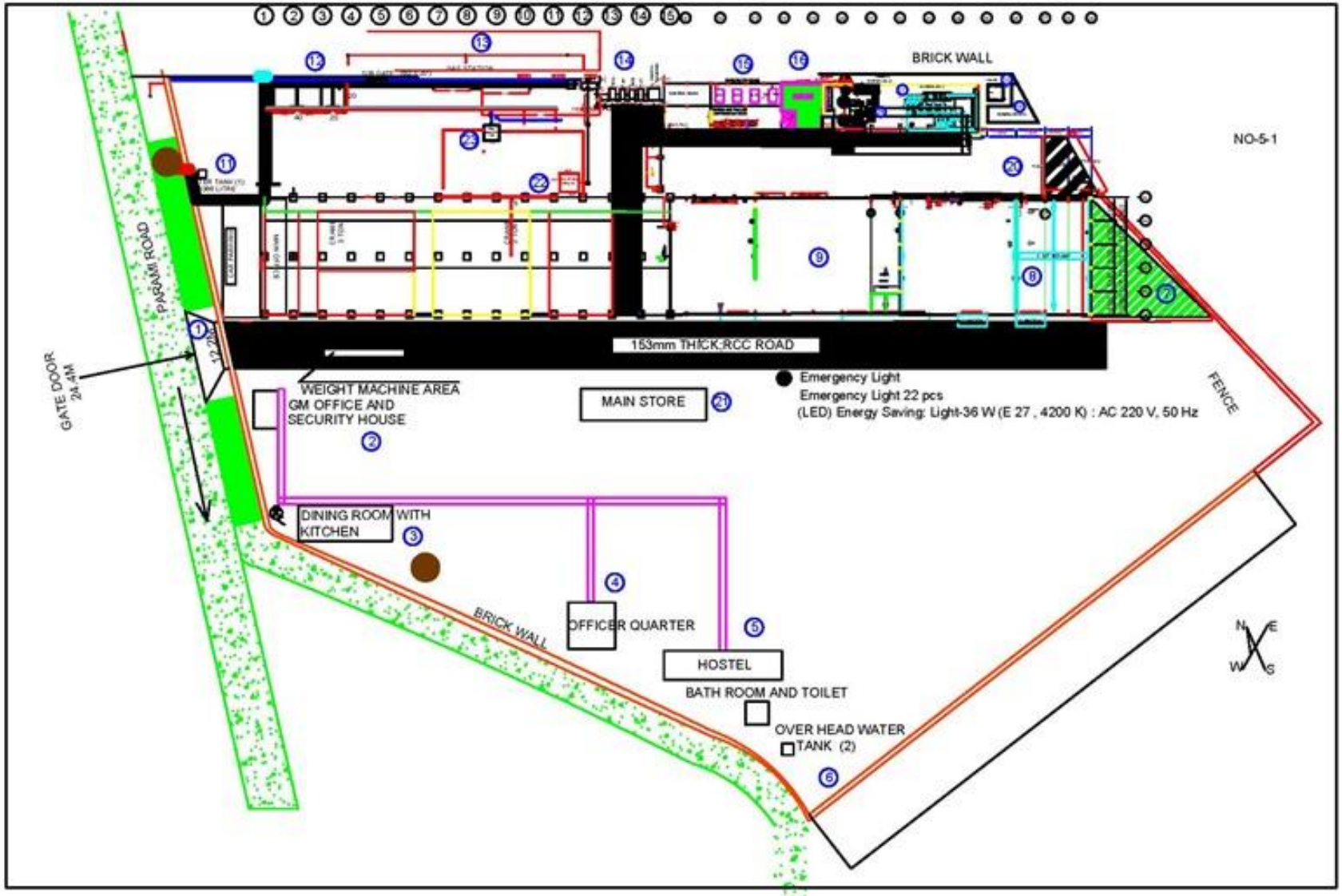


Figure 3.9-10: Factory Drainage Pipe Plan of Yangon Metal Industry Co., Ltd.

3.10 Working Timetable and Number of Employees

Working timetable of YMI Co., Ltd. is described in the following table. The working days are from Monday to Friday. It is closed on weekend and public holidays. The working time is divided into 3 shifts: (1) morning shift (from 7:30 am to 3:30 pm), (2) afternoon shift (from 3:30 pm to 11:30 pm), and (3) night shift (from 11:30 pm to 7:30 am).

Table 3.10-1: Working Timetable

Status	Description	Time
Working Hours	Daily 8 Hours Operation	
	Morning Working Time	08:00 to 12:00 hours
	Lunch Break	12:00 to 13:00 hours
	Afternoon Working Time	13:00 to 17:00 hours

Source: YMI Co., Ltd.

The manpower of YMI is currently about 218 Employees and more details of the level of employees are described in Table 3.10-2.

Table 3.10-2: Workforce

No.	Department	Man Power	
		Office	Operation
1	Admin/HR	15	11
2	Engineering	5	33
3	Quality Control (QC)	5	6
4	Quality Assurance (QA)	2	-
5	Production	7	96
6	Planning	10	18
7	Finance	10	-
	Total	54	164

Source: YMI Co., Ltd.

3.11 Project Schedule

YMI started construction in 2008 and finished in February 2018. The project is currently in the operation stage. The Preliminary Project Schedule is shown in Table 3.11-1.

Table 3.11-1: Preliminary Project Schedule

Activities	Year		
	2008-2018	2018-Onward	2020-Onward
Project Construction	Established	Production	-
EIA study	-	-	Processing
Operation	-	Started	Continue

Source: YMI Co., Ltd.

3.12 Selection of Alternative

3.12.1 Description of Alternatives

YMI Co., Ltd. has been set up specifically to develop lead and lead alloy recycling factory in Myanmar. The various site investigations have been done, and the current location was chosen as the most suitable project site for infrastructure developments and site specific for this type of industry.

3.12.2 No Action Alternative Option

YMI Co., Ltd. is under operation with the existing infrastructure. Therefore, No-Action alternative option is considered based on the current situation as follows.

Table 3.12.2-1: Study of No Action Alternative Option

Aspect	Conditions without the Project	Conditions with the Project
Economic Consideration	• Creation of job opportunity would not be feasible without this project. • Limited economic development with the current situations	• Job opportunities would be more developed for local residents. • Increase in local economy to a certain extent
Environment and Social Considerations	• No occurrence of natural, environmental and social impact by the project • Randomly arranged project leads to environmental and social complexity and segmentations.	• Construction and operation of Project will cause impact on natural & social environment. • Well planned project leads to the development of effective solutions for environmental and social issues. • Raising the status of living environment of local residential area by the projects.

Source: EIA Study Team

As an outcome of the Zero option study, the project implementation would be a better alternative approach with the development of designed quality, environmental and OHS management systems. However, the appropriate countermeasures would be required to reduce the negative impact.

3.12.3 Comparison of Alternatives

Several alternatives have been identified for the project by YMI Co., Ltd. including environmental and social, and economical alternatives. From the comparison between alternatives and the proposed site, there are more positive attributes to Proponent and the Project. Some of the considerations are described in Table 3.12.3-1.

Table 3.12.3-1: Comparison for Project Site Alternatives

Approach	YMI Factory Site	Other Locations in Yangon
Environment and Social Aspect	• Accessible location for sanitary landfill sites and spacious factory area for more environmentally friendly operation • Proximity for minimization of vehicle-related impact such as vehicular emission, traffic and use of fuel • Programmed CSR by Yangon Metal Industry • Regular and specific training program for employees will improve the workforce's additional/new skills	• Close to residential areas hence, making impact to nearby local residence • Occurrence of increased vehicle-related impacts, such as emission, traffic and use of fuel
Economy Aspect	• Cheaper labor cost due to the local employment but may require additional cost for capacity building (e.g. on the-job training). • More raw materials use and waste output due to inexperienced workforce.	• More overhead charges and capital costs in land lease.

Source: EIA Study Team

From the above comparison, this project contributes to more positive impact on social, environmental and economic points.

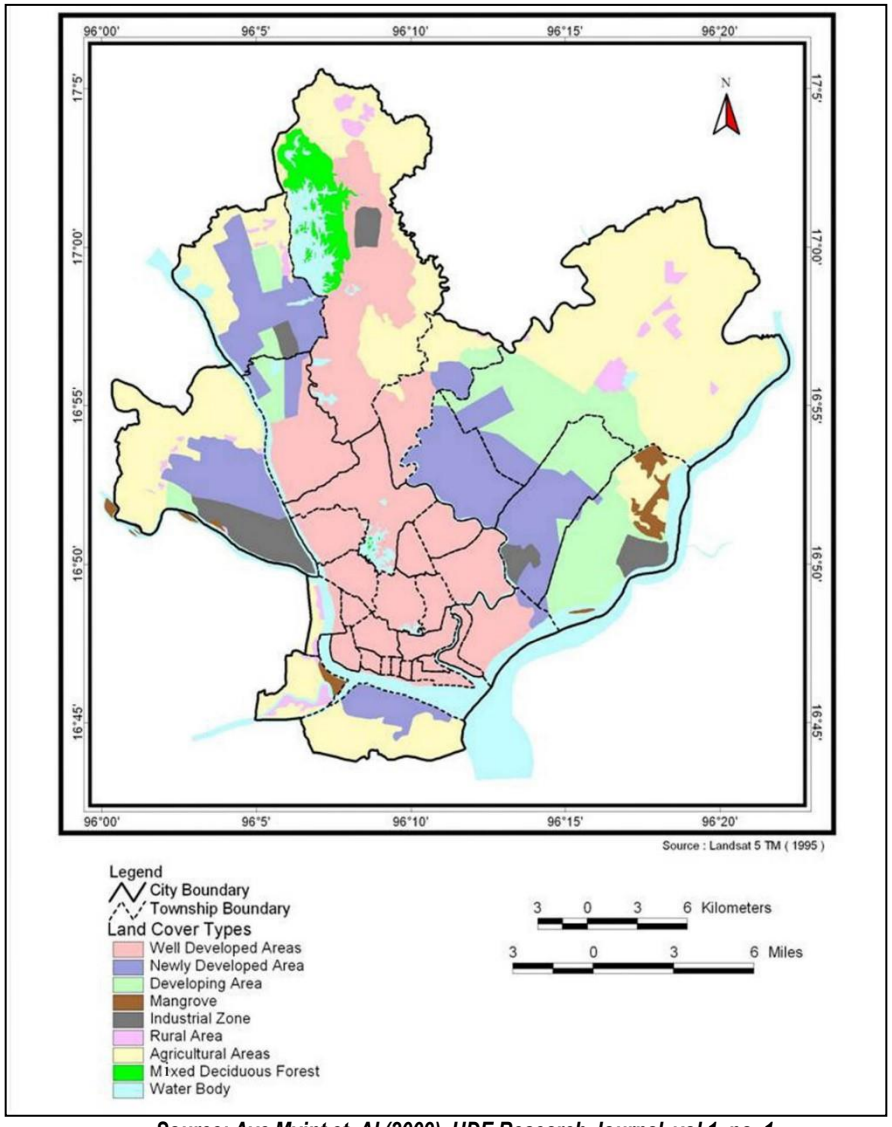
CHAPTER 4

DESCRIPTION OF THE SURROUNDING ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 Setting the Study Limits

Myaung Ta Kar Industrial Zone is located in Hmawby township, Yangon city area. Yangon city comprises of 33 townships. The spatial landscape of the Yangon City can be classified as follows.

(1) Well-developed residential area
(2) Newly developed residential area
(3) Developing residential area
(4) Mangrove area
(5) Industrial zone
(6) Rural area
(7) Agricultural area
(8) Mixed deciduous forest
(9) Water body



Source: Aye Myint et. Al (2009), UDE Research Journal, vol.1, no. 1

Figure 4.1-1: Land Cover Map of Yangon Region

4.1.1 Hmawbi Township

The proposed project area, Yangon Metal Industry (YIMI) is within Myaung Ta Kar Industrial Zone in Hmawby township, a township located northwest of the city of Yangon. Hmawbi Township is home to the Myaung Dagar Industrial Zone which is constructed in 2006-2008 and is intended to house of all of Yangon's steel factories. The township shares the borders on Taikkyi Township to the north, Hlegu Township to the east, Mingaladone Township to the southeast, Shwepyithar Township to the south and Htantabin Township to the southwest, west and northwest.

4.2 Geographic and Topographic Conditions

Myaung Ta Kar Industrial Zone is located western part of Hmawby Township. The west part is contact with Htantabin Township and Hlaing River is divided into these townships. Myaung Ta Kar township is located at the eastern most part of Ayeyarwaddy Delta Area and contact with foot hill of Bago Yoma. Hlaing River is a part of Ayeyarwaddy Delta. Yangon – Pyay Highway and Railroad situated at the east of Myaung Ta Kar Industrial Zone and they assess to all over country. It is 8 km away from Hmawby, the nearest city, and 58 km away from Yangon, the commercial capital of Myanmar. Myaung Ta Kar Village is the nearest village to Industrial Zone and located 1 km north of it. Myaung Ta Kar Industrial Zone is located west of Yangon-Pyay Highway and all area is assessed with paved road. Jetties are constructed along the bank of Hlaing River for transportation purpose.

4.2.1 Topography and Drainage

Since the Myaung Ta Kar Industry Zone is located at the eastern part of Ayeyarwaddy Delta, the topographic feature is relatively flat. However, there is some low relief highs are consisted in east part of Industry Zone. Especially, Hmawby City is built on a rolling hill, a foot path of Bago Yoma. According to aerial photograph, the industrial zone is located between flood plain of Hlaing River and foothills of Bago Yoma. Regionally, the topography of Htantabin Township illustrates totally flat, whereas Hmawby Township shows ridge and valley. The elevation is low near Hlaing River and increasing to the east part gently. There are some rolling hills around the industrial zone, but the slope gradient never exceeds 5 degree.

The project area, YMI is located 9 meter above sea level and bank of Hlaing River at this area is 6 meter above sea level. The topography of YIM is totally flat and built on the flood plain of Hlaing River. Figure 4.2-1 illustrate the topographic map of Hmawby and Htantabin Township and the slope gradient map is shown in Figure 4.2-2. These maps are generated from the Digital Elevation Model of GMTED – DEM.

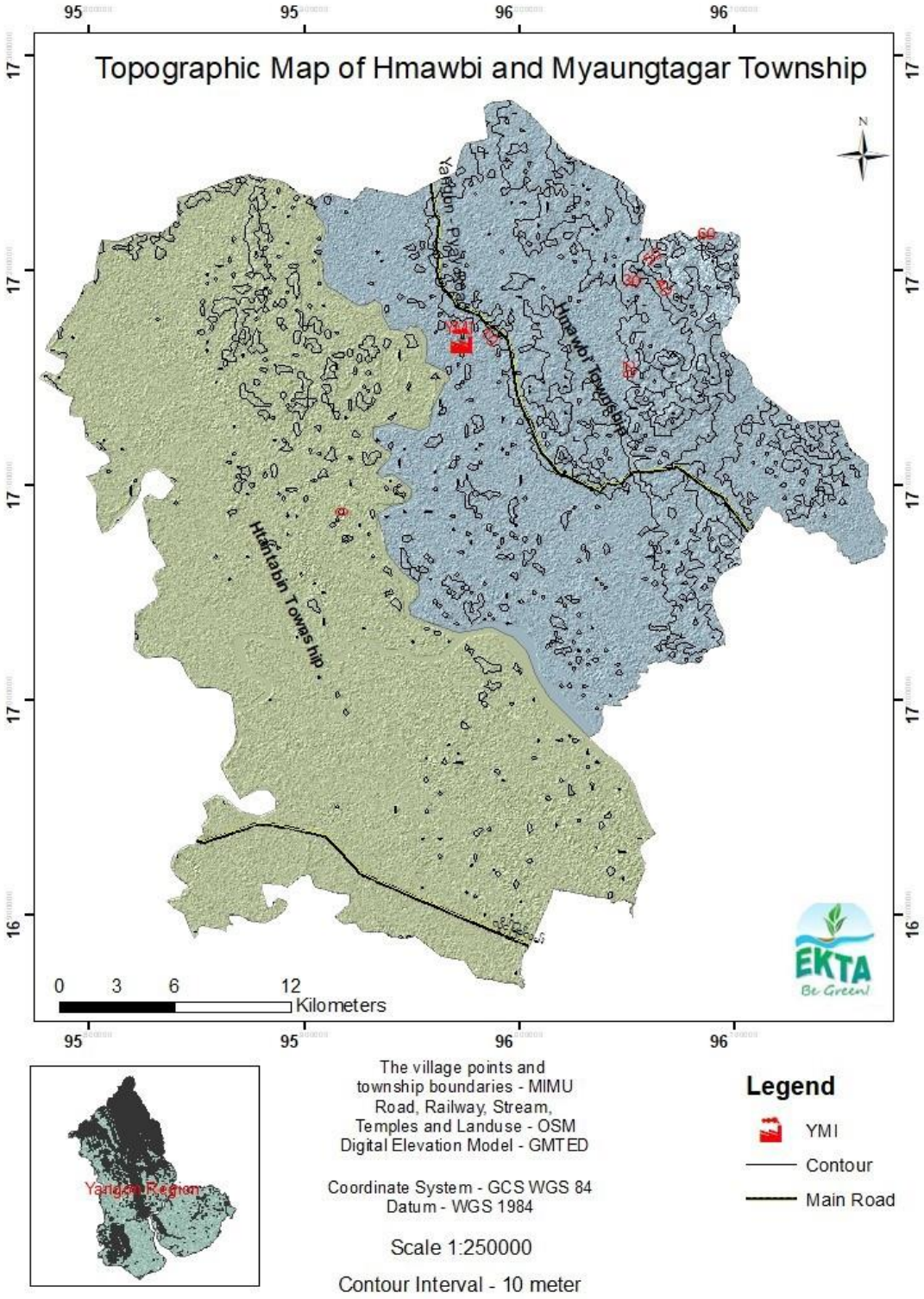


Figure 4.2-1: Topographic Map of Myaung Ta Kar Industrial Zone and its surrounding

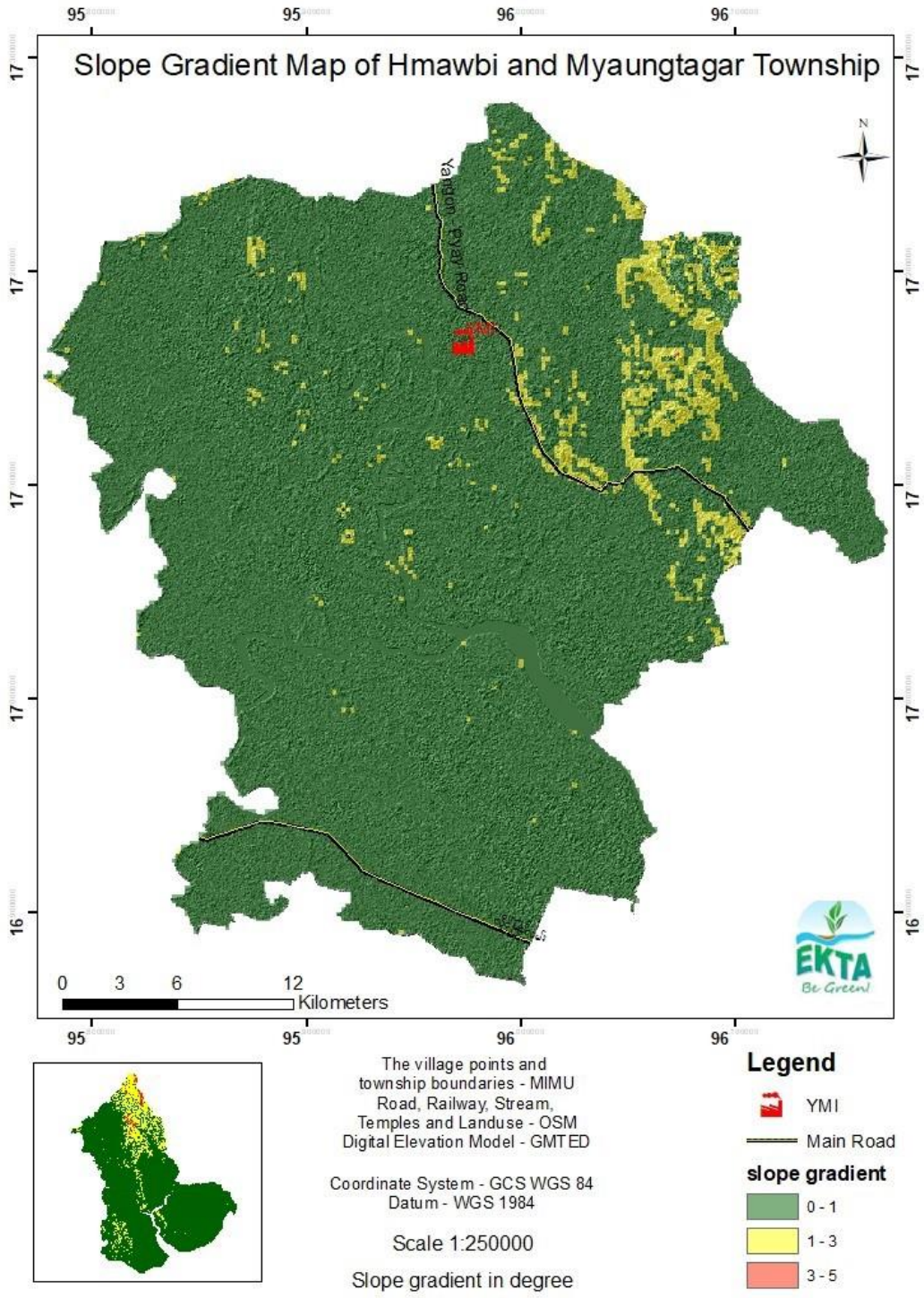


Figure 4.2-2: Slope Gradient Map of Myaunt Ta Kar Industrial Zone and its surrounding

4.2.2 Regional Geology

Tectonically, Myanmar is subdivided into four main parts: Eastern Highland, Central Lowland, Western Ridges and Rakhine Coastal Plain. The project area is in a Central Lowland. Central Lowland consisted of Bago Yoma, Bago Basin at the east and Ayeyarwaddy Basin at the west. Myaung Ta Kar Industrial Zone is located at the eastern

part of Ayeyarwaddy Basin and foot of Bago Yoma. The succession of soil and rock formation of the area is shown in Table 4.2.2-1 and regional geological map is shown in Figure 4.2-3.

Table 4.2.2-1: Succession of Regional Geology

No	Formation / Group	Symbol	Age
1	Alluvium	Q2	Recent
2	Older Alluvium	Q1	Recent
3	Irrawaddy Formation	Tm-Tp	Plio-Miocene
4	Pegu Group	Tm	Miocene

The Alluvium (Q2) consists of marine deposit underlain by fluvial deposit. At the upper part of Alluvium, the fluvial deposit being existed from sedimentation process of Ayeyarwaddy River and Hlaing River. The river dynamic is still progressing, and the dimension and thickness of deposits change yearly and seasonally. Sand and clay are dominated, and gravel patches observed locally.

The Older Alluvium (Q1) consists alluvial deposits laid by erosion of earth materials from Bago Yoma and deposited at foot of hill slopes. Alluvial fans deposited are dominated and sand are gravel are common.

The Irrawaddy Formation (Tm-Tp) is mainly composed of poorly consolidated ferrogeneous feldspathic sandstone with colored mud and clay.

The Pegu Group (Tm) is mainly composed of alternative sandstone and shale formation interbedded with massive sandstone. At the central part of Bago Yoma, the Pegu Group shows sandstone interbedded with shales.

The project area is located on the deposit of Alluvium and composed of sand deposit.

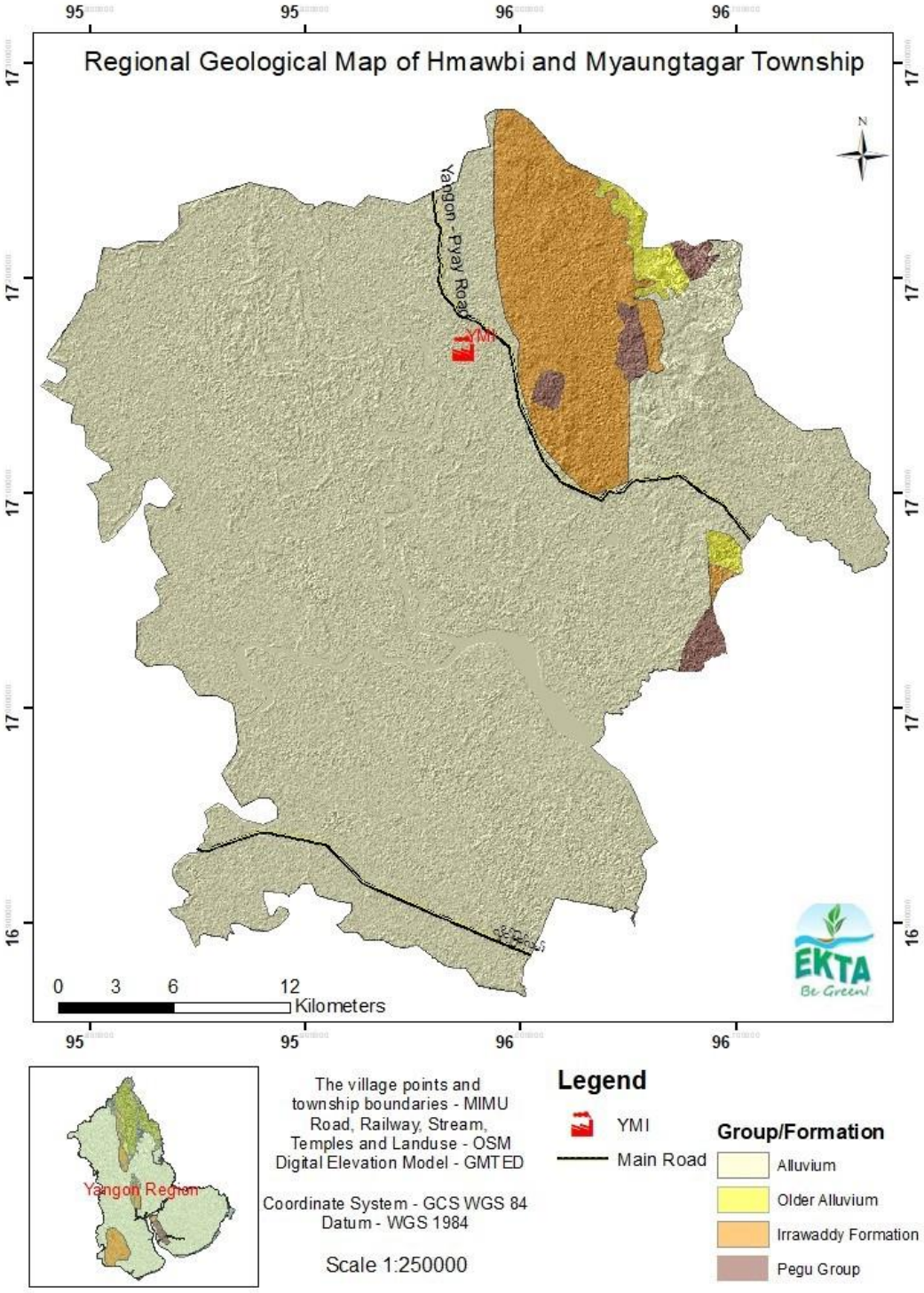


Figure 4.2-3: Regional geological Map of Myang Ta Kar Industrial zone and its surrounding

4.2.3 Natural Disaster

As the project area is located near bank of river and flood plain area, the flood is accounted as the prominent disaster for Myaung Ta Kar Industrial Zone. However, as the east bank where project area is situated is a bit higher

than west bank, the frequency of flood will be higher, but the magnitude will be less. Both river flood and tidal flood is significant in this area.

The second prominent disaster is bank erosion. Since the project area is located at the bank of erosional side and composed of loosely cemented deposits, the bank erosion will be affected towards the Industrial Zone. The effect of bank erosion will loss land properties.

Although less in frequency, the magnitude in fairly large of another disaster is earthquake. The major earthquake distribution source, the Sagaing Fault is located 55 km east of project area. In accordance with seismic hazard map, published by Myanmar Earthquake Committee, the project area is in zone 5 and its peak ground acceleration is less than 0.2 g (see Figure 4.2-4). Moreover, as the ground of project area is composed with loosely cemented materials and shallow in groundwater level, the liquefaction potential is high, apart from potential of ground movement.

Another disaster is accounted as tropical cyclone because the project area is located fairy far from coastal region of Myanmar. The tropical cyclone frequently hit the coastal region during pre and post monsoon season.

The other disasters are accounted as drought, extreme weather condition, urban fire, thunderstorm, and ground subsidence. There is no potential for landslide, tsunami, and volcanic eruption.

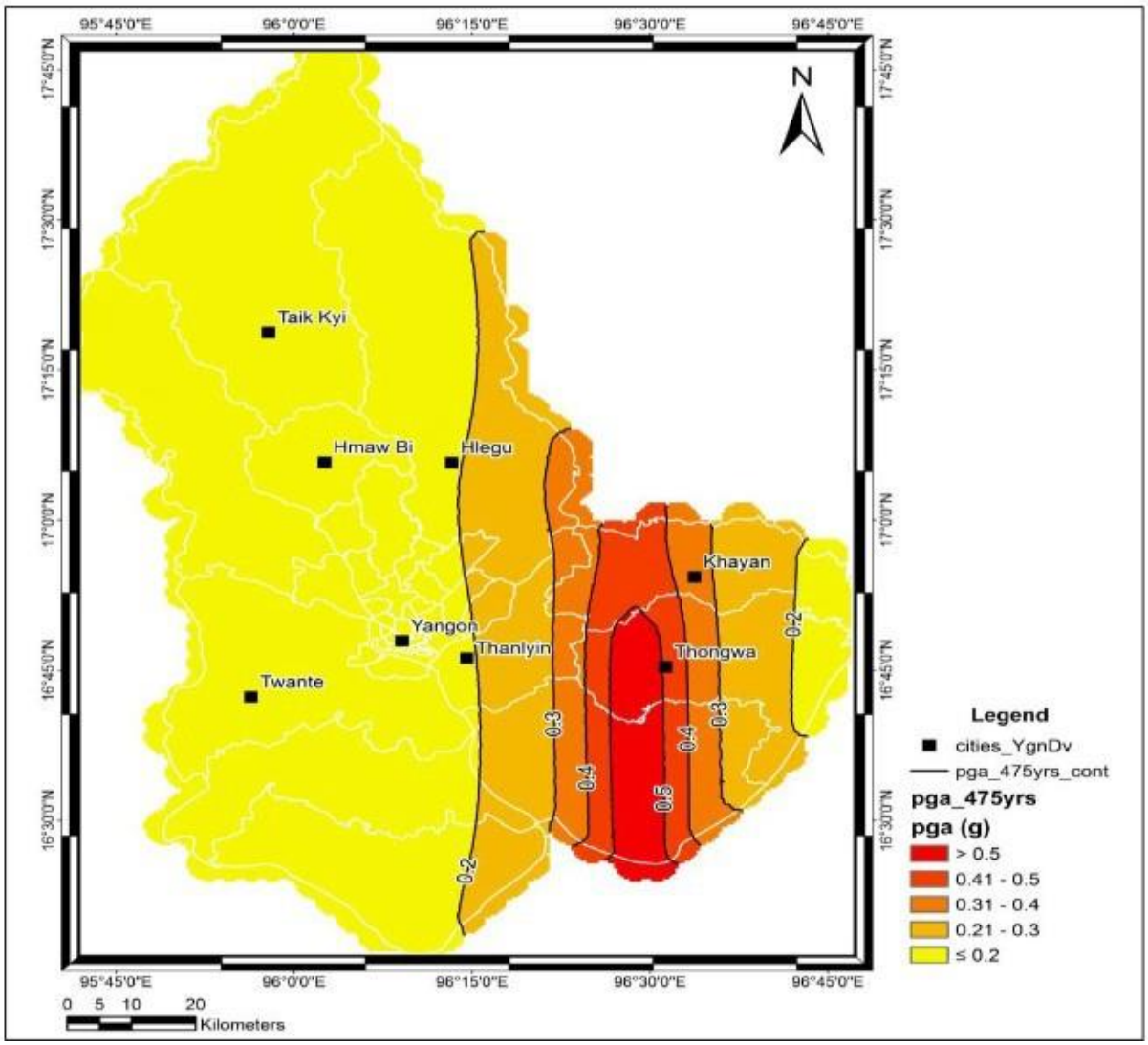


Figure 4.2-4: Seismic Hazard Map of Yangon Region with 10% probability of exceedance in 50 years.

Source: Myanmar Earthquake Committee

4.2.3.1 Seismic Status

The project area is located in Hmawbi township, the northern part of the Yangon region where the earthquake occurrence is classified as “medium” according to the Think Hazard of Global Facility for Disaster Reduction and Recovery (GFDRR). It was predicted that there is a 10% likelihood of potential damaging earthquake in the area in the next 50 years.

4.2.3.2 Climate

The area has hot and humid weather; the maximum temperature appears 39.3°C and the minimum temperature, 10°C. The annual rainfall and temperature are presented in table 4.23.2-1.

Table 4.2.3.2-1: Average Rainfall and Temperature

No	Year	Rainfall		Temperature	
		Raining Day	Avg. Rainfall (In)	Summer	Winter
				Maximum (°C)	Minimum (°C)
1	2015	114	97.25	40	13.5
2	2016	124	97.91	41	12
3	2017	118	103.74	35.2	12.6
4	2018	11	12.26	39.3	10

Source: GAD, 2019

Besides, monthly normal of maximum and minimum temperature, and rainfall for 30 years recorded at the Hmawbi station of Department of Meteorology and Hydrology are also illustrated in the table 4.2.3.2-2 and table 4.2.3.2-3.

Table 4.2.3.2-2: Monthly Normal Temperature (1981-2010)

1981-2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max (°C)	32.5	35	37	38.1	34.5	30.7	30.2	30	30.8	32.3	32.7	31.8
Min (°C)	15.6	17.2	20.3	23.5	24.5	24.2	24.1	24	23.9	23.4	21	17.2

Source: DMH, 2017

Table 4.2.3.2-3: Monthly Normal Rainfall (1981-2010)

1981-2010	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (In)	2.2	3.5	7.2	28.2	281.3	526.4	540.7	534.8	349.4	164.3	57.8	5.4

Source: DMH, 2017

4.2.4 Drainage

Hlaing River is the main river of this region and located at west end of Myaunt Ta Kar Industry Zone. At the east part of Hlaing River, the streams and tributaries started from Bago Yoma and flow to the Hlaing River. It shows coarse dendritic pattern. Hlaing River at this area shows meandering channel to prove its oldage stage. The oldage stage also prove that the braded channels and oxbow lake are observed in west bank of Hlaing River. According to the channel meandering pattern, Hlaing River moves toward Industrial Zone. It means, the riverbank of Hmawbi side is erosional side and that of Htantabin side is depositional side.

The drainage system of YMI is dominated by manmade channel rather than natural stream. The Myaung Ta Kar Creek joins Hlaing River at upstream of Myaung Ta Kar Industry Zone. Figure 4.2-5 illustrates drainage pattern of Hmawbi and Htantabin Township.

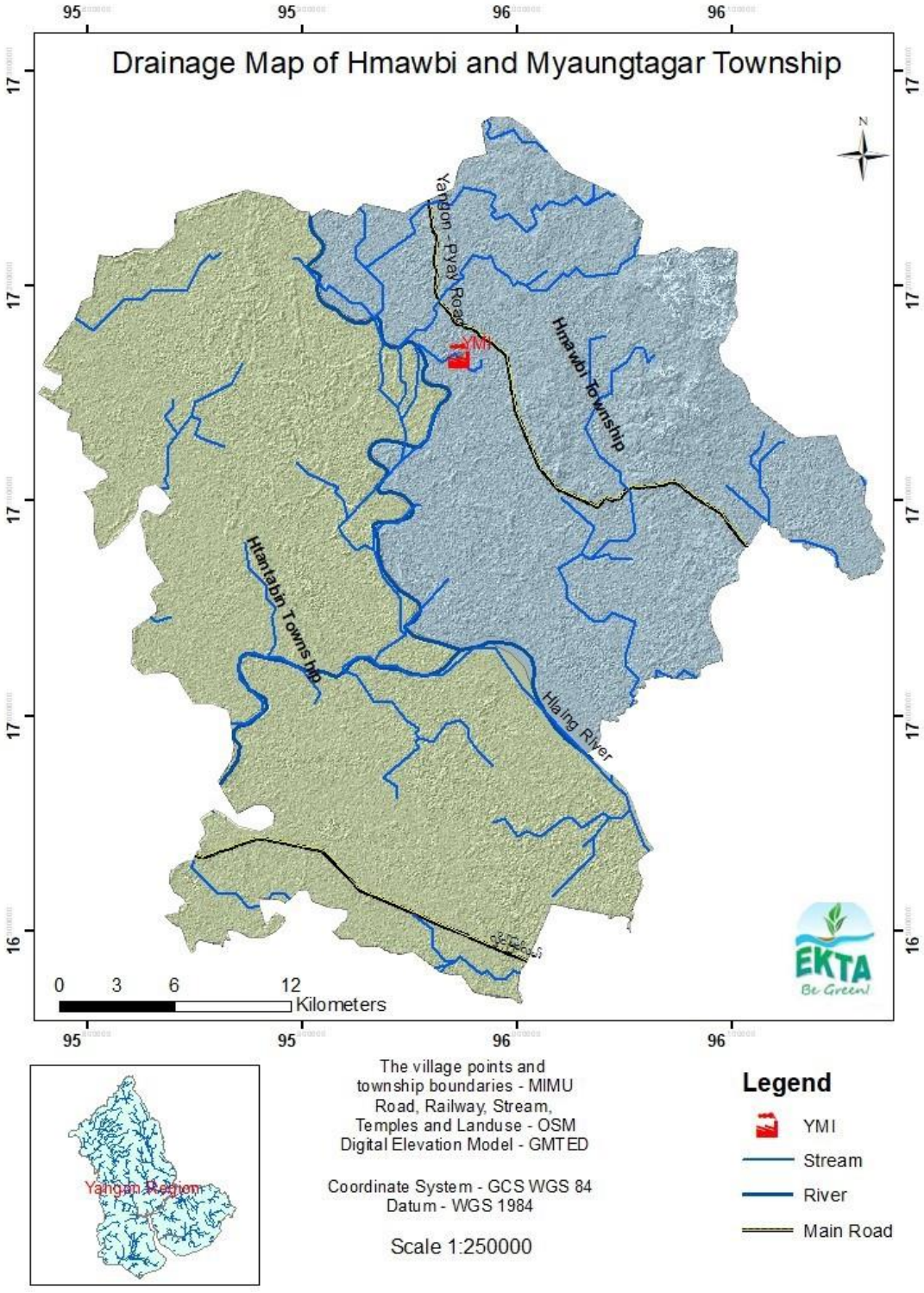


Figure 4.2-5: Drainage Pattern Map of Myaung Ta Kar Industry Zone and its surrounding

4.2.5 Protected Areas

4.2.5.1 Myanmar Forest Policy

National Environmental Policy was adopted in 2019 in Myanmar. The Myanmar Forest Policy builds on Myanmar's 1994 National Environmental Policy and reaffirms its core values:

(1) The wealth of the nation is its people, its cultural heritage, its environment and its natural resources;

(2) It is the responsibility of the State and every citizen to preserve our natural resources in the interests of present and future generations; and

(3) Environmental protection should always be the primary objective in seeking development.

Myanmar Forest Policy (1995) has been formulated in a holistic and balanced manner with the overall context of the environment and sustainable development taking full cognizance of the forestry principles. It formalizes the commitment and intent of the Government to ensure the sustainable development of forest resources for social, environmental and economic purposes. The policy paves the way for prudent use and enhanced benefit from the forest while maintaining ecosystem integrity and environmental balance. Six imperatives identified in the policy are:

(1) Protection of soil, water, wildlife, biodiversity and the entire environment;

(2) Sustainability of forest resources to ensure perpetual supply of both tangible and intangible benefits accrued from the forests for the present and future generations;

(3) Basic needs of the people for fuel, shelter, food and recreation;

(4) Efficiency to harness, in the socio-environmentally friendly manner, the full economic potential of the forest resources;

(5) Participation of the people in the conservation and utilization of forests; and

(6) Public awareness about the vital role of forests in the well-being and socioeconomic development of the nation.

4.2.5.2 Conservation of Biodiversity and Protected Areas Law

In May 2018, the Union parliament enacted the "Conservation of Biodiversity and Protected Areas Law" which replaced the old "Protection of Wildlife and Protected Areas Law" (1994). There are three major changes found in the new law, which enable a much greater role for local communities while promoting co-management, support international obligations such as Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and increase penalties for legal infringements. Most significantly, "Community Protected Areas" are recognized as a category of protected area. Therefore, the new Law provides opportunities for more effective conservation while recognizing the rights and the potential roles of local communities.

4.2.5.3 Local Protected Area

The proposed project area, Hmawbi township is within the Zone 3 (Bago, Yangon and Naypyidaw) and locally there was no local protected area, such as natural forest, wildlife and deforestation places near the proposed project.

Hlawga Wildlife Park

The nearest National Park of the proposed project site is the Hlawga National Park. It is also known as Hlawga Wildlife Park (Figure 4.4-1). The Hlawga Wildlife Park with an area of 1542 acres (624 ha) has a fenced core area of 808 acres (327 ha). It is situated in Mingaladon Township of Yangon Division, northern part of Yangon City. The eastern part of the park is bordered by the Yangon Pyay Road, the southern part by Hlawga forest reserve, the

western part by paddy fields and the northern part by Pe-Nwe-Gone Village.

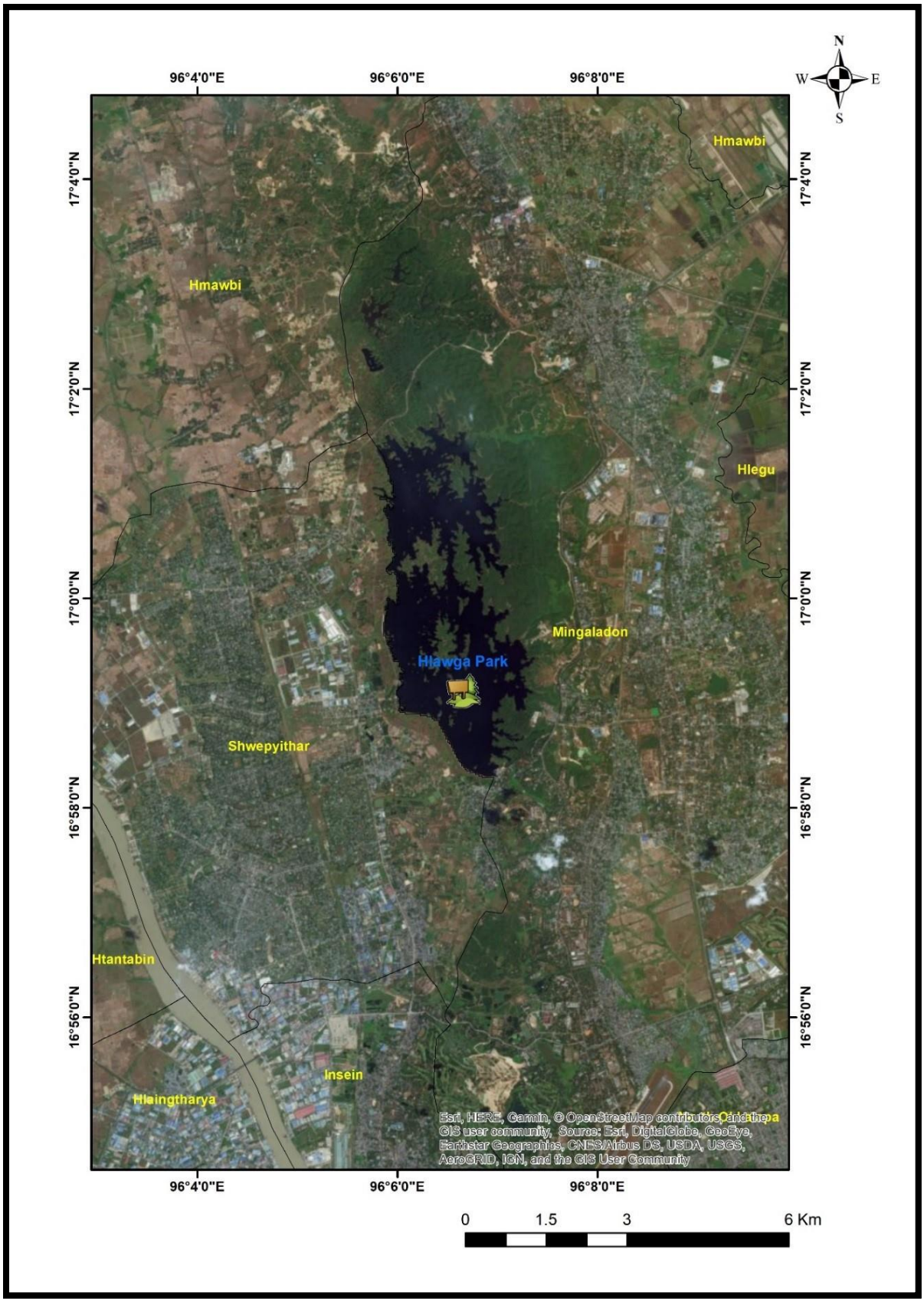


Figure 4.2-6: The Closest Protected Area nearby the Proposed Project

4.3 Surroundings of Project Area

The proposed project, Yangon Metal Industry (YMI) is located in Myaung Ta Kar industrial zone and surrounded by the nearby industrial productions in the zone. Myaung Ta Kar industrial zone is well-known as the home for steel production industries in Yangon area, with the size of 1034.87 acres. YMI Co., Ltd. is located in Myaung Ta Kar Special Foundry Industrial Zone, Hmawbi township, the northern part of Yangon Division. YMI is located at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E.

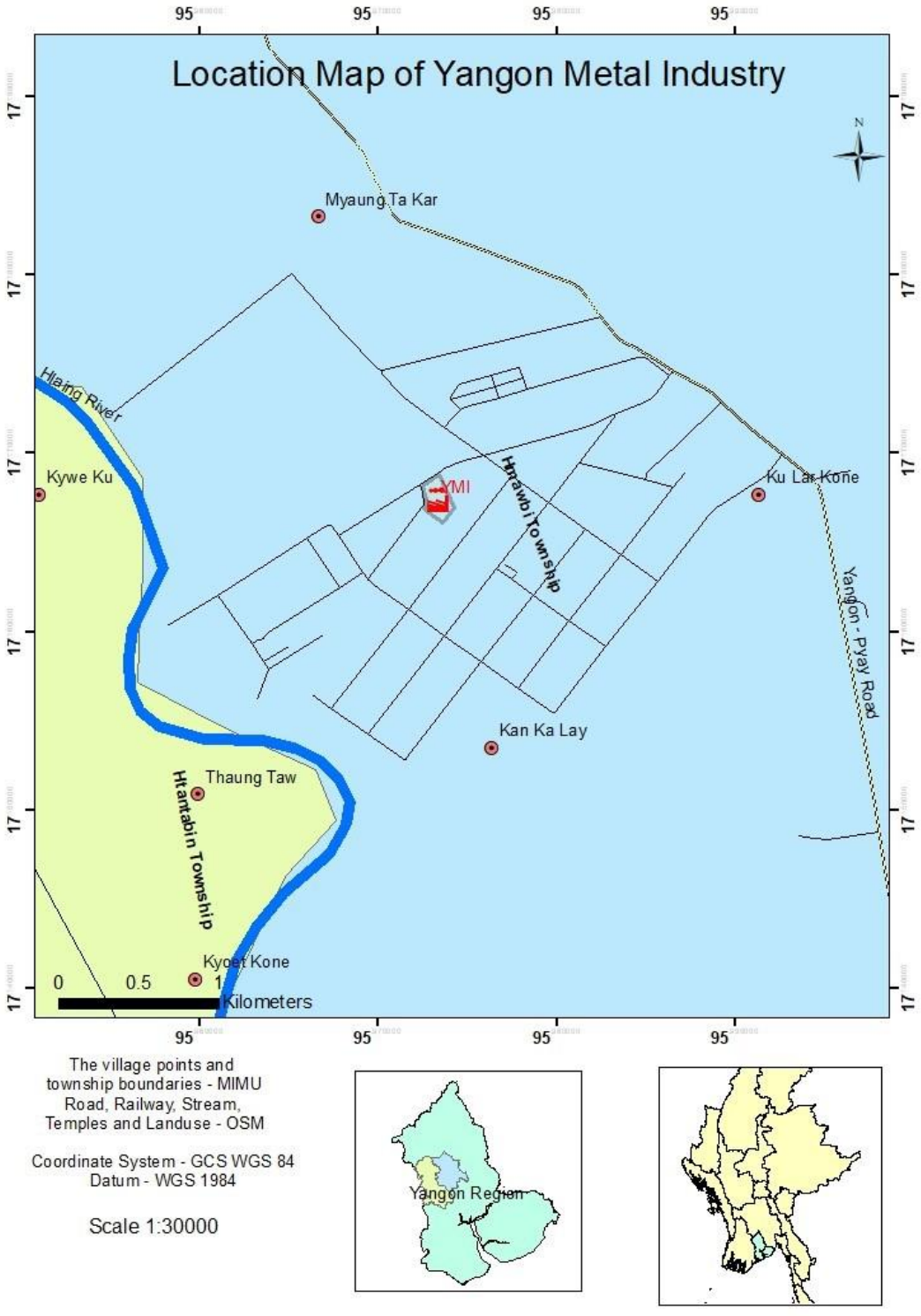


Figure 4.3-1: Location Map of Yangon Metal Industry

4.3.1 Investigation on Physical Environments

The physical environment is comprised of:

(1) Air Environment

(2) Water Environment

(3) Soil

(4) Noise & Vibration

Table 4.3.1-1: Physical Environmental Survey/Sampling Locations

Survey/Sample Type	Sample ID	Location
Air Quality	AQ-1	Lat: 17°10'1.18"N Long: 95°58'26.11"E
Air Quality	AQ-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E
Noise and Vibration	NV-1	Lat: 17°10'2.09"N Long: 95°58'24.92"E
Noise and Vibration	NV-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E
Surface Water Sample	SW-1	Lat: 17°10'7.68"N Long: 95°58'24.30"E
Surface Water Sample	SW-2	Lat: 17°10'0.45"N Long: 95°58'26.88"E
Ground Water Sample	GW-1	Lat: 17°10'7.17"N Long: 95°58'23.64"E
Soil Sample	S-1	Lat: 17°10'0.64"N Long: 95°58'22.87"E
Traffic Survey	TS-1	Lat: 17°10'6.76"N Long: 95°58'22.65"E
Traffic Survey	TS-2	Lat: 17°10'27.66"N Long: 95°59'12.36"E

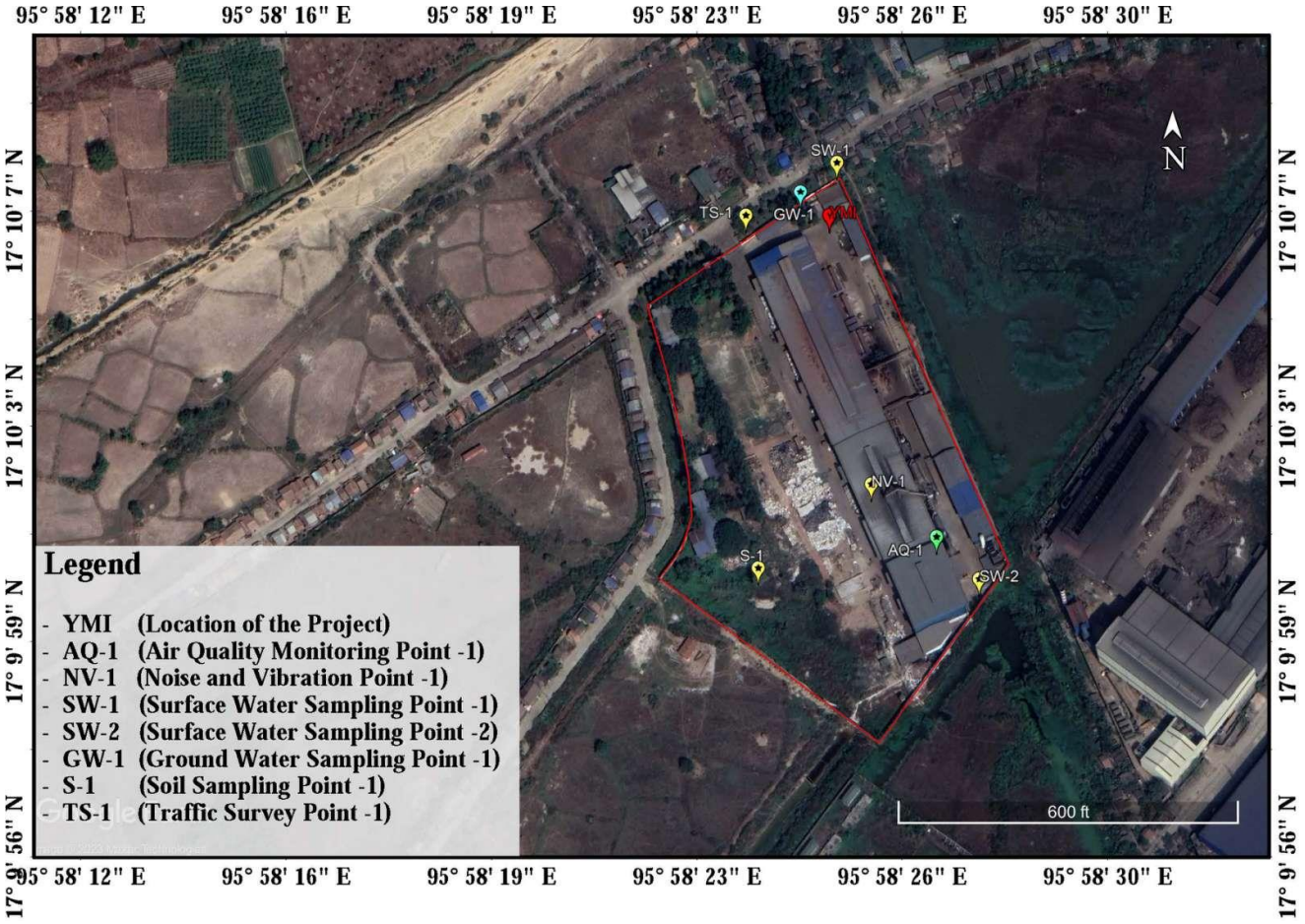
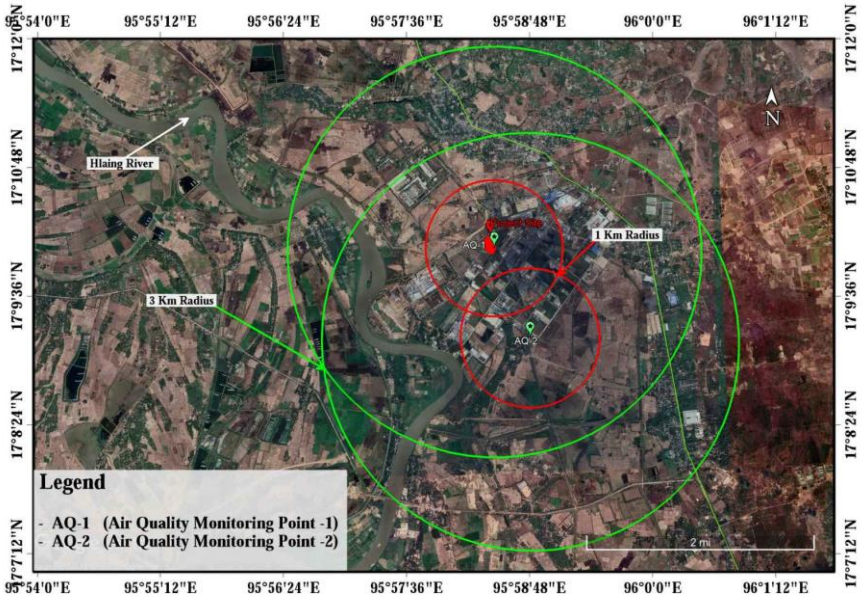


Figure 4.3-2: Sampling Points of Physical Environment Surveys

4.3.2 Air Environments

The factory is located within the industrial cluster (Myaung Ta Kar Industrial Zone) and stacks emission sources such as steel and other metal processing factories are found in the vicinity of the factory, the air quality of the area is likely to be polluted if not operated under the control. Therefore, the air quality and noise quality monitoring points were set up at the factory and another point at the monastery to represent the receptor area in community as per follow.



Among 50 other industrial productions in the Myaung Ta Kar Industrial Zone, there were 5 factories with the stack emissions surrounding the YMI, namely Khin Maung Nyunt Steel Products Galvanizing, SOGO steel industry, Japfa Comfeed Mill, Han Steel and Myanmar Smelting and Refining Co., Ltd. The last one is needed to be consider for cumulative effect on the environment due to operation nature.

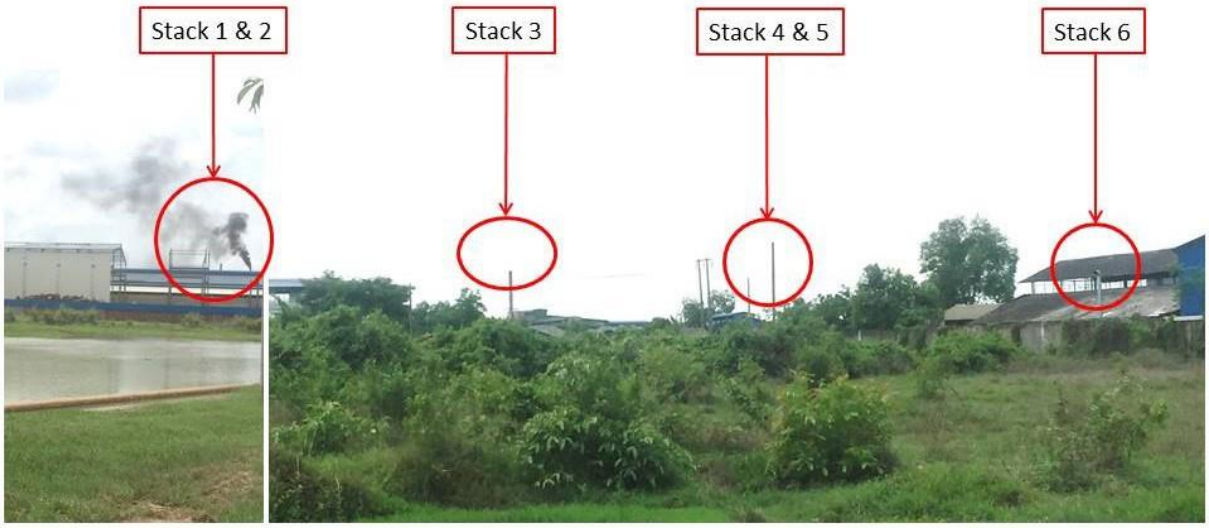


Figure 4.3-3: Stack Emission Sources at the South of the YMI Factory

4.3.2.1 Air Quality Survey

Sampling and analysis of ambient air pollutants was conducted by referring to the recommendation of United States Environmental Protection Agency (U.S. EPA). The Haz Scanner Environmental Perimeter Air Station (EPAS) was used to collect ambient air monitoring data. The characteristics of the instrument are:

- Portable direct reading
- Configure up to 14 simultaneous air measurements including U.S. EPA criteria air pollutants
- Standard configuration measures PM2.5, PM10 or TSP particulates, CO, NO, NO_2, SO_2, VOC, and O_3
- Wind parameters are also measured by Haz-scanner EPAS and the required data are analyzed by using the WRPLOT View of AERMOD View (ver. 7.0) in which calm wind is defined below 0.5 m/s.

Table 4.3.2.1-1: Sampling and Analysis Method for Air Quality

Parameter	Averaging Period	Unit	Analysis Method
Carbon Monoxide	1-hour	ppb	On site reading
Carbon Dioxide	1 hour	ppm	On site reading
Nitrogen Dioxide	1-hour	ppb	On site reading
Particulate Matter PM10[a]	24-hour	µg/m^3	On site reading
Particulate Matter PM2.5[b]	24-hour	µg/m^3	On site reading
Sulfur Dioxide	24-hour	ppb	On site reading
Volatile Organic Compound	24-hour	ppm	On site reading
Ozone	24-hour	ppm	On site reading
RH	One time	%	On site reading

Source: EKTA Survey, 2020

Monitoring Instrument for Air Quality

No.	Instrument	Brand & Model	Measurement/ Parameter		
1.	**Environmental Perimeter Air Monitoring System**	**HAZ-SCANNER** **EPAS**	**CO, CO_2, NO_2, SO_2, PM (2.5), PM (10), RH**		

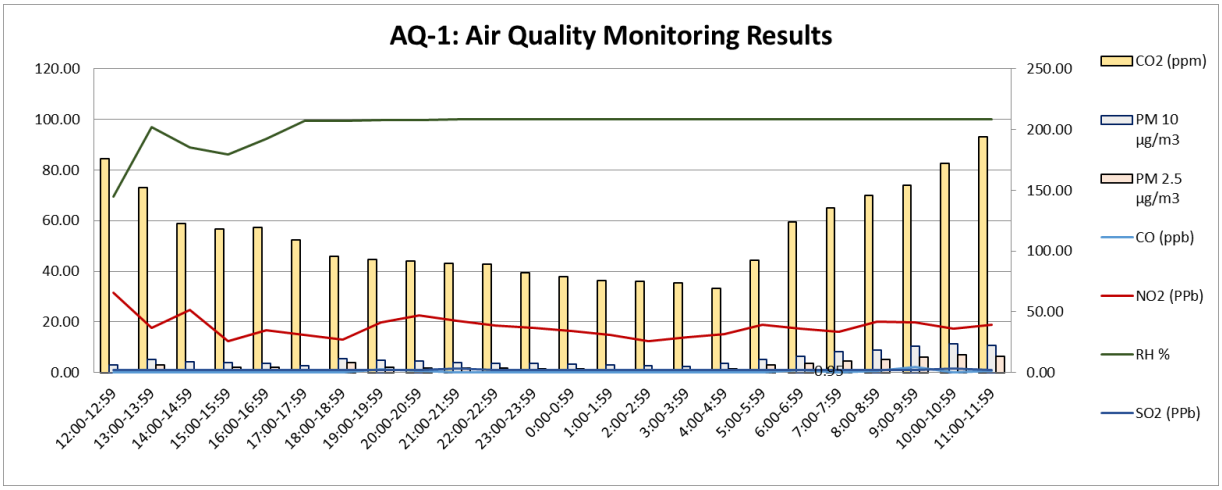
4.3.2.2 Air Quality Survey Results

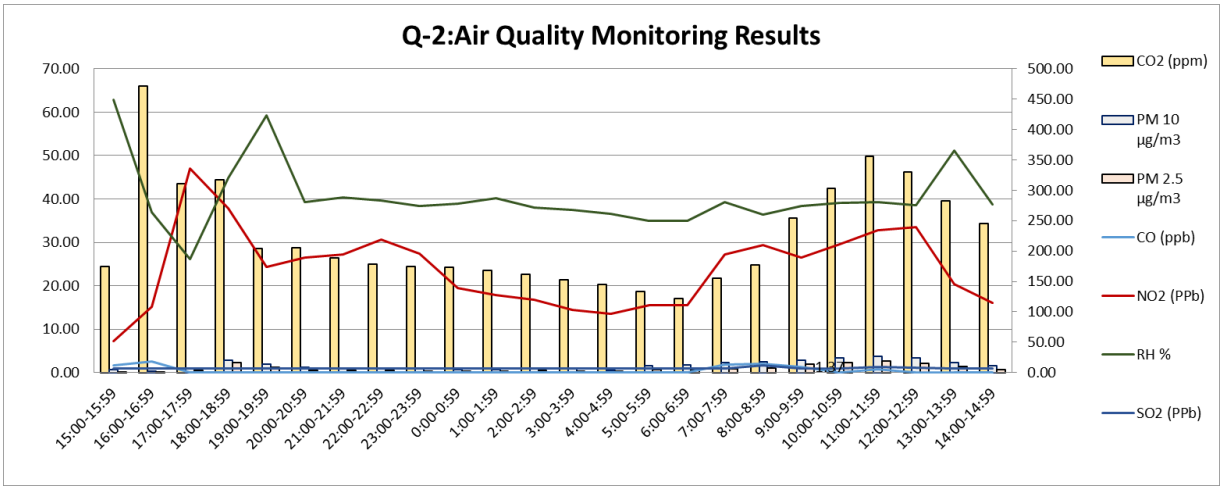
The target air quality was monitored as per table and the emission results air parameters are described as in the table. The air monitoring points, near YMI factory in Myaung Ta Kar industrial zone as the source and Dhama Yayaye monastery as the receptor are set up for air quality survey.

Survey/Sample Type	Sample ID	Location
Air Quality	AQ-1	Lat: 17°10'1.18"N Long: 95°58'26.11"E
Air Quality	AQ-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E

Table 4.3.2.2-1: Emission Results for Air Quality

Parameter	Averaging Period	Unit	AQ-1	AQ-2	NEQG Guideline
Carbon Monoxide	1-hour	ppb	1.37	0.00007	-
Carbon Dioxide	8-hour daily maximum	ppm	240.14	153.05	5000
Particulate Matter PM10[a]	1-year 24-hour	µg/m^3	 27.28	 23.66	20 50
Particulate Matter PM2.5[b]	1-year 24-hour	µg/m^3	 18.70	 12.42	10 25
Sulfur Dioxide	24-hour 10-minute	ppb	1.73	2.96	20 500
Nitrox Oxide	1-year 1-hour	ppb	 23.83	 42.92	40 200
Volatile Organic Compounds	24-hour	ppm	0.44	1.57	20
Ozone	24-hour	ppm	0.0029	0.0009	100
Relative Humidity	24-hour	%	40.42	45.61	-





4.3.3 Noise and Vibration Quality of the Project Area

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 below. Noise meter was set up to record the log as ten minutes' intervals during an hour for one consecutive day.

Instrumentation for Noise Survey

Instrumentation	Description
Sound level meter	Sound level meter with SD Card, Model SL-4023SD

Figure 4.3-4: Lutron Sound Level Meter

Measurement of environmental vibration 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 vibration level survey is shown in the following Table. Vibration meter was set up to record the log as ten minutes' intervals during an hour for one consecutive day.

Instrumentation for Noise Survey

Instrumentation	Description
Vibration meter	Rion VM55 with SD Card

The noise and vibration monitoring points, near YMI factory in Myaung Ta Kar industrial zone as the source and Dhama Yayaye monastery as the receptor are set up for noise and vibration quality survey.

Survey/Sample Type	Sample ID	Location
Noise and Vibration	NV-1 (source)	Lat: 17°10'2.09"N Long: 95°58'24.92"E
Noise and Vibration	NV-2 (receptor)	Lat: 17°09'19.138"N Long: 95°58'43.386"E

4.3.3.1 Noise and Vibration Quality Survey Results

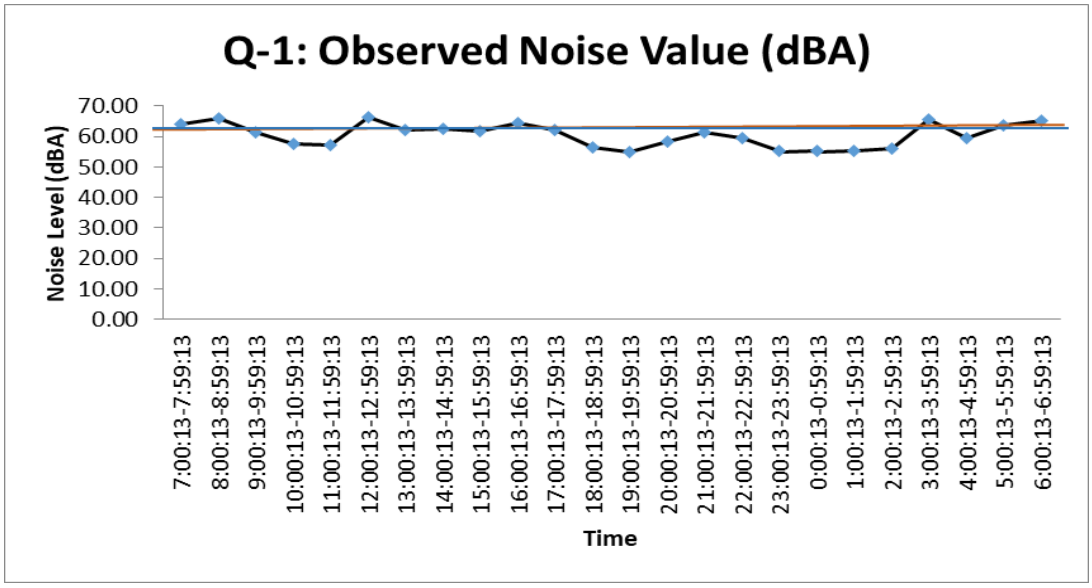
Since the factory is located in the industrial zone, the background noise level has already existed. The sources of generation of noise and vibration in the area observed during the time of the initial site visit as follows;

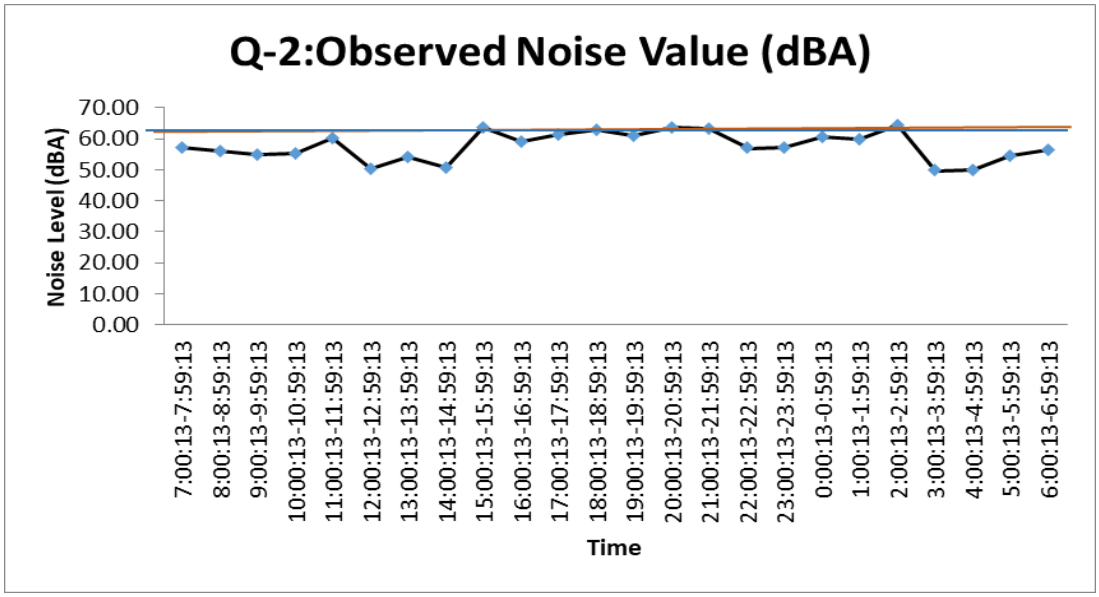
- Mechanical noise from the operation of industrial used ventilator, exhaust fans, compressors, electric motors, different types of machines used in different factories etc.,
- Movements of heavy-duty trucks, cars, 3-wheelers and motorbikes and
- Electrical equipment such as inverters, transformers and buck up generators.

Table 4.3.3.1-1: A-Weighted Loudness Equivalent Noise Level at Myaung Ta Kar Industrial Zone

Noise Level	Day-time (dBA)	Night-time (dBA)
Q-1	65.43	59.51
Q-2	59.26	55.72
NEQG standard (Residential and institutional area)	55	45
WHO for specific environment, Industrial, commercial, shopping and traffic areas, indoors and outdoors	70	

(Source: EKTA Survey Team, May 2021)





According to survey result, the standard noise level in industrial zone is 70 dB and the survey noise level is still under the standard in both daytime and nighttime. However, the residential noise level were exceed the target noise level in both day and night times.

Table 4.3.3.1-2: Daily Average Vibration Level Results at Myaung Ta Kar Industrial Zone (Source: EKTA Survey Team, May 2021)

Survey Result	Daytime (dBA)	Nighttime (dBA)
Q-1	45	36
Q-2	42	31
Standard (Standard)[II]	65-70	60-65

[II] : Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating (Japanese road side guideline standard).

The vibration rate is significantly quite low when compared with the standard values, which is the standard vibration level for the areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of residents and areas. Night-time vibration level is significantly lower than daytime and quite different because the area is massive transport operation at the residential area and the industrial operation activities within the Industrial zone.

4.3.4 Water Environment

Hlaing River is the main river of this region and located at west end of Myaunt Ta Kar Industry Zone. At the east part of Hlaing River, the streams and tributaries started from Bago Yoma and flow to the Hlaing River. It shows coarse dendritic pattern. Hlaing River at this area shows meandering channel to prove its oldage stage. The oldage stage also prove that the braded channels and oxbow lake are observed in west bank of Hlaing River. According to the channel meandering pattern, Hlaing River moves toward Industrial Zone. It means, the riverbank of Hmawby side is erosional side and that of Htantabin side is depositional side.

The drainage system of YMI is dominated by manmade channel rather than natural stream. The Myaung Ta Kar Creek joins Hlaing River at upstream of Myaung Ta Kar Industry Zone. Figure 4.3-5 illustrates drainage pattern of Hmawby and Htantabin Township.

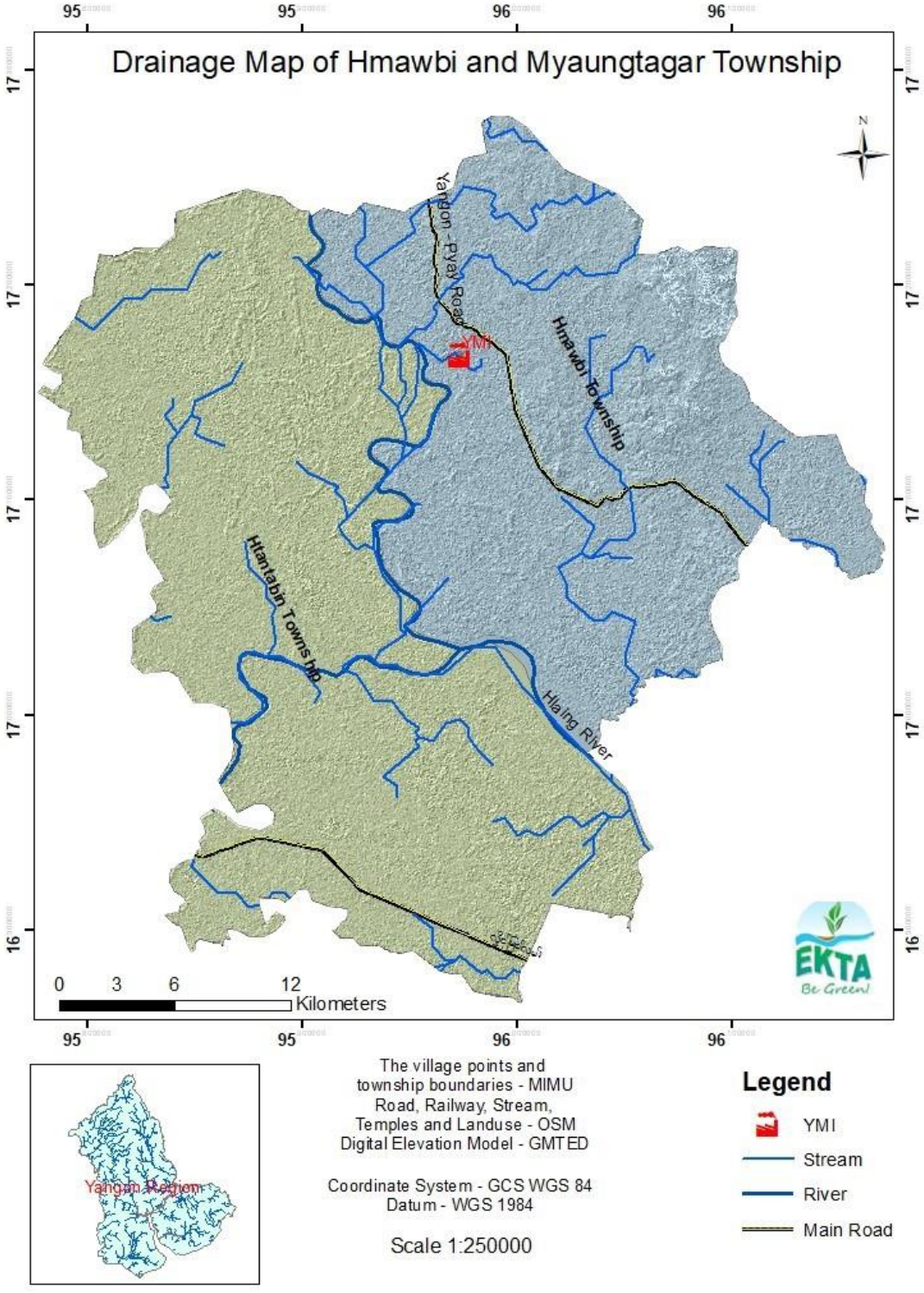


Figure 4.3-5: Drainage Pattern Map of Myaung Ta Kar Industry Zone and its surrounding

4.3.4.1 Water Consumption Sources

There is a tube well within the factory boundary and groundwater is extracted by the pump to meets with its demand. There are two kinds of water demanding operations at the factory. The former is the step-by-step operation of lead manufacturing, and the latter is used for office building such as drinking water, kitchen, bathrooms, washrooms and toilet facilities. The total water usage for the operation of the factory is approximately 600 m^3 per day including the office staffs, workers use and in the operation process.

It is observed that there are networks of drainage channels inside the factory and only the used water from the facilities such as kitchen, bathrooms, and washrooms are discharged to the common drainage outside the factory. No industrial effluent discharge is observed from the lead processing operation since the processed water is treated with Wastewater Treatment Plant and reused in its operation.

4.3.4.2 Collection of Water Samples for Laboratory Analysis

The survey team collected water samples from the tube well, drainage channel and final wastewater treatment pond to investigate the quality of water and the samples were sent to the certified laboratories. The sampling locations illustrated in the table.

Table 4.3.4.2-1: Water Sampling Location

Sample ID	Sample Type	Coordinate
GW-1	Ground Water	Lat: 17°10'7.17"N Long: 95°58'23.64"E
SW-1	Surface Water	Lat: 17°10'7.68"N Long: 95°58'24.30"E
SW-2	Surface Water	Lat: 17°10'0.45"N Long: 95°58'26.88"E

Figure 4.3-6: Water and Soil Sampling Points

4.3.4.3 Groundwater Quality Survey Results

The results from the laboratory analysis are compared with WHO Drinking Water Guideline and presented in the table because there is no mention about the groundwater standards in NEQG guidelines. The turbidity, the concentration of Iron and Manganese of the ground water are found higher than the guideline values while the other studied parameters are within the guideline limit. During the site visit, it has been observed that ground water is used for the office facilities and however, the water is pretreated with filters for drinking purpose.

Table 4.3.4.3-1: Analysis Results of Ground Water Quality

No	Parameter	Unit	Result	WHO Drinking Water Guideline*
1	pH	S.U [a]	7.4	6.5 – 8.5
2	Turbidity	NTU	32	5
3	Total Dissolved Solid	mg/l	325	1000
4	Nitrate	mg/l	0.3	50
5	Chloride	mg/l	Nil	250
6	Iron	mg/l	1.60	0.3
7	Manganese	mg/l	5.7	0.05
8	Hardness ($CaCO_3$)	mg/l	36	500
9	Sulfate	mg/l	120	500
10	Arsenic	mg/l	Nil	0.01

***WHO Drinking Water Guideline (Geneva-1993)**

[a] Standard unit

Here, the ground water baseline quality is quite normal except for turbidity and iron concentration, however the guideline standard hereby is the WHO drinking water standard and the YMI factory is not intended to use the groundwater for drinking purpose.

4.3.4.4 Surface Water Quality Survey Results

The results of surface water quality from the laboratory analysis are compared with the effluent level of NEQG and presented in table below. The TSS of SW-1 is significantly higher than the guideline value since the water samples was taken while the water was flowing in the drainage channel whereas the TSS of SW-2 is slightly higher than that of guideline limit. The concentration of COD of SW-1 exceeds the guideline limit, this is likely to be resulted from the residual food and beverage waste from the kitchen and runoff of excess stormwater to the drainage channel. The concentration of Nickel for SW-1, SW-2 and Cadmium for SW-2 also appeared higher than the guideline value while the remaining studied parameters are well within the guideline limit.

Table 4.3.4.4-1: Water Sampling Location

Sample ID	Sample Type	Coordinate
GW-1	Ground Water	Lat: 17°10'7.17"N Long: 95°58'23.64"E
SW-1	Surface Water	Lat: 17°10'7.68"N

		Long: 95°58'24.30"E
SW-2	Surface Water	Lat: 17°10'0.45"N Long: 95°58'26.88"E

Table 4.3.4.4-2: Analysis Results of Surface Water Quality

No	Parameter	Unit		SW-1	SW-2	NEQG Guideline*
1	Total Suspended Solids	mg/l		148	30	20
2	Zinc	mg/l		Nil	Nil	0.2
3	Temperature	°C		25.0	25.0	<3[b]
4	pH	S.U[a]		8.2	8.4	6-9
5	Lead	mg/l		Nil	Nil	0.1
6	Fluoride	mg/l		1.0	0.8	5
7	Copper	mg/l		Nil	Nil	0.1
8	Chemical oxygen demand	mg/l		64	32	50
9	Arsenic	mg/l		Nil	Nil	0.05
10	Aluminum	mg/l		<0.01	0.03	0.2
11	Cadmium	mg/l		0.02	0.3	0.05
12	Nickel	mg/l		0.6	0.4	0.1
13	Mercury	mg/l		< 0.1	< 0.1	0.01

***National Environmental Quality Guideline**

[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

4.3.5 Soil Quality Survey

The soil sample is collected within the factory boundary, specifically from the bare soil near the area where the raw materials, batteries are temporarily stored. The sample is analyzed at the laboratory of Land Use Department of MOALI in Gyogone township in Yangon. The analysis results are presented in table 4.3.5-1.

Table 4.3.5-1: Analysis Results of Soil Quality

No.	Parameter	Unit	Result
1	pH	S.U [a]	9.76
2	Moisture	%	15.75
3	Lead	ppm	1692.00
4	Zinc	ppm	4.46
5	Mercury	ppm	0.03
6	Copper	ppm	8.59

7	Iron	ppm	24.22
8	Chromium	ppm	0.004

[a] Standard unit

According to the analysis results from the laboratory, the results of studied parameters are compared with ASEAN Soil and Nutrient Management Guideline (2017) and found that the concentration of Lead (Pb) in soil exceeds the maximum permissible limit (MPL) while the other parameters Chromium (Cr), Zinc (Zn), Copper (Cu), Iron (Fe) and Mercury (Hg) are within the range. This is likely to be resulted from the leakage of residual lead from the batteries due to the fact that the old batteries (raw materials) are stored outside, especially on the bare soil and unprotected from the weather.

4.4 Traffic Flows

Traffic Survey (hereinafter as TS) was conducted in two locations, TS-1 and TS-2 presented in figure 4.4-1. This TS aims to collect data of travel behavior patterns and characteristics for a short-term period (12-hour) to record the hourly variation of traffic flow at the designated locations.

Table 4.3.5-1: Summary of Traffic Survey

No. of Traffic Survey Points	▪ 2 points (TS-1 and TS-2)
Location of TS-1	▪ Access road to YMI. ▪ Located near the main entrance gate of the YMI, at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E. ▪ Vehicles passing the TS point in both directions (inbound and outbound) were counted. ▪ Number of Lane: 2 (1 lane for each direction)
Location of TS-2	▪ Ygn-Pyay Road. ▪ Located on the Yangon – Pyay Highway Road, at the Latitude of 17°10'27.66"N and Longitude of 95°59'12.36"E. ▪ Vehicles travelling in both directions of Yangon – Pyay Road were counted. ▪ Number of Lane: 4 (2 lanes for each direction)
Date	▪ TS-1 and TS-2 were conducted simultaneously for 10-hour on 4 June 2020.
Time	▪ 9:00 am to 7:00 pm
Weather	▪ Sunny days
Method	▪ Manual counting method was applied with the structured TS form. The TS form was designed based on the classified vehicles on hourly basis. Tally counters were utilized to record the volume of traffic volume in the study area. A total of 4 enumerators were used in this study.

Figure 4.4-1: Traffic Survey Locations

Table 4.3.5-2: Vehicle Class

No.	Class*	Description
1	Motorcycle	All type of vehicles with two wheels
2	3-Wheeler	All type of vehicles with 3-wheels (eg. Chinese Made 3-wheelers used for transport of goods and materials)
3	Car	Car, Pick-up, Van
4	Bus	YBS Buses (Such as Line number 37, 90), Highway express and all types of buses
5	Truck (< 3 tons)	Truck with loading capacity of lower than 3 tons
6	Truck (> 3 tons)	Truck with loading capacity of higher than 3 tons
7	Truck (Trailer)	Truck with trailer

***Vehicle classes are adapted from the Yangon – Pyay Highway toll plaza**

4.4.1 Vehicle Composition

The total volume of vehicles at TS-1 appeared at 1267. Among them, Motorcycle accounted for the highest proportion at 83% while the classes made up very few percentages, from 1 to 5 % and no bus appeared during the time of the survey. The detailed information of the TS-1 is presented in Table 4.4.1-1 and Figure 4.4-2.

At TS-2, the total traffic volume during the study period was 6825 which is higher than TS-1. The motorcycle was found the highest contribution to the total traffic volume at 40%, 3-wheeler and Trailer Truck appeared the lowest at 2% respectively. The other classes, Cars, Bus and Truck (both <3 tons and > 3 tons) ranged from 12 to 21 % of total volume. The detailed information of the TS-2 is presented in Table 4.4.1-2 and Figure 4.4-3.

Table 4.4.1-1: Vehicle Composition at Studied Locations

TS-1					TS-2				
Class	**In**	**Out**	**Total**	**Total (%)**	**Class**	**Pyay-Ygn**	**Ygn-Pyay**	**Total**	**Total (%)**
Motorcycle	535	517	1052	83	Motorcycle	1349	1376	2725	40
3-wheeler	20	25	45	4	3-wheeler	54	61	115	2
Cars	37	30	67	5	Cars	669	796	1465	21
Bus	0	0	0	0	Bus	246	263	509	7
Truck (< 3 tons)	24	14	38	3	Truck (< 3 tons)	488	548	1036	15
Truck (> 3 tons)	22	26	48	4	Truck (> 3 tons)	415	414	829	12
Truck (Trailer)	11	6	17	1	Truck (Trailer)	75	71	146	2
Total	**649**	**618**	**1267**	**100**		**3296**	**3529**	**6825**	**100**

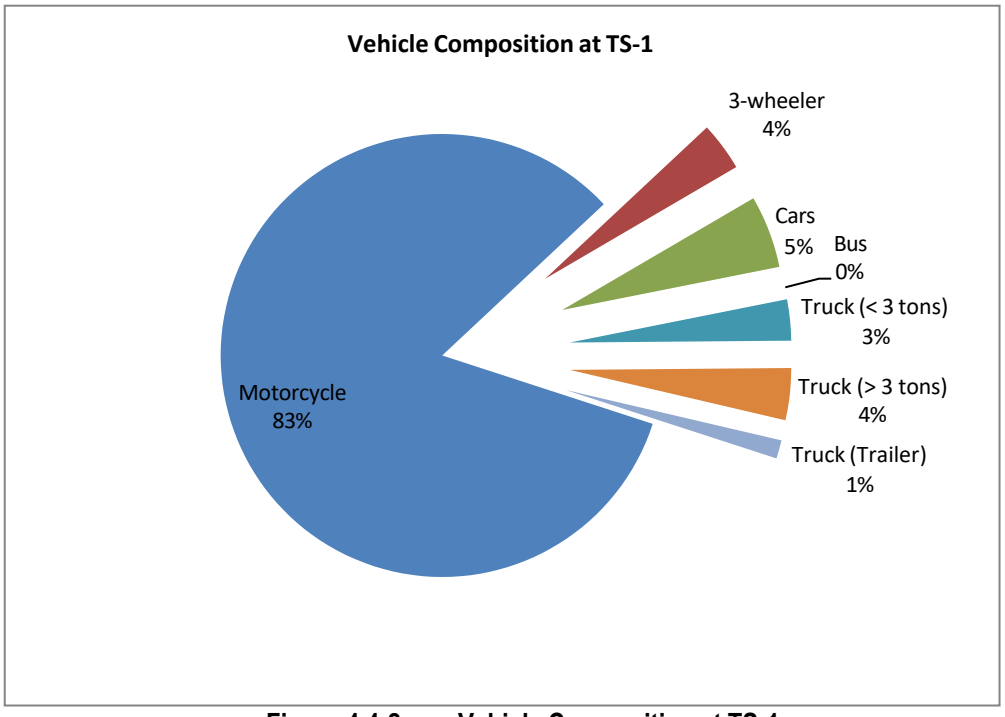


Figure 4.4-2: Vehicle Composition at TS-1

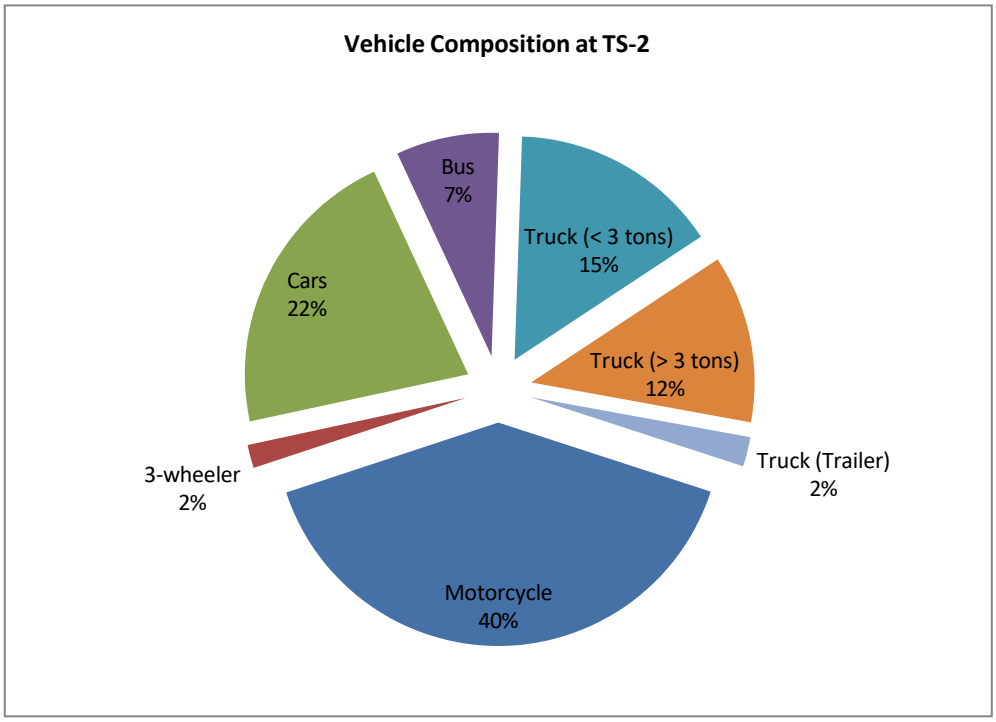


Figure 4.4-3: Vehicle composition at TS-2

4.4.2 Flow Fluctuation

TS-1

As stated in the above figures, peak flow for all classes was found between 10:00-11:00 and 16:00-17:00 for inbound direction, and 16:00-17:00 and 17:00-18:00 for outbound direction. The motorcycle was dominant on this access road in both directions whereas the rest were lower than 10 numbers throughout the study period. The hourly flow fluctuation and volume are stated in figure 4.4-4, 4.4-5 and table 4.4-3.

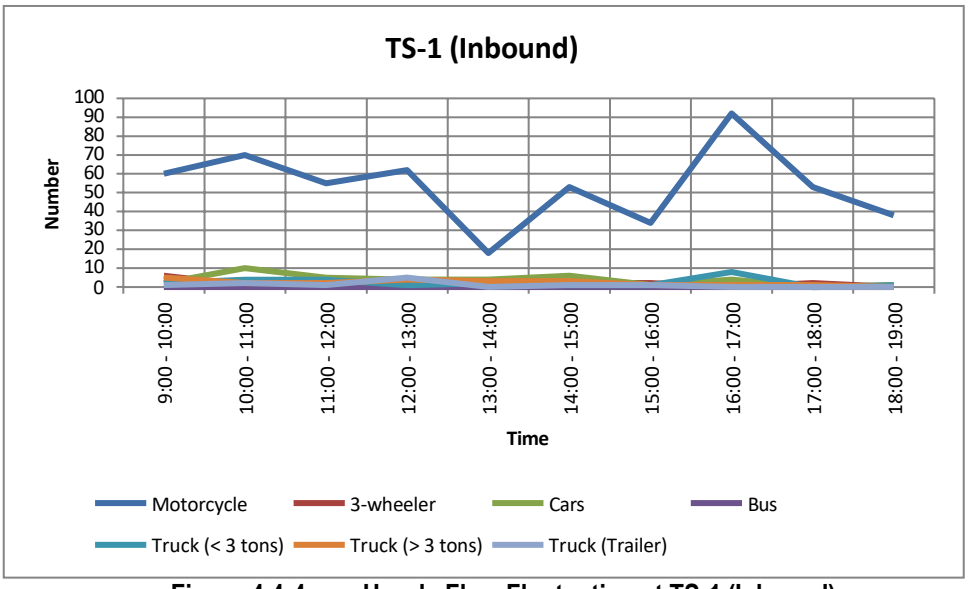


Figure 4.4-4: Hourly Flow Fluctuation at TS-1 (Inbound)

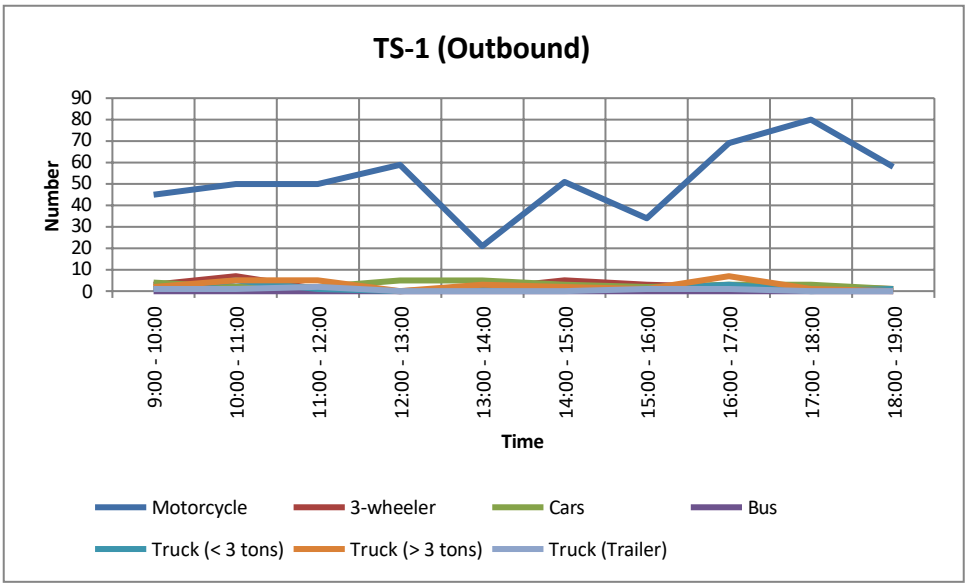


Figure 4.4-5: Hourly Flow Fluctuation at TS-1 (Outbound)

TS-2

At the TS-2, Motorcycle was also dominant and the peak flow appeared at 9:00-10:00 for all types of classes in both directions. For motorcycle and car classes, there was steady declination from the peak flow rate to the end of the study period. The rest were in slight fluctuation throughout the study hours. The hourly flow fluctuation and volume are illustrated in figure 4.4-6, 4.4-7 and table 4.4-3.

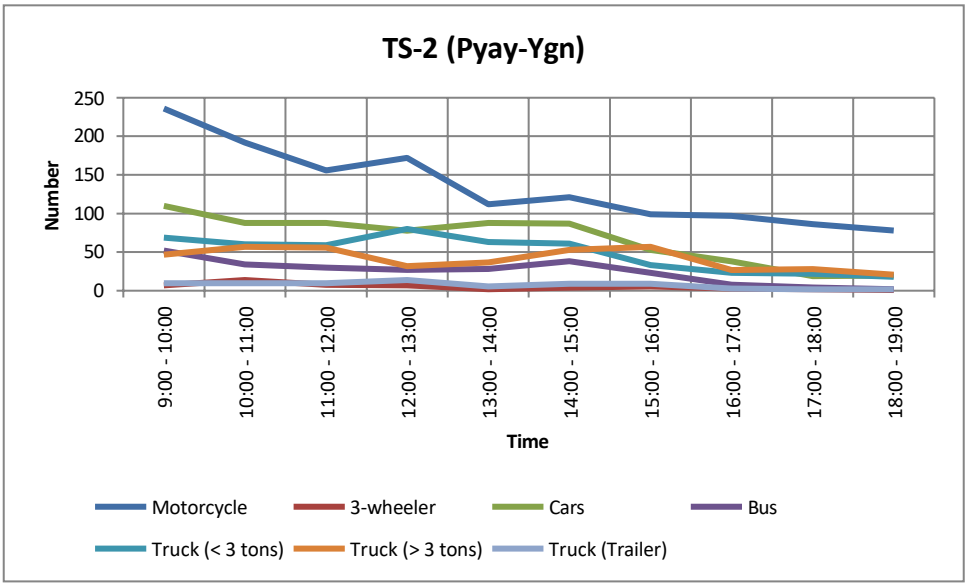


Figure 4.4-6: Hourly Flow Fluctuation at TS-2 (Pyay-Ygn)

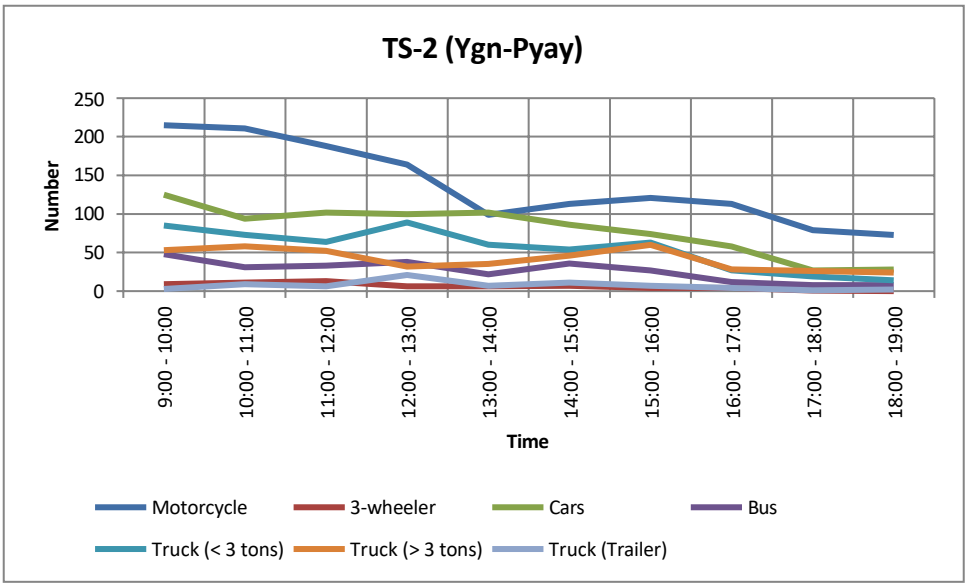


Figure 4.4-7: Hourly Flow Fluctuation at TS-2 (Ygn-Pyay)

4.4.3 Traffic Flow Survey Records

Figure 4.4-8: Traffic Survey at TS-1

Figure 4.4-9: Traffic Survey at TS-2

The following are the typical classes of vehicles commonly found during the short-term TS period.

	
Motorcycle	***3-wheeler***
	
Car	***Bus***

	
Truck (< 3 tons)	***Truck (> 3 tons)***
	
Trailer Truck	

Table 4.4.3-1: Hourly Volume of TS-1

Hour	Motorcycle		3-wheeler		Cars		Bus		Truck (< 3 tons)		Truck (> 3 tons)		Truck (Trailer)		Total
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	
9:00 - 10:00	60	45	6	3	2	4	0	0	2	1	5	2	1	1	132
10:00 - 11:00	70	50	1	7	10	2	0	0	4	5	2	5	2	1	159
11:00 - 12:00	55	50	4	1	5	2	0	0	4	1	2	5	1	2	132
12:00 - 13:00	62	59	1	0	4	5	0	0	1	0	4	0	5	0	141
13:00 - 14:00	18	21	2	1	4	5	0	0	2	1	3	3	0	0	60
14:00 - 15:00	53	51	2	5	6	3	0	0	1	1	3	2	1	0	128
15:00 - 16:00	34	34	2	3	1	2	0	0	1	1	1	1	1	1	82
16:00 - 17:00	92	69	0	2	4	3	0	0	8	3	1	7	0	1	190
17:00 - 18:00	53	80	2	2	0	3	0	0	0	0	1	1	0	0	142
18:00 - 19:00	38	58	0	1	1	1	0	0	1	1	0	0	0	0	101
Total	535	517	20	25	37	30	0	0	24	14	22	26	11	6	1267

Table 4.4.3-2: Hourly Volume of TS-2

Hour	Motorcycle		3-wheeler		Cars		Bus		Truck (< 3 tons)		Truck (> 3 tons)		Truck (Trailer)		Total
	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	Pyay-Ygn	Ygn-Pyay	
9:00 - 10:00	236	215	7	9	110	125	52	48	69	85	47	53	10	3	1069
10:00 - 11:00	192	211	14	11	88	94	34	31	60	73	57	58	10	9	942
11:00 - 12:00	156	188	8	13	88	102	30	33	59	64	56	52	10	6	865
12:00 - 13:00	172	164	7	6	78	100	27	38	80	89	32	32	14	21	860

13:00 - 14:00	112	99	2	6	88	102	28	22	63	60	37	35	6	7	667
14:00 - 15:00	121	113	4	7	87	86	38	36	61	54	53	46	9	11	726
15:00 - 16:00	99	121	6	4	53	74	23	27	33	63	57	60	9	7	636
16:00 - 17:00	97	113	3	4	38	58	8	12	23	27	27	28	3	4	445
17:00 - 18:00	86	79	2	1	19	27	4	8	22	19	28	26	2	1	324
18:00 - 19:00	78	73	1	0	20	28	2	8	18	14	21	24	2	2	291
Total	1349	1376	54	61	669	796	246	263	488	548	415	414	75	71	6825

4.5 Ecological Environment

4.5.1 Site Reconnaissance

A targeted site reconnaissance was conducted from 3rd, May 2020 to ground-truth information gathered and supplements it with site observations, data and photographs. The site reconnaissance targeted the following specific ecological objectives:

- To name, describe and map vegetation communities and habitats present within the Project Area at a suitable scale, using existing community nomenclature where possible.
- To identify, describe and map other ecologically sensitive areas within the Project Area such as springs, watercourses and other water bodies.
- To the extent possible within the survey time frame and season, determine if species of conservation significance known or predicted likely to be present in the Study Area are actually present within the Project Area.
- To identify opportunities for future ecological monitoring and enhancement within the framework of the proposed project survey area.

Figure 4.5-1: Visual View of Ecological Environment around the Factory Area

4.5.2 Survey Area

The survey area is planned to make circular surrounding area around the factory within 1 km vicinity area.

Table 4.5.2-1: Representative GPS points of the study sites

No.	Latitude	Longitude
1	17°10'07.0"N	95°58'23.0"E
2	17°10'00.0"N	95°58'23.17"E
3	17°09' 59.62"N	95°58'27.74"E
4	17°10' 05.08"N	95°58'25.95"E

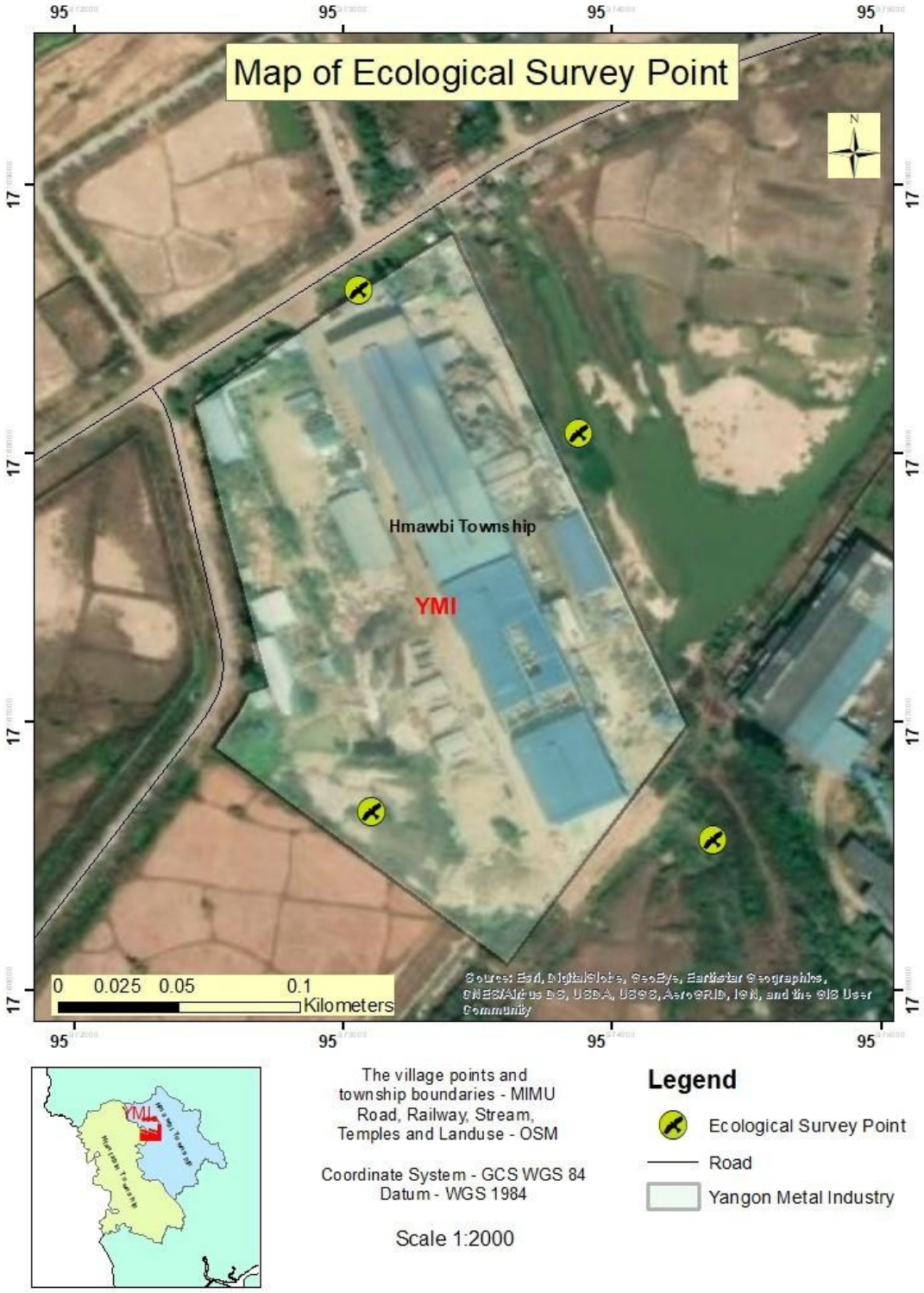


Figure 4.5-2: Ecological Survey Map

4.5.3 Methodology

The methodologies used in the baseline study were discussed below.

4.5.3.1 Desktop Survey

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.

4.5.3.2 Field Observation

(1) Flora

A Global Positioning System was used to navigate and mark coordinates between sample points in/around the study area. Field observation was conducted within boundary of each project area. During the field survey period, quadrant sampling method and transect sampling method were used. The choice of dimension and shape of the quadrant will affect the precision and accuracy of the parameter estimates subsequently computed. Transect is a long, thin quadrat that are used to sample or to get better averages. There are three transect sampling techniques such as Line transect, belt transect, and pace transect among which we used pace transect sampling technique. Pace-transects were established when the observer strides along an imaginary line across the sample site, and uses their foot placement to determine specific sampling points. In addition, all trees, shrubs, herbs and cultivated crops were recorded and listed. Identification of plants and animal species was conducted with assistances of skilled local people. The identified species and families were translated to scientific name with assistance of a checklist of trees, shrubs, herbs and climbers of Myanmar.

(2) Fauna

(i) Mammal

The data collection for mammal species was conducted in three ways; (1) Direct Observing of mammals in the field, (2) Observation of track and signs such as footprints, scat and feeding signs in their natural habitats, and (3) Interview survey. These area were used interviewed method. The presence or absence of the very well-known mammal species was confirmed by interviewing local people already familiar with the forest.

(ii) Herpetology

Herpetofauna surveys was conducted through direct observation and active searching in all major representative habitat types within boundary of each project area and in potential hiding places such as among leaf litter, inside holes and under stones and logs within the study area. Surveys will conduct during day-time periods. Visual observations, documented where possible by photographs, were made of some captured specimens that were not collected for preservation. Wherever possible, herpetofauna was captured by hand. A photo record was taken by digital camera. Their morphometric characters of each specimen were recorded such as sizes, shapes, patterns, spots, stripes, and color and body length in the data sheet.

(iii) Butterflies and Odonata

Butterflies and Odonata survey were conducted through direct observation and active searching in all different habitats within boundary of each project area by using point count method subject to the on-site conditions. Butterflies species and *Odonata* species were collected by taking photo and then identify the species with reference book.

(iv) Bird

Random Point count method was used for the bird survey and took the photo for species identification, observed numbers and habitat utilization. Species identification was done by using the field guide books, with help of the binoculars, camera and GPS. Nocturnal birds were observed when it becomes dusk. Point count and opportunistic methods were used to census the species richness and point counting was used to get the relative measure of bird abundance.

(v) Aquatic

Interviewed with local fisherman from the study area were conducted during the collection of the specimen. The fishing gears are trap and gill nets. The water body of project area was studied for aquatic fauna. The fishes were photographed soon after the collection and measurements were also taken for key characteristics. Indirect observation was conducted interviewed with fishermen about kind and quality of fishery product.

4.5.3.3 Interview 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 on biodiversity and ecosystem in the area was interviewed for examination.

4.5.1 Ecological Survey Results

4.5.1.1 Floral Species

(1) Habitat

In and around the Area of proposed project area, three major habitat types were observed namely (1) Plantation (3) bare land, (4) shrub land as shown in Figure 4.5.3.

(2) Vegetation Communities

The vegetation communities found around the survey area were discussed below.

Community name	Land form	Description
Shrub land	Occurs in moist low-lying areas and along a narrow zone adjacent to streams.	Shrub land habitats contain thickets of shrubs and young trees mixed with scattered grasses and wildflowers.
Plantation	Plantation includes 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 and Permanent cropland" includes forested plantations used Banana, Thayet , Coconut, U Ka Lit or Khaya tree farms or proper forests used for food and shadow.	A plantation is a small -scale farming that specialized in Khaya. The grown include mangoes, banana, Khaya, Mangoes.
Bare Land	Bare land that is not covered by vegetation, litter or duff, downed woody material, or rocks is highly susceptible to erosion. Bare ground increases the possibility of compaction or bank shearing by hoofed animals, vehicles, or people. This reduces the water-holding capacity of the soil.	Bare land is not covered by vegetation, litter or duff, downed woody material, or rocks are highly susceptible to erosion. It can affect water quality as well as the loss of valuable soil and acreage. Soil not covered by desirable vegetation is a prime area for invasion of noxious weeds or other undesirable plant species.

(3) Investigation Results of Floral Species

Within Project area, there are two major habitat types were observed Plantation and Shrub Land. The present survey identified and recorded 40 plants species within the area. Based on IUCN Globally Threatened Red List (2019-2), there was no threatened species in this area. Plantation plant was Thayet (*Mangifera indica*), Banana (*Terminalia catappa*) for food. And other plant species were Letpan (*Bombax ceiba*), Mohbin (*Scaphium scaphigerum*), Kokko (*Albizia lebbek*) species for shadow. The dominant tree species in this area are Khaya (*Manikara hexandra*), Gangaw (*Albizia lebbek*).

Table 3-1: List of Floral Species in the Survey Area

No.	Family Name	Scientific Name	Common Name	Habitat	Distribution	IUCN
1	Asclepiadaceae	*Calotropis procera*	Mayo	S	Magway, Mandalay, Sagaing, Shan	NE
2	Bombaceae	*Bombax ceiba*	Letpan	T	Wide	NE
3	Meliaceae	*Azadirachta indica*	Tama	T	Wide	LC
4	Mimosaceae	*Albizia lebbek*	Kokko	T	Reported from Myanmar	LC
5	Anacardiaceae	*Mangifera indica*	Thayet	T	Wide	DD
6	Myrtaceae	*Psidium guajava*	Malaka	ST	Cultivated	LC
7	Steruliaceae	*Scaphium scaphigerum*	Mohbin	T	Mon, Taninthayi	NE
8	Moraceae	*Ficus glomerata*	Thapan	T	Bago, Kachin, Mandalay, Yangon	NE
9	Myrtaceae	*Eugenia praetermissa*	Thabye	T	Ayeyarwady, Sagaing, Taninthayi	NE
10	Passifloraceae	*Adenia cardiophylla*	Kinmon	Cr	Yangon, Sagaing	NE
11	Caesalpinaceae	*Delonix rigia*	Sein-ban gyi	T	Cultivated	NE
12	Caesalpiniaceae	*Tamarindus indica*	Magyi	T	Cultiveted	LC
13	Rubiaceae	*Anthocephalus morindaefolius*	Ma-u	T	Bago, Magway, Mandalay, Sagaing, Yangon	NE
14	Verbenaceae	*Tectona grandis*	Kyun	T	Wide	NE
15	Fabaceae	*Sesbania grandiflora*	Paukpan-byu	ST	Cultivated	NE
16	Hypericaceae	*Mesua ferrea*	Gangaw	T	Cultivated	NE
17	Combretaceae	*Terminalia catappa*	Banda	T	Cultivated	NE
18	Moringaceae	*Moringa aleifera*	Dantalon	T	Cultivated	NE
19	Poaceae	*Bambusa vulgaris*	Shwe-wa	Bamboo	Cultivated	NE
20	Moraceae	*Ficus obtusifolia*	Nyaung-gyat	T	Wide	LC
21	Ebenaceae	*Diospyros discolor*	Kadiba	T	Cultivated	NE
22	Sapotaceae	*Manikara hexandra*	Khayay	T	Cultivated	NE

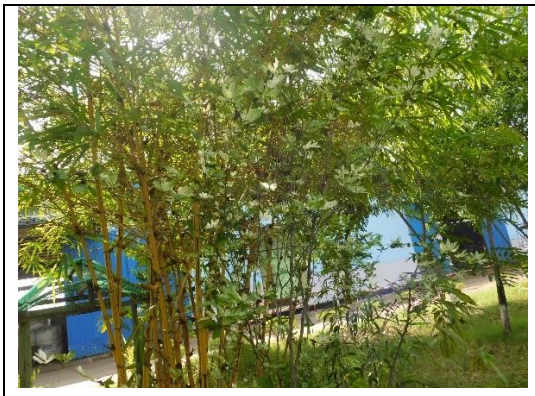
23	Rubiaceae	*Morinda angustifolia*	Yeyo	ST	Wide	NE
24	Boraginaceae	*Heliotropium indium*	Sin-hna-maung	H	Yangon	NE
25	Lecythicadeae	*Barringtonia acutangula*	Kyi	T	Wide	LC
26	Moraceae	*Streblus asper*	Okhne	ST	Bago, Sagaing, Taninthayi, Unknown	LC
27	Poaceae	*Mnesithea striata*	Kaing	Grass	Reported from Myanmar	NE
28	Caesalpiniaceae	*Cassia mimosoides*	Me -za-li	T	Reported from Myanmar	LC
29	Fabaceae	*Butea frondosa*	Pauk	T	Reported from Myanmar	NE
30	Convolvulaceae	*Ipomoea marginata*	Taw-kazun	Creeper	Madway, Mandalay	NE
31	Asteraceae	*Chromolaena odorata*	Bizat	S	Wide	NE
32	Bignoniaceae	*Oroxylum indica*	Kyaung-sha	T	Wide	NE
33	Mimosaceae	*Albizia procera*	Sit	T	Reported from Myanmar	LC
34	Rhamnaceae	*Ziziphus jujuba*	Zi	T	Cultivated	LC
35	Lythraceae	*Lagerstroemia speciosa*	Pyinma	T	Reported from Myanmar	NE
36	Mimosaceae	*Mimosa pudica*	Htikayon	H	Wide	LC
37	Arecaceae	*Cocas nucifera*	Ohn	T	Cultivated	NE
38	Musaceae	*Musa sapientum*	Nget-pyaw	H	Cultivated	NE
39	Rubiaceae	*Ixora arborea*	Ponna- yeik	ST	Ayeyarwady, Mon, Taninthayi, Yangon	NE
40	Cucurbitaceae	*Lagenaria siceraria*	Bu	Cl/Cr	Cultivated	NE

NT-Near threatened

LC-Least concerned

EN-Endangered

NE-Not Evaluated



Shwe Wa (*Bambusa vulgaris)*

Kokko (*Albizia lebbek*)

	
Thabye (*Eugenia praetermissa)*	**Kyi (*Barringtonia acutangula*)**

Figure 4.5.1-3: Some Plant Species around the Survey Area

4.5.1.2 Fauna Species

A total of 49 species were recorded in survey area ,2 species of mammal ,11 species of Herpetofauna, 8 species of Butterfly , 2 species of Dragonfly , 22 species of Bird and 4 species of fish .Base on IUCN Red list of threatened species in fauna(2019-2) , there was no threatened species . These areas one endemic species in this area.

(1) Habitat

The wildlife groups of the survey area consist of 5 groups of animals: mammals, birds, insects, Herpetofauna and Fish. Fauna species habitat was found in pond, plantation, Shrubland and in potential hiding places such as among leaf litter, inside holes and under stones and logs within the study area.

(2) Mammal

A total of 2 mammal species belonging to 2 genera under to 1 family were recorded during the survey period. Rat species were recorded interviewed from local people. Based on globally threatened status of IUCN Red List, there was no threatened species in project area.

Table 4.5.1.2-1: List of Mammal Species around the Survey Area

No	Family Name	Scientific Name	Common Name	Observation/Status	IUCN /Status
1	Muridae	*Bandicota indica*	Greater Bandicoot Rat	Interviewed	LC
2	Muridae	*Rattus rattus*	House Rat	Interviewed	LC

(3) Herpetofauna

During the herpetofauna survey, 11 amphibians and reptile species were recorded through interviewed and observation, 6 species were observed and 5species were interviewed in local people. two species were Lizard, one species was Skink, three species were Asian Toad, and five species was Snake. Russell's Viper was very

common in this area because this area was viper's habitat, so many logs, waste material and plastic. Based on globally threatened status of IUCN Red List (2019-2), there was no threatened species and no endangered species in this area.

Table 4.5.1.2-2: List of Herpetology Species around the Survey Area

No	Family Name	Scientific Name	Common Name	Observation Status	IUCN/Status
1	Agamidae	*Calotes multifasciata*	Blue Forest Lizard	Observed	NE
2	Agamidae	*Calotes versicolor*	Garden Lizard	Observed	NE
3	Scincidae	*Eutropis multifasciata*	Common Sun Skink	Observed	LC
4	Colubridae	*Dendrelaphis caudolineatus*	Stripe-tailed Bronzeback Tree Snake	Interviewed	NE
5	Colubridae	*Ptyas mucosa*	Indian Rat Snake	Interviewed	NE
6	Viperidae	*Daboia russelii*	Russell's Viper	Interviewed	LC
7	Elapidae	*Naja kaouthia*	Monocled Cobra	Interviewed	LC
8	Natricidae	*Xenochrophis vittatus*	Striped Keelback Water Snake	Interviewed	LC
9	Rhacophoridae	*Polypedates leucomystax*	Common Tree Frog	Observed	LC
10	Dicroglossidae	*Fejervarya limnocharis*	Paddy Field Frog	Observed	LC
11	Bufonidae	*Bufo bufo*	Common Toad	Observed	LC

Common Sun Skink (*Eutropis multifasciata)*

Gaden Lizard (*Calotes versicolor)*

Blue forest Lizard (*Calotes multifasciata)*

Indian Rat Snake (*Ptyas mucosa)*

Figure 4.5.1-4: Some Herpetofauna Species around the Survey Area

(4) Bird

A total of 22 bird species were recorded in the proposed project area. Members of the Family, Anatinae Lesser Whistling-duck (*Dendrocygna javanica*), Little Egret (*Egretta garzetta*) , Cattle Egret (*Bubulcus ibis*), Indian pond Heron (*Ardeola grayii*) and Little Cormorant (*Phalacrocorax niger)* were found in Pond beside the factory and list as waterbird species. The bird species Spotted Dove (*Streptopelia chinensis)*, Common myna (*Acridotheres tristis*) , House Sparrow (*Passer domesticus*) , House Crow (*Corvus splendens)* were recorded as common species in the proposed project area. Member of the family Cisticolidae and Estrildidae, Plain prinia *Prinia flaxiventris*, Scaly-breasted Munia (*Lonchura punctulata*) and White-rump Munia (*Lonchura striata*) are found in Plantation and list as grass bird species. One Endemic species of Ayeyarwady Bulbul *(Pyconotus blanfordi* were observed in that area. Based on the IUCN Red List of threatened species, this area was no threatened species.

Table 4.5.1.2-3: List of Bird Species around the Survey Area

No	Scientific Name	Common Name	Family	IUCN /Status
1	*Dendrocygna javanica*	Lesser Whistling Duck	Anatidae	LC
2	*Egretta garzetta*	Little Egret	Ardeidae	LC

3	*Bubulcus ibis*	Cattle E gret	Ardeidae	LC
4	*Ardeola grayii*	Indian Pond Heron	Ardeidae	LC
5	*Phalacrocorax niger*	Little Cormorant	Phalacrocoracidae	LC
6	*Streptopelia chinensis*	Spotted Dove	Columbidae	LC
7	*Lanius cristatus*	Brown Shrike	Laniidae	LC
8	*Corvus splendens*	House Crow	Corvidae	LC
9	*Dicrurus macrocercus*	Black Drongo	Dicruridae	LC
10	*Copsychus saularis*	Oriental Magpie-robin	Muscicapidae	LC
11	*Merops orientails*	Little Green Bee eater	Meropidae	LC
12	*Megalama haemacephala*	Coppersmith Barbet	Megalaimidae	LC
13	*Pyconotus cafer*	Red-vented Bulbul	Pycnontidae	LC
14	*Pyconotus blanfordi*	Ayeyarwady Bulbul	Pycnontidae	LC/Endemic
15	*Acridotheres tristis*	Common Myna	Sturnidae	LC
16	*Acridotheres fuscus*	Jungle Myna	Sturnidae	LC
17	*Prinia flaxiventris*	Plain prinia	Cisticiolidae	LC
18	*Orthotomus sutorius*	Common Tailorbird	Sylviidae	LC
19	*Lonchura punctulata*	Scaly-breasted Munia	Estrildidae	LC
20	*Passer montanus*	Eurasian Tree Sparrow	Passeridae	LC
21	*Passer domesticus*	House Sparrow	Passeridae	LC

House Crow (*Corvus splendens)*

Scaly -breasted Munia (*Lonchura punctulate)*

Oriental Magpie Robin (*Copsychus saularis)*

Ayeyarwady Bulbul (*Pyconotus blanfordi)*

Figure 4.5.1-5: Some Bird Species around the Survey Area

(5) Butterfly Species

A total of 11 butterfly species were collected by the survey area. 4 species of Nymphalidae and 5 species of Pieridae, 1 species of Papilionidea and 1 species of Lycaenidae. Under the Family Nymphalidae species of Danaus genutia species was dominant species in Project area. Based on the Globally threatened species (2019-2), these areas was no threatened species and no endemic species within the project area.

Table 4.5.1.2-4: List of Butterfly Species in Survey Area

No.	Family Name	Species Name	Common Name	IUCN List
1	Papilionidae	*Papilio polytes*	Common Mormon	NE
2	Pieridae	*Appias libythea*	Striped Albatross	NE
3	Pieridae	*Hebomoia glaucippe*	Great Orange-tip	NE
4	Pieridae	*Eurema hecabe*	Common Grass Yellow	NE
5	Pieridae	*Catopsilia pyranthe*	Mottled Emigrant	NE

6	Pieridae	*Appias lyncida*	Chocolate Albatross	NE
7	Nymphalidae	*Danaus genutia*	Common Tiger	NE
8	Nymphalidae	*Acraea terpsicore*	Tawny Coster	NE
9	Nymphalidae	*Danaus chrysippus*	Plain Tiger	NE
10	Nymphalidae	*Junonia atlites*	Grey Pansy	NE
11	Lycaenidae	*Loxura atymnus*	Yamfly	NE

NE-Not Evaluated

Mottled Emigrant (*Catopsilia pyranthe)*

Figure 4.5.1-6: Butterfly Species around the Survey Area

(6) Dragonfly Species

A total of 3 dragonfly species were collected in the survey area. Dragonflies play key roles in both terrestrial and aquatic habitats. They are predators as both nymphs and adults, feeding on a variety of prey including nuisance species such as mosquitoes and biting flies. *They are used in water study as indicator species because of Spending most of their lives underwater in rivers, streams, ponds, lakes, their presence in aquatic environments do signify water quality due to dragonflies requiring clean water to thrive (Manoj V. Nair, 2011).* In this study, Dragonfly and were sampled as *indicator species* of water quality. During the survey period, three species of Dragonfly (adult) under same family were recorded. These three species are common and widely distributed in flat land and high alleviated area.

Table 4.5.1.2-5: List of Dragonfly Species around the Survey Area

No.	Family Name	Species Name	Common Name	IUCN List
1	Libellulidae	*Libellula needhami*	Needham's Skimmer	LC
2	Libellulidae	*Panchydiplax longipennis*	Blue Dasher	LC
	Libellulidae	*Libellua fulva*	Scarce Chaser	LC

	
Scarce Chaser (*Libellua fulva)*	**Blue Dasher *(Panchydiplax longipennis)***

Figure 4.5.1-7: Some Dragonfly Species around the Survey Area

(7) Fish Species

A total of 4 fish species belong to 3 families were recorded in the representative study sites around pond beside the factory. Fish species were recorded in local fishermen, they were collected used to fish net. This pond were found small fish, Barb (Puntius *sophore),* Tilapia *(Oreochromis niloticus*), Thick lipped Gourami (*Colisa labiosa)* and Mola Carplet (*Amblypharyngodon mela).* Among of this species. Tilapia (Oreochromis *niloticus)* invasive species in Myanmar. Based on the IUCN Red List of threatened species, there was no threatened species.

Table 4.5.1.2-6: List of Fish Species around the Pond Near Survey Area

No.	Family Name	Species Name	Common Name	IUCN List
1	Cyprinidae	*Puntius sophore*	Barb	LC
2	Cichlidae	*Oreochromis niloticus*	Tilapia	LC
3	Osphronemidae	*Colisa labiosa*	Thick lipped Gourami	LC
4	Cyprinidae	*Amblypharyngodon mela*	Mola Carplet	LC

Lc-least concern

	
***Oreochromis niloticus* (Tilapia)**	***Puntius sophore* (Barb)**

*Colisa labiosa (*Thick – lippped Gourami)

Amblypharyngodon mela (Mola Carplet)

Figure 4.5.1-8: Some Fish Species around the Survey Area

4.5.1.3 Invasive Species

(1) Plant Species

No.	Scientific Name	Common Name	Family Name
1	*Mimosa pudica*	Hti-ka-yone	Mimosaceae
2	*Cassia mimosoides* L.	Me-za-li	Caesalpiniaceae

Hti-ka-yone (*Mimosa pudica*)

(2) Fauna

Fish Species

No.	Scientific Name	Common Name	Family Name
1	***Oreochromis niloticus***	**Tilapia**	**Cichlidae**

Oreochromis niloticus (Tilapia)

4.6 Social Environments

The village communities, such as Myaung Ta Kar, Ku Lar Kone, Kywe Ku, Kan Ka Lay and Taung Taw are located within the 1-3 km radius of the YMI project area as illustrated in Figure 4.6-1.

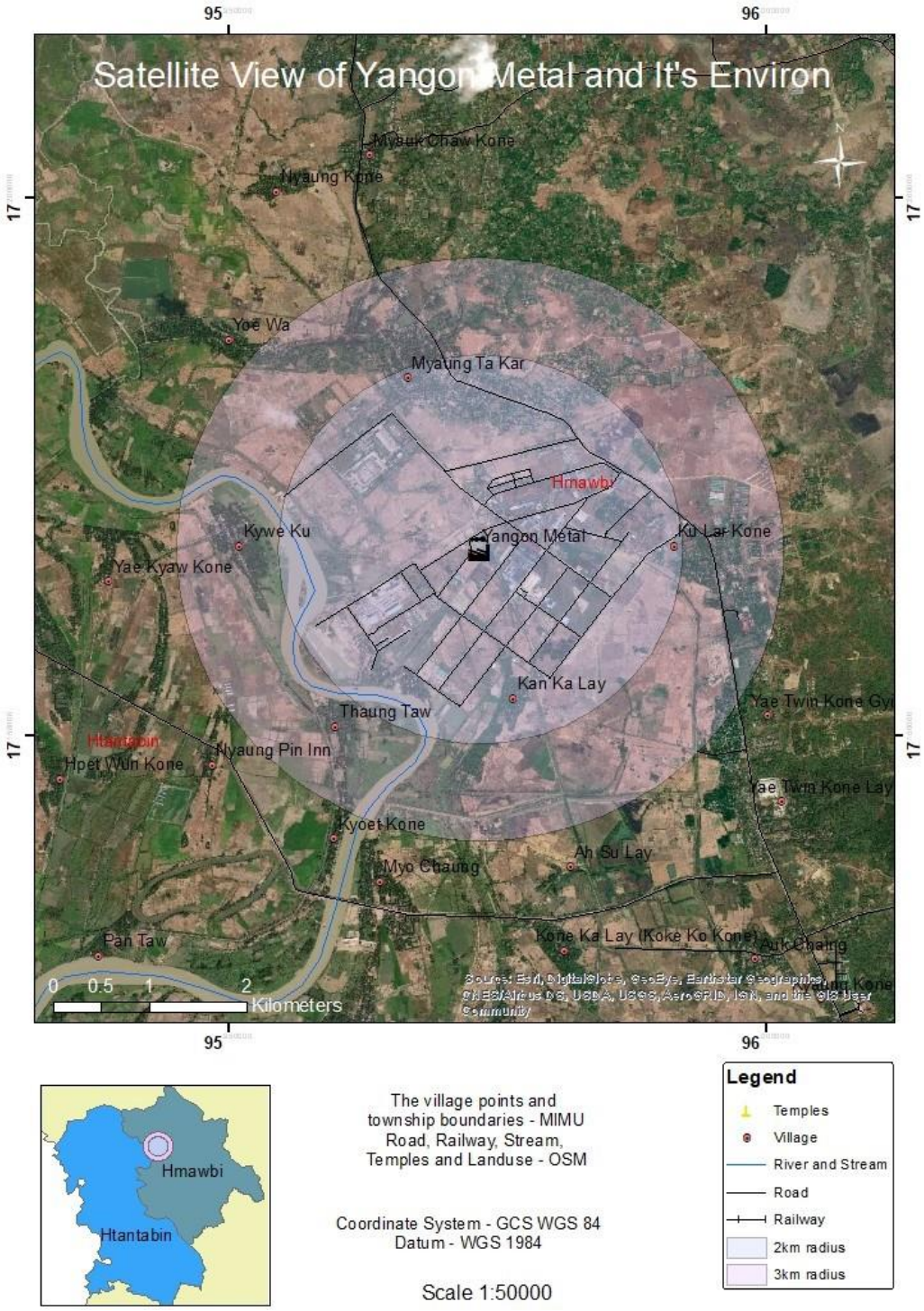


Figure 4.5.1.3-1: Satellite View of YMI Project Study Area

4.6.1 Hmawby Township Profile[1]

Hmawby Township is located in the northern part of Yangon which comprised of 4 wards and 39 village tracts.

[1] **Source: General Administrative Department,** 2019 (**Union, Yangon Region and Hmawby Township**)**Population Status** The total population is 244,607 with males 120931 and females 123,676. The sex ratio is almost equal (98 males per 100 females). The township area is about 476 km^2 and the population density is 513.9 persons/ km^2.

Literacy Rate

The literacy rate of those aged 15 and over in Hmawby Township is 95.2 per cent. It is lower than the literacy rate of Yangon Region (96.6%) but higher than Union (89.5%). Female literacy rate is 93.5 per cent and for the males it is 97.1 per cent. The literacy rate for youth aged 15-24 is 96.9 per cent with 96.7 per cent for females and 97.1 per cent for males.

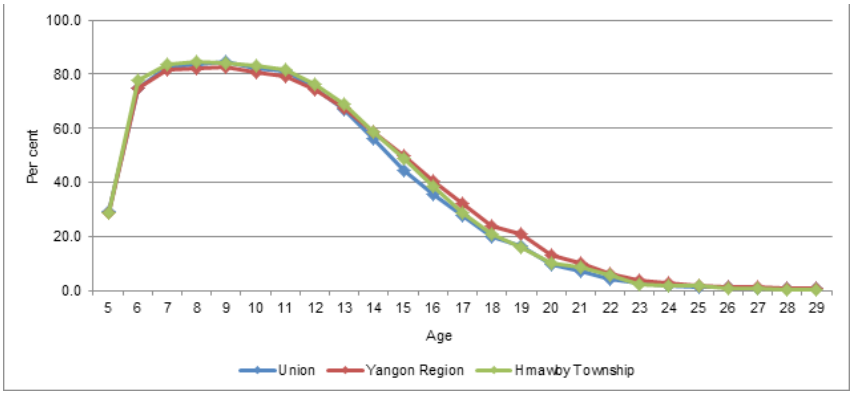
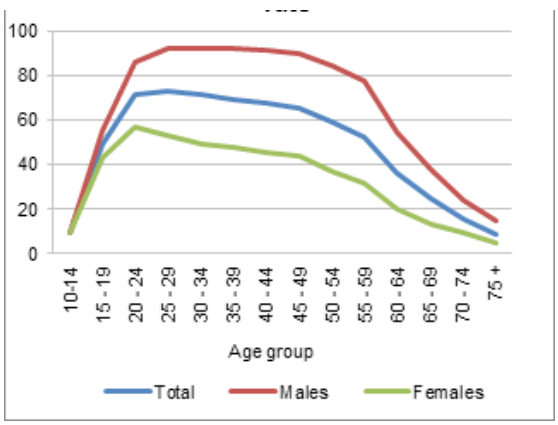


Figure 4.6-2: School Attendance by Age (Union, Yangon Region and Hmawby Township) Religious Status

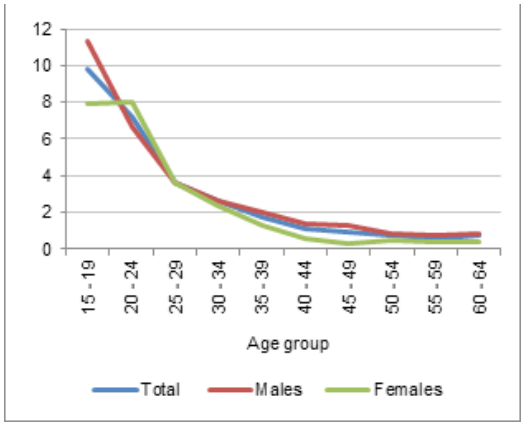
In Yangon Region, it is 91.0% Buddhist, 3.2% Christian, 4.7% Islam, 1.0% Hindu, 0.1% Other religion, and less than 0.1% each for Animist and those with No religion respectively.

Work Opportunities

Labour force participation rate for the population aged 15-64 in Hmawby Township is 63.8 per cent. In Hmawby Township, 23.8 per cent of the employed persons aged 15-64 are skilled agricultural, forestry and fishery workers and is the highest proportion, followed by 18.4 per cent in elementary occupations.



(a)



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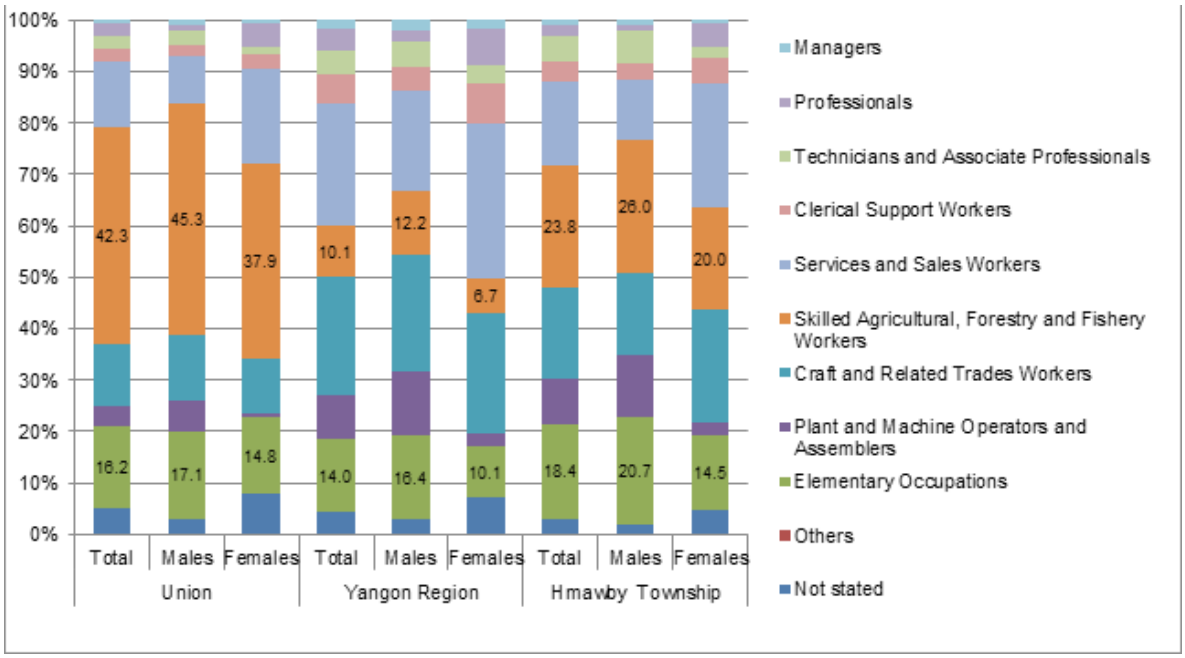


Figure 4.6-3: (a) Labour Force Participation Rate and (b) Unemployment rate (%)

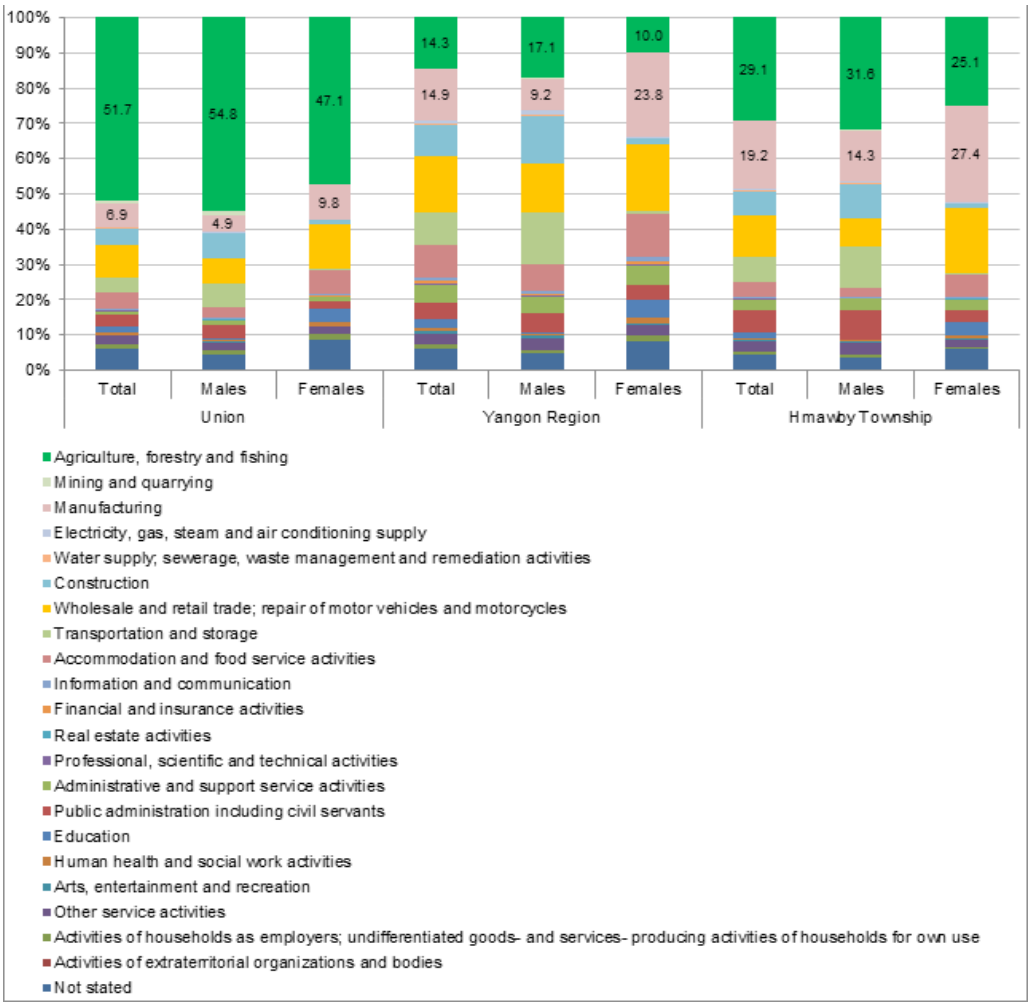


Figure 4.6-4: Employment Populations by Industry (%)

Source of Drinking Water

Drinking water sources in Hmawby township includes Tap water/Piped, Tube well, borehole, Protected well/ Spring, Bottled water/ Water purifier, Unprotected well/Spring, Pool/Pond/ Lake, River/stream/canal, Waterfall/ Rain water, Other unimproved drinking water.

In Hmawby Township, 89.8 per cent of households use improved sources of drinking water (tap water/piped, tube well, borehole, protected well/spring and bottled water/water purifier).

Source of Lighting

Source of lighting includes Electricity, Kerosene, Candle, Battery, Generator (Private), Watermill and Solar. In Hmawby Township, 56.5 per cent of the households use electricity for lighting. This proportion is just adequate in electricity usage compared to other townships in Yangon Region. In rural areas, 53.4 per cent of the households mainly use electricity for lighting. However, types of cooking fuel contain Charcoal, Coal, Electricity, LPG, Kerosene, BioGas, Firewood and other.

Transportation Items

They include Car, Truck, Van, Motorcycle, Moped, Bicycle, 4-Wheel tractor, Canoe, Boat, Motorboat and Cart (bullock). In Hmawby Township, 55.4 per cent of the households have bicycle as a means of transport and it is the highest proportion followed by 29.6 per cent of households having motorcycle/moped.

Child Mortality and Maternal Mortality

The Infant and Under 5 mortality rates in Hmawby Township are higher than those in Yangon Region and North District. The Infant mortality in Hmawby is 55 per 1,000 live births and Under 5 mortality is 62 per 1,000 live births.

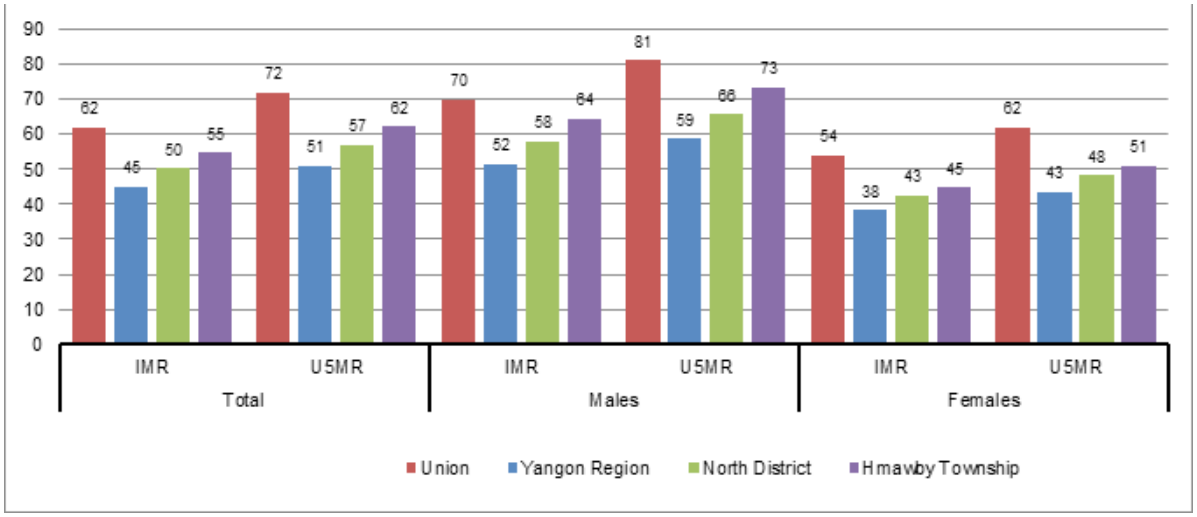


Figure 4.6-5: Infant and under 5 Mortality Rates (%)

4.6.2 Project Area for Social Environment

The study area, Yangon Metal Industry (YMI) is located at the central part of Industrial Zone. Kan Ka Lay Village is the nearest village located south of YMI. Myaung Ta Kar, Kywe Ku, Thaung Taw, Kan Ka Lay and Ku Lar Kone Villages are located within 3 km radius of YMI and regarded as affected villages for ESIA Process. For the affected villages, the location point and distance from YIM is illustrated in Table 4.6.2-1.

Table 4.6.2-1: List of Affected Villages

No.	Name	Latitude	Longitude	Distance from YMI
1	Ku Lar Kone (VT)	17.16769	95.99140	1.9 km
2	Kywe Ku	17.16769	95.95097	2.4 km
3	Thaung Taw	17.15087	95.95989	2.3 km
4	Myaung Ta Kar (VT)	17.18330	95.96669	1.9 km
5	Kan Ka Lay	17.15349	95.97642	1.6 km

4.6.2.1 Survey Plan for Social Environment

Although the factory is operated within the Myaung Ta Kar industrial zone in Hmawby township, there are 5 villages nearby the factories and also there are workers and staffs in these villages who worked in the factory. These villages will be consulted about the project activities and social economic survey and health conditions will also be conducted. The following methods will be used for the social concerns about the project as necessary.

4.6.2.2 Site Inspection

The site inspection survey will be conducted as necessary where the project activities are seriously concerned with the community health and safety. EKTA consultant team conducted the site inspection survey in YMI factory and its environment on 29th May 2020 to study the site reconnaissance of the project activity and relation with its environment within the industry and with the community nearby. The EKTA consultants inspected the production process in YMI factory and its compound and discussed with the factory management team for the gaps and future survey and reporting plans.

Figure 4.6-6: Photographic Records of EKTA Consultant Team's Site Inspection in YMI Factory

Figure 4.6-7: Photographic Records of Site Inspections within the YMI Factory Compound

Figure 4.6-8: Photographic Records of Site Inspection in the YMI Factory's Environments within Myaung Ta Kar Industrial Zone

4.6.2.2 Administrative Area

For the general administrative information of the village communities around the project area, the key persons from Myaung Ta Kar village, Kular Kone village and Kan Ka Lay village participated in the KII survey. The survey questionnaire is compromised for the general information of the villages such as basic infrastructures for education, health care, electricity and fuel use, drinking water resources, transportation scheme, livelihood activities, natural disasters, language and religions, some impacts and concerns about the project activities etc.

Figure 4.6-9: Survey Results on Administrative Area

Title	Kan Ka Lay Village	Kular Kone village tract	Myaung Ta Kar village tract	Remarks
Gender	Male	Male	Male	
Experience	15 years	2 years	2 years	
Population	600 persons	1230	12555	
Families	146	630	3374	
Households	146	490	3350	
Change in village population in last 5 years	-	Yes	Yes	-Migrates from other area due to industrial zone and work opportunities -Migrate works from Ayeyarwaddy and Magway divisions
Controversial cases in village	-	Yes	Yes	
Ethnic group	Kayin	Chin, Kayin, Rakhine	Chin, Kayin, Rakhine	
Traditional event	Kayin New Year	Kayin New Year	Kayin New Year	
Religion	Christian/Buddhism	Christian/Buddhism/Muslim	Christian/Buddhism	
Language	Bamar	Bamar	Bamar	
Livelihoods	Farming/Casual workers	Government office, Company, Farming, small business	Farming/Industrial zone workers	
School	Primary school (1)	Middle School (1)	Primary, Middle, Upper (8 units in total)	
Historical building	1	-	-	Christian Church

Transportation scheme (mostly use)	Car road	Car road	Car road	
Mostly Visit Site	Myaung Ta Kar Industrial Zone	Yangon	Work place	
Water source	Underground tube well	Underground tube well	Underground tube well	
Flood	No	No	No	
Fire hazard	No	No	No	
Fuel	Woods/Charcoal	Electricity	Electricity 90 % Wood 10 %	

4.6.2.2 Socioeconomic Survey Methodology

Socioeconomic survey will be conducted in Kular Kone village tract which will be used as an assembly point for all the affected community nearby and will exactly follow the rules and guidelines which are set out by Government during Covid-19 period.

- **a.** Secondary Data Collection: Baseline data gathered from the township government administration office and other appropriate government and public organizations, academics and the relevant website (the www.mimu.com), etc. The secondary data sources included reports, field documents, monographs, information leaflets/booklets, manuals, written order and instruction, statement of the government organization, among others.
- **b.** Primary data Collection: Primary data collection through direct observations, interviews, individual/target group consultation (FGDs) to collect and verify the socio-economic conditions (demography/residence), economic status (by age, sex, education, occupation, ethnical group and income, expenditure, loan and household assets and poverty status). The survey tools and methodologies considered was developed by the consultant (EKTA). The study also reflected the comments and concerns in the ESIA raised by the survey respondents, participants in FGDs, interviews and other consultation activities (including the public consultation workshops).
- **c.** A questionnaire-based survey for socio-economic conditions was carried out during field surveys in Kularkone village tract.

The socioeconomic survey covered the following items and the details of questionnaires for social status and health surveys were attached in Annexes 5, survey form for Covid 19 infectious disease in Annex 5-1 and questionnaire for Key Informant Interview in Annex 5-2.

Section/Title	Contents
M. Household Characteristics	·Primary information on survey respondents and households (name, gender, ethnicity, age etc.)
N. Income, Expenditure, and Lifestyles	·Average income and major income source ·Recent increase in income and its reason ·Average expenditure status ·Key areas of spending by household

O. Access to Utilities, Basic Social Infrastructure	·Drinking water supply and sanitation ·Sewage and waste management ·Power supply and main source of energy ·Medical and health status ·Status of education facilities such as schools ·Status of religious and cultural facilities
P. Impacts on Ecosystems and Communities	·Expected environmental and social impact (Impact on water resources, religious and cultural facilities etc.) ·Positive/Negative environmental·social impact before and after construction ·Expected impact on vulnerable groups
Q. Perceptions and Expectations	·Project perception and level of project info awareness ·Source of project information ·Level of expectations and concerns about the positive/negative impact of the project ·Feedback collections regarding the project
R. Health Condition	-History of Health problems at the study site -Survey of Lead-related issues

4.6.3 Socioeconomic Survey Plan of the Affected Area

The EKTA survey team conducted the investigation on the socioeconomic status of the affected villages as well as the health survey from August 24th to 27th in 2020. The surveyor team was comprised of a project management unit, a survey leader, and two followers for socioeconomic survey. One medical doctor (M.B.B.S) joined the surveyor group for the health status investigation in the affected area. Before conducting the interview survey, the project management.

No.	Survey Area	Duration	Surveyor/Interviewer	Remarks
1	Myaung Ta Kar	25.8.2020	EKTA social survey team + a medical doctor	❖ Two responsible persons from the YMI factory also joined the team throughout the survey period. ❖ Medical doctor checked the basic health status of the respondents in village community and factory compound as well as conduct the interview survey on their health conditions using the health survey questionnaire.
2	Kular Kone	26.8.2020	EKTA social survey team + a medical doctor	
3	Kan Ka Lay	24.8.2020	EKTA social survey team + a medical doctor	
4	Kywe Ku	24.8.2020	EKTA social survey team + a medical doctor	
5	Industrial Zone	27.8.2020	EKTA social survey team + a medical doctor	

6	Other Places	24.8.2020	EKTA social survey team + a medical doctor	

Figure 4.6-10: Photographic Records of Socioeconomic Survey at the Factory Area and Affected Villages

4.6.3.1 Respondent Status in Socioeconomic Survey

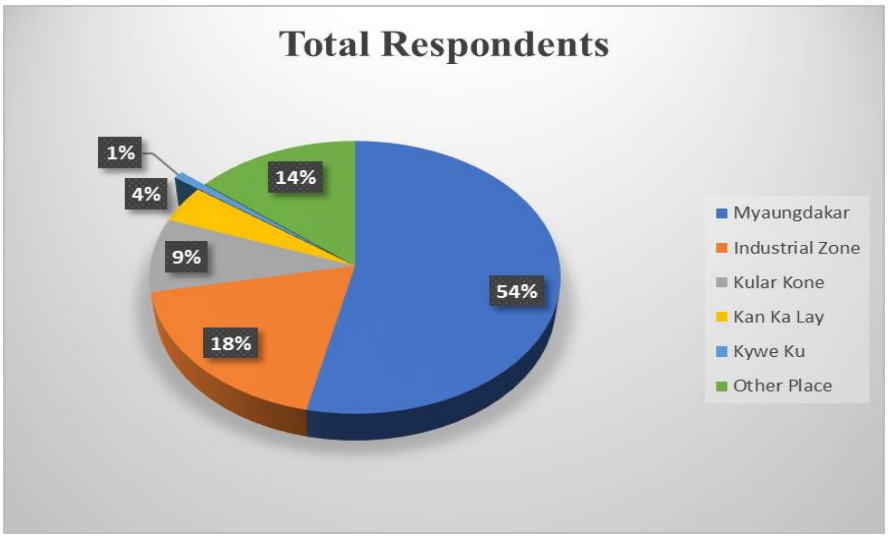
During the socioeconomic survey, the respondents from 6 places, such as Myaung Ta Kar, Kular Kone, Kywe Ku, Kankalay, Industrial Zone, and another one place gave the feedbacks to the questionnaires of the surveyor.

(2) Number of Respondents

Total 114 respondents from the industrial zone and the village community around the industrial zone were incorporated during the socioeconomic survey period. As shown in result chart, Myaung Ta Kar stood a peak in number of respondents.

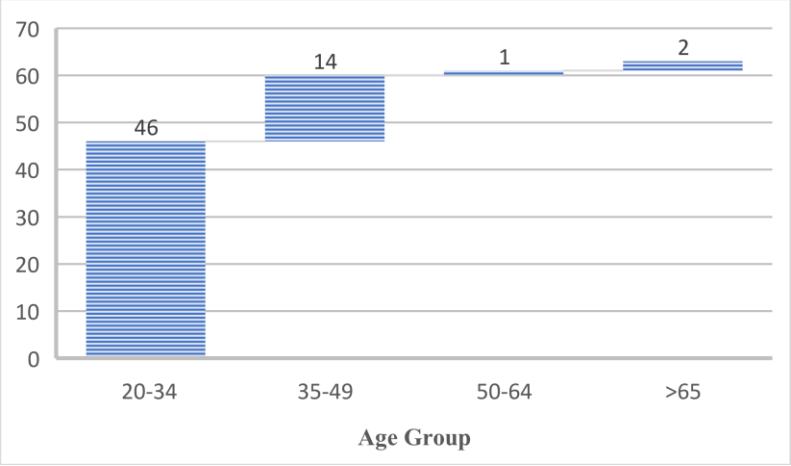
Villages	Total Respondents	Male	Female
Myaung Ta Kar	61	49	12
Industrial Zone	21	20	1
Kular Kone	10	6	4
Kywe Ku	5	2	3
Kankalay	16	15	1

Other Places	1	1	0
Total	114	93	21



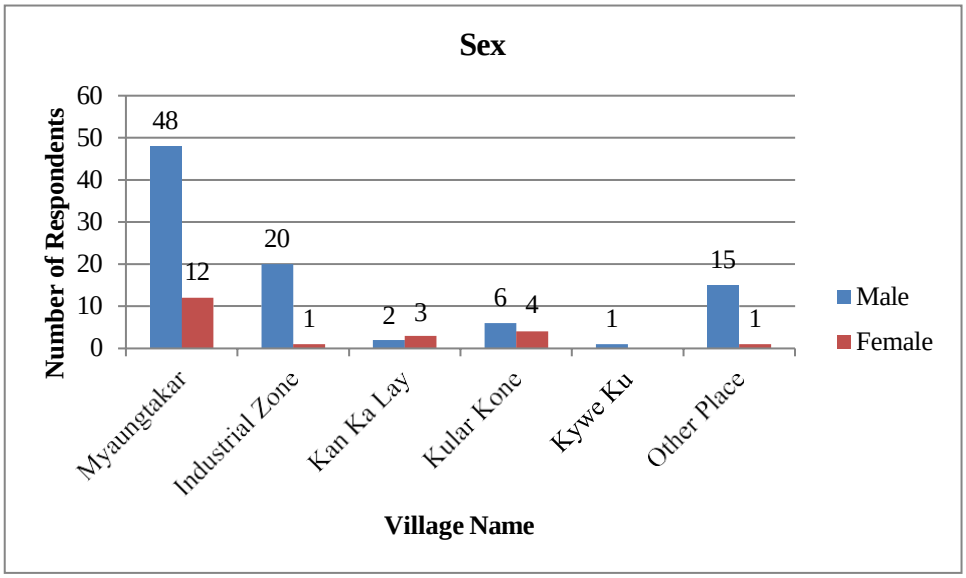
(3) Age Group

The respondents age group were differentiated from 20 to 65 and there were 4 age groups in this survey, such as a) 20-34 years b) 35-49 years c) 50-64 years and above 65 years old. The first age group 20-34 years actively incorporated in the survey, followed by 35-49 age group, above 65 and so.



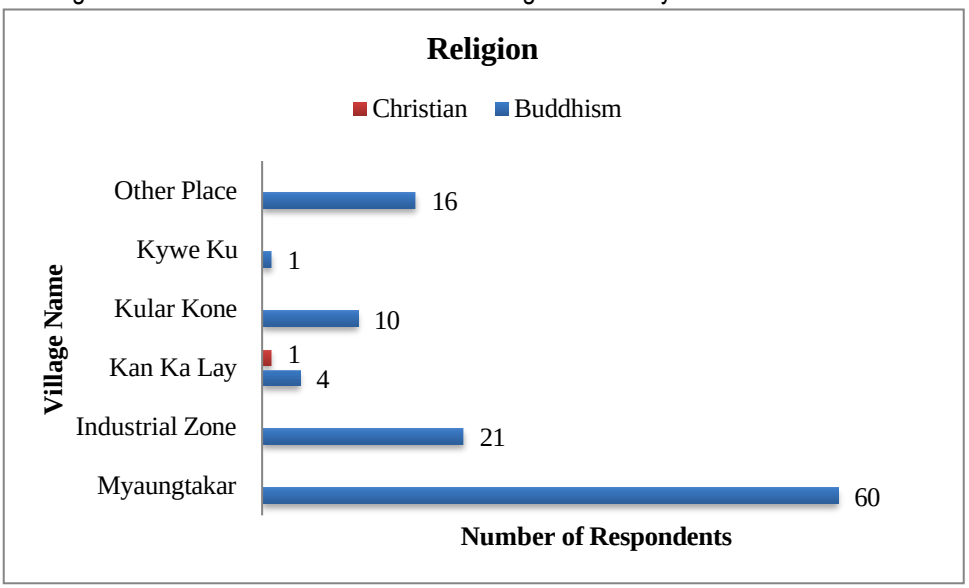
(4) Gender Identity

During the survey, 82 % male respondents joined the survey. Only 18 % of female respondents are found in the feedback forms. This may be due to the industrial operation area, means that number of female workers are lower than the male in industrial production activities.



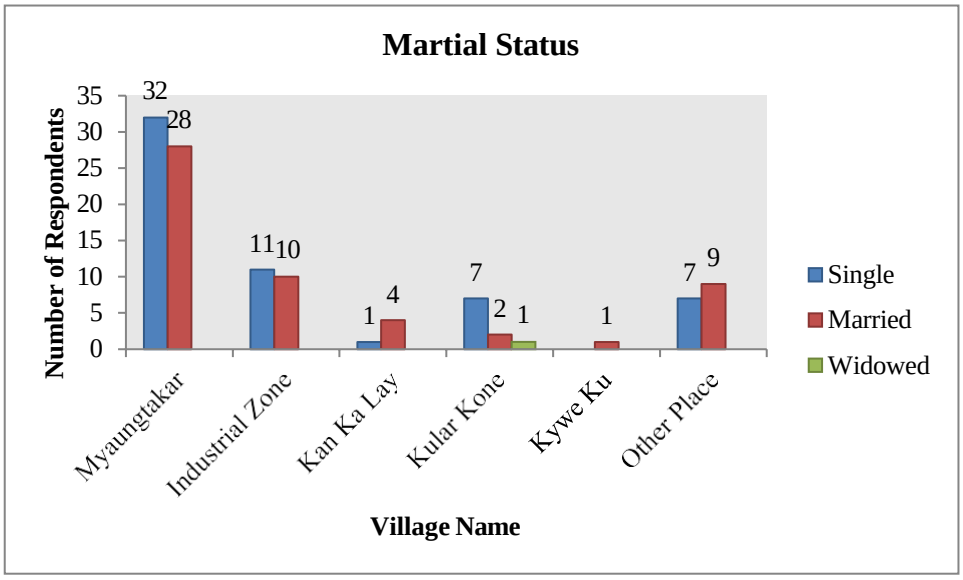
(5) Religion

In the survey area, almost all respondents are Buddhism and so a few Christian people. There was no respondent from the other religion within the industrial zone and the village community.



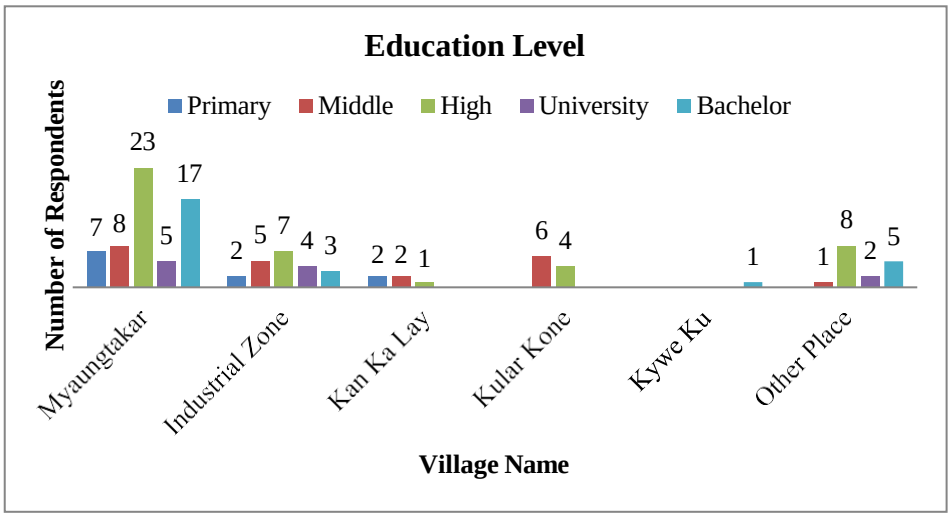
(6) Marital Status

Three groups of marital status were observed among the respondents, such as single, married and widowed. However, most of the respondents are still single. It may be due to their age because the respondents age group are mostly 20-34 years.



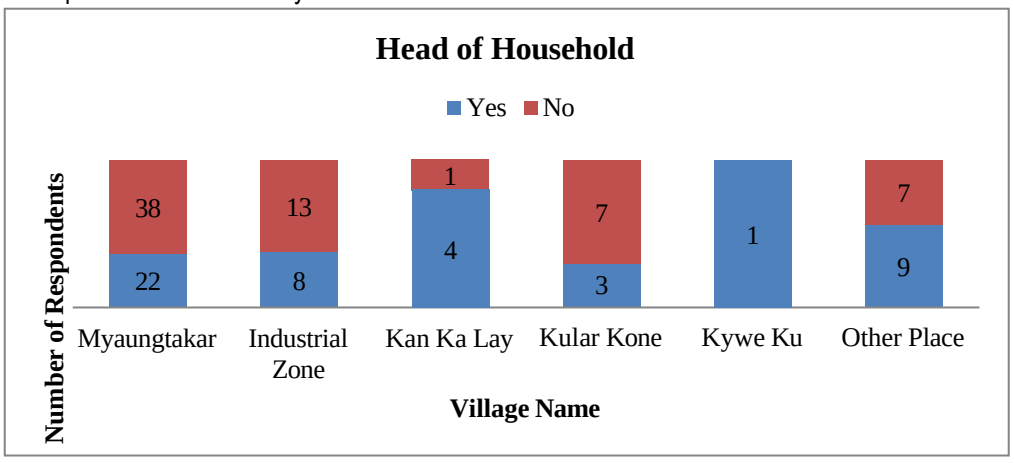
(7) Education Level

Within the industrialized area, the education level of the respondents is variously identified as the primary, middle, high, university students and graduate levels, respectively. Among them, the high school level peaked in all survey areas.



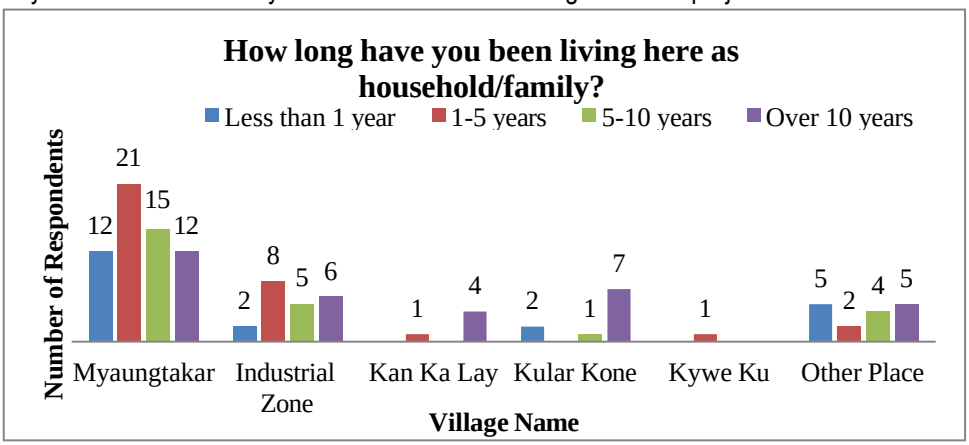
(8) Head of Household

41 % of the respondents in the survey are the Head of their households.



(9) Duration of Living in the Project Area

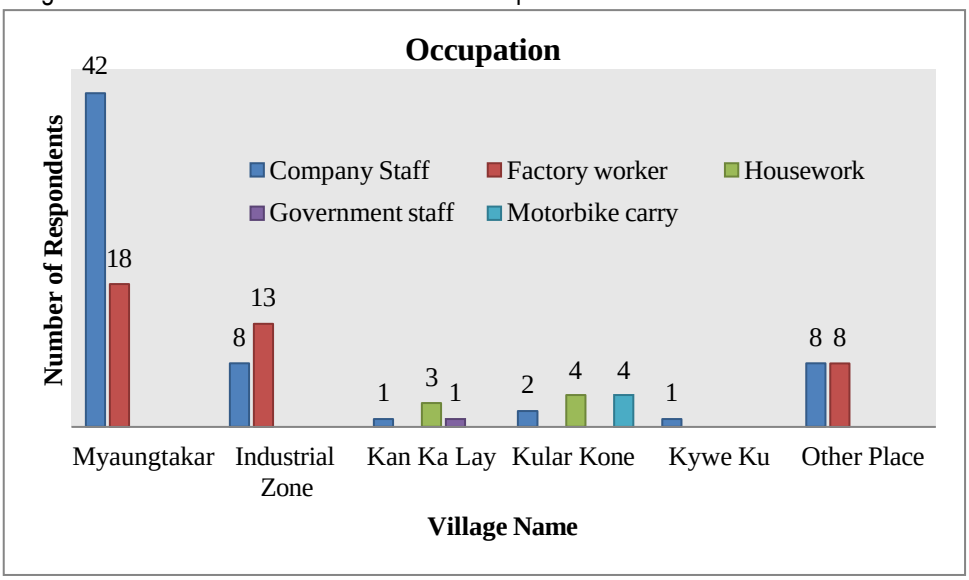
The respondents lived in the project area from the duration of less than 1 year to over 10 years. The respondents of less than 1 years feedbacks mostly from the other area and migrate to the project area due to livelihood activity.



4.6.3.2 Status of Livelihood and Assets

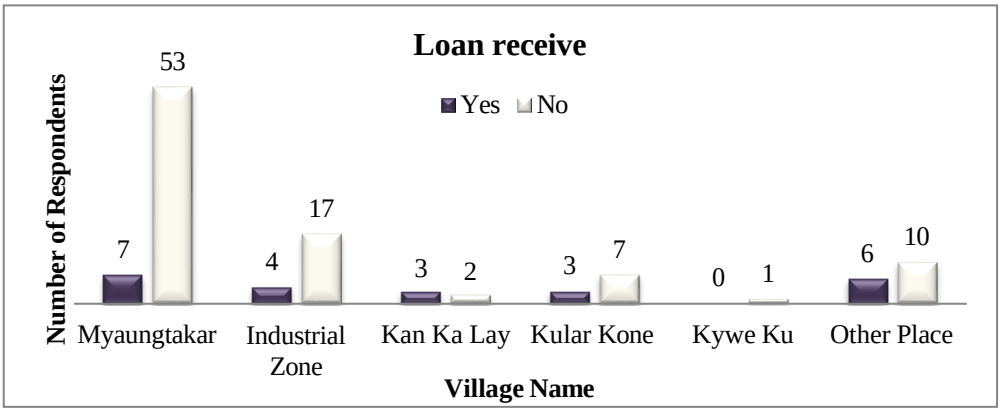
(10) Livelihood/Occupation

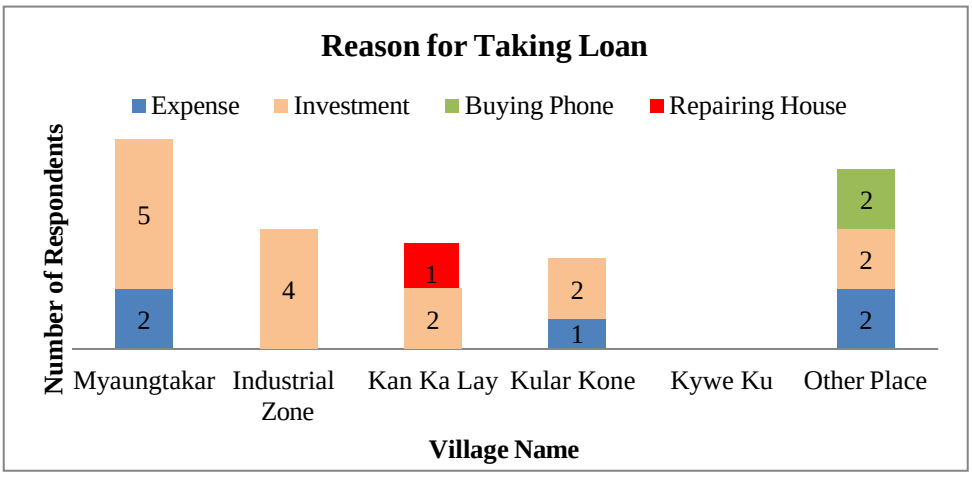
Various livelihood activities like company staffs, factory workers, government staffs, house works and some stands by motorbike carry. However, the company staffs are mostly found in the Myaung Ta Kar village. There were also found some migrate workers from other area for industrial operation works.



(11) Personal Loan Receive Status

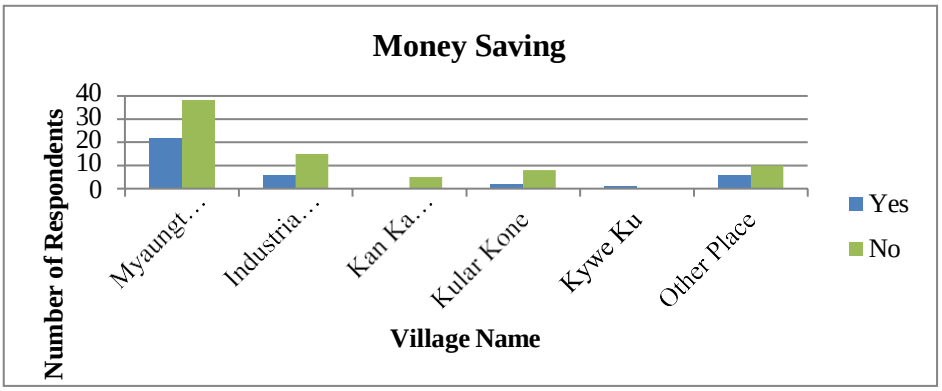
All the survey area cannot be free of loans receiving for various reasons of expense, business investment, buying phone and repairing house etc.

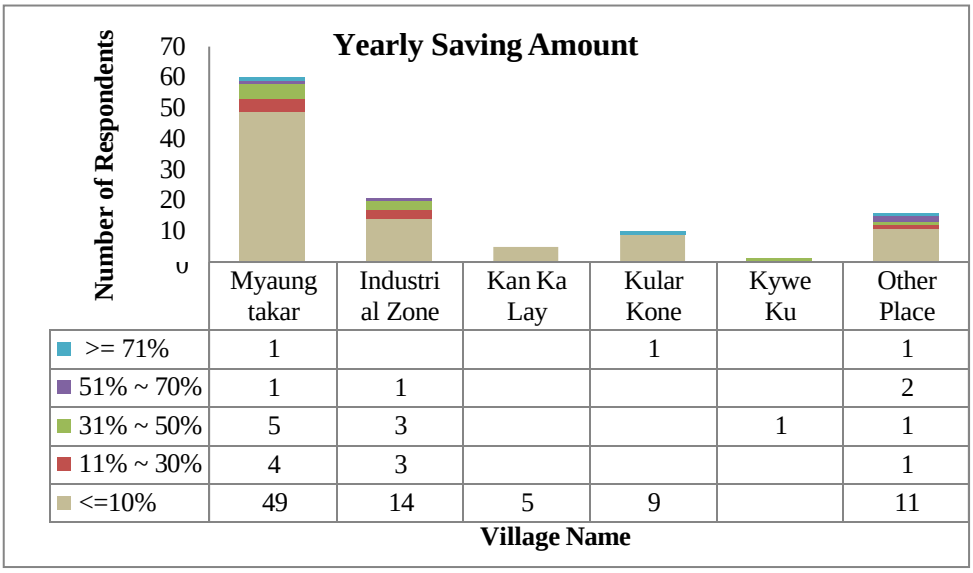




(12) Money Saving

Some people can save money from their monthly incomes with the yearly saving amount, mostly less than 10 % of their incomes.

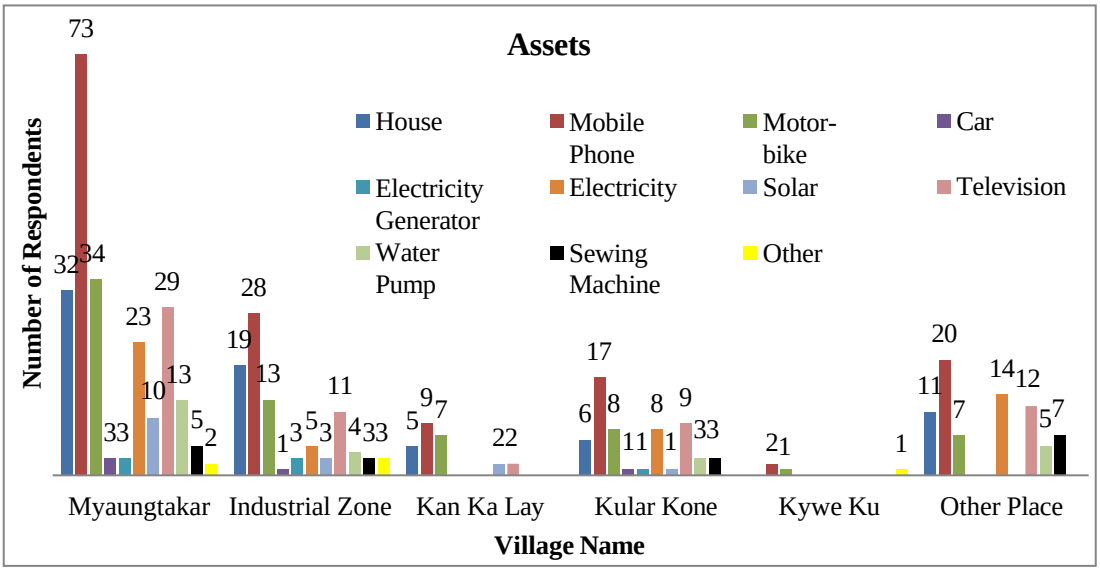




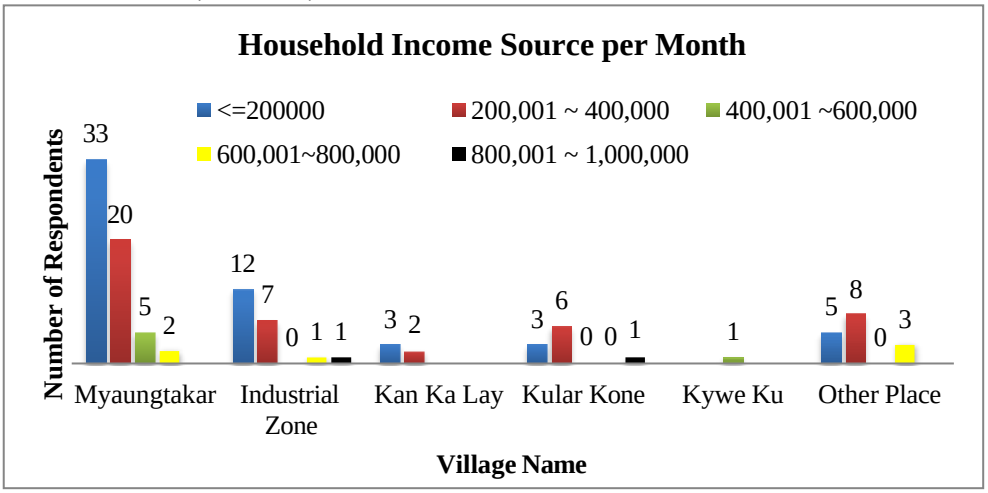
	Myaungtakar	Industrial Zone	Kan Ka Lay	Kular Kone	Kywe Ku	Other Place
>= 71%	1			1		1
51% ~ 70%	1	1				2
31% ~ 50%	5	3			1	1
11% ~ 30%	4	3				1
<=10%	49	14	5	9		11

(13) Assets

Most of the respondents own the house, mobile phone, motor bike, electricity related facilities including solar, water pump, television, sewing machines and 5 respondents even own the car. Apparently, almost all people own their mobile phones and reached a peak.

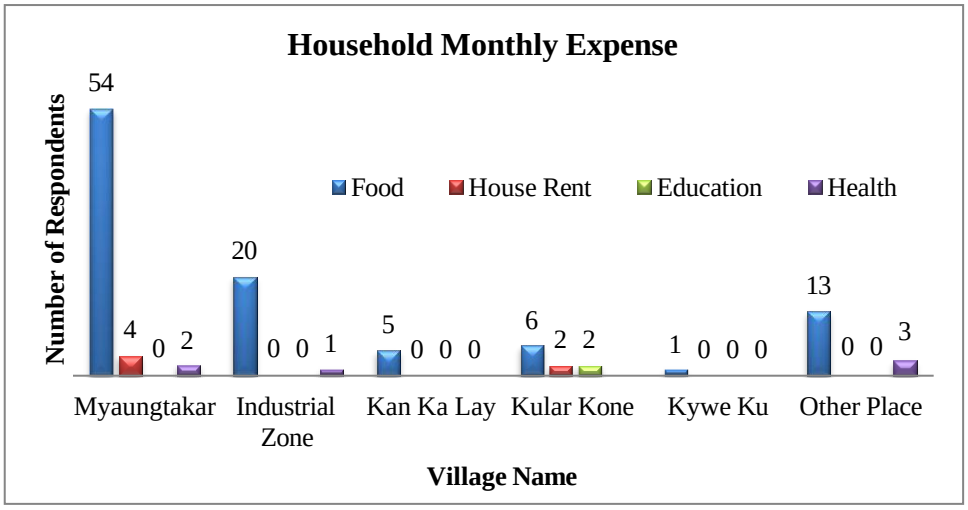


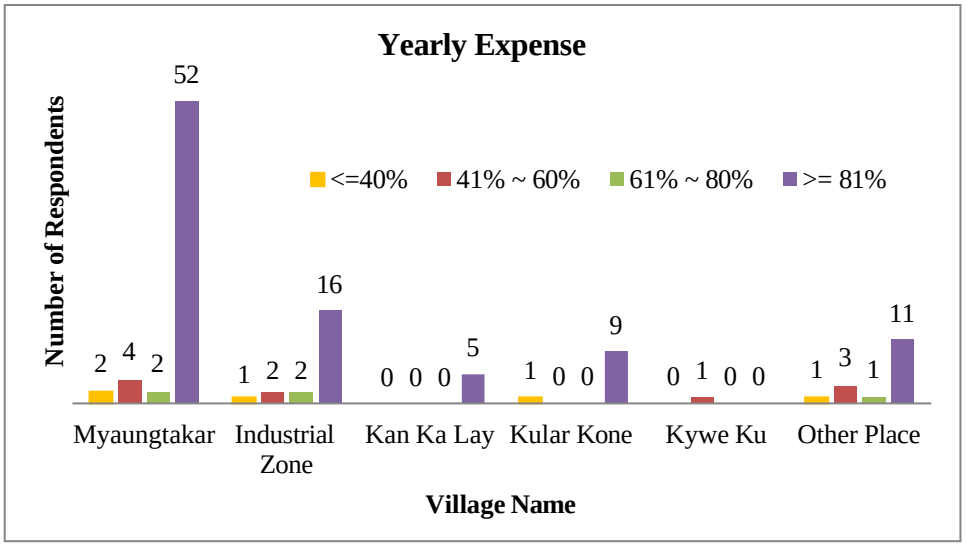
(14) Household Income (per Month)



(15) Household Expense

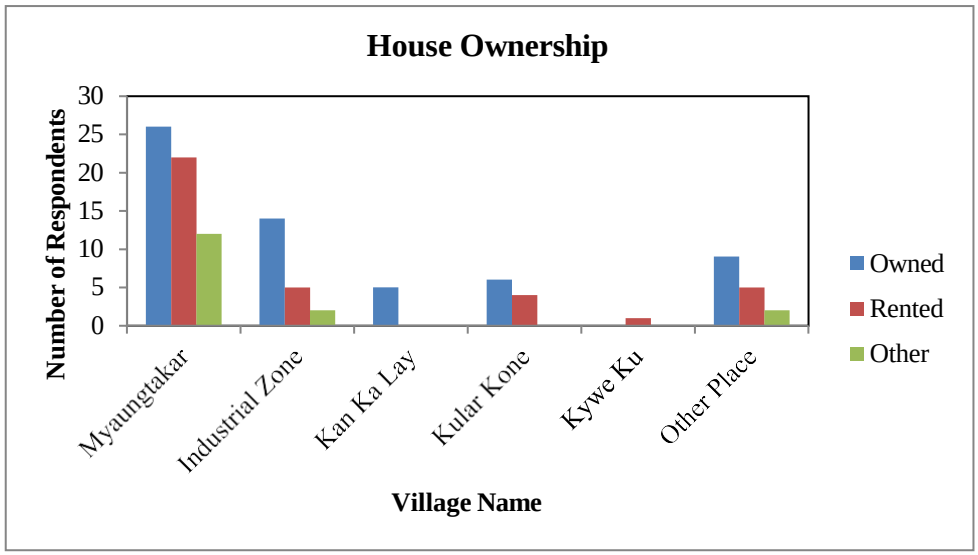
The household expenses include those for food, house rent, education and health costs per monthly and yearly expense percentages vary from less than 40 to more than 80 % for the above reasons. However, the respondents mostly cost for foods.

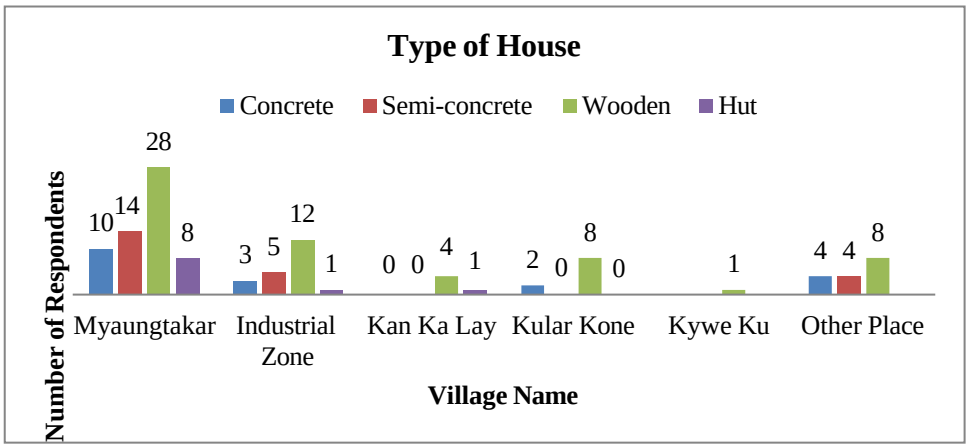




(16) House Ownership

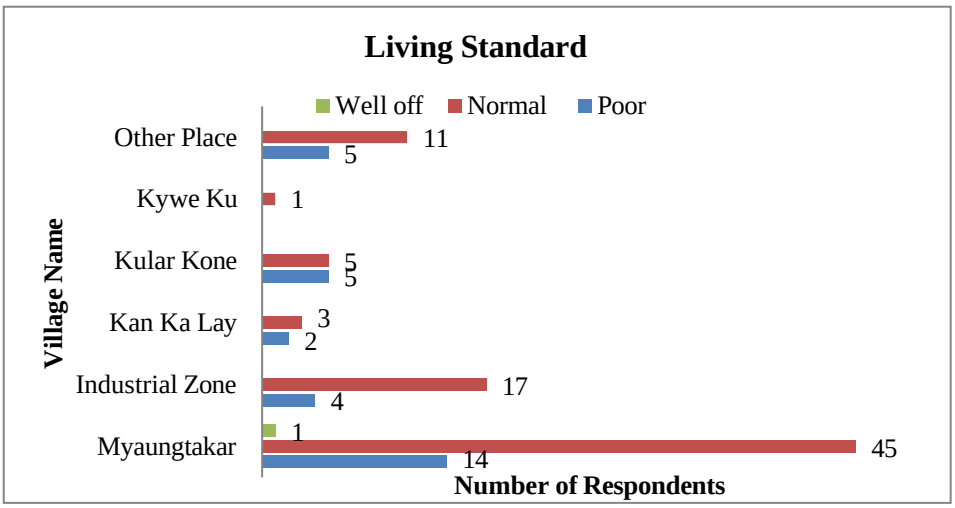
Most of the respondents owned a house and most are rent status in all areas. Other means here is some respondents got the staff housing by support of their company and some are living in government housing. The types of houses they owned are concrete, semi-concrete, wooden and hut.





(17) Living Standard

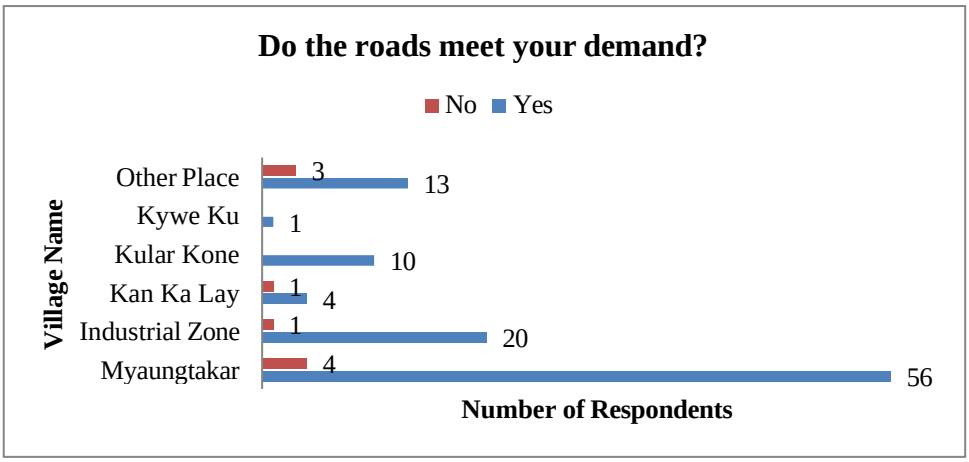
The respondents gave feedback on three statuses based on their occupied assets for living standards, such as well off, normal and poor. However, the surveyor got no access on poverty status on their feedbacks.

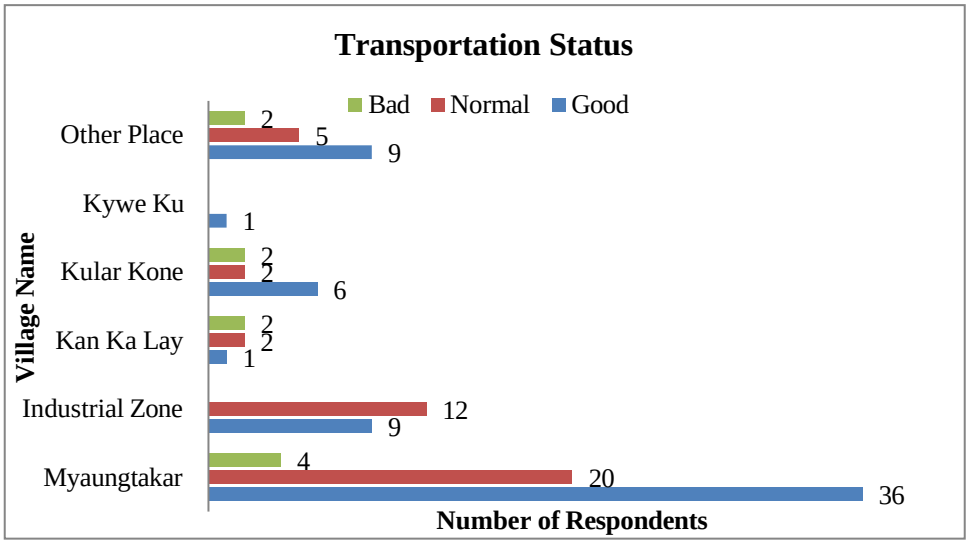


4.6.3.3 Transportation Status

(18) People Concerns on People Demand and Current Transportation Status

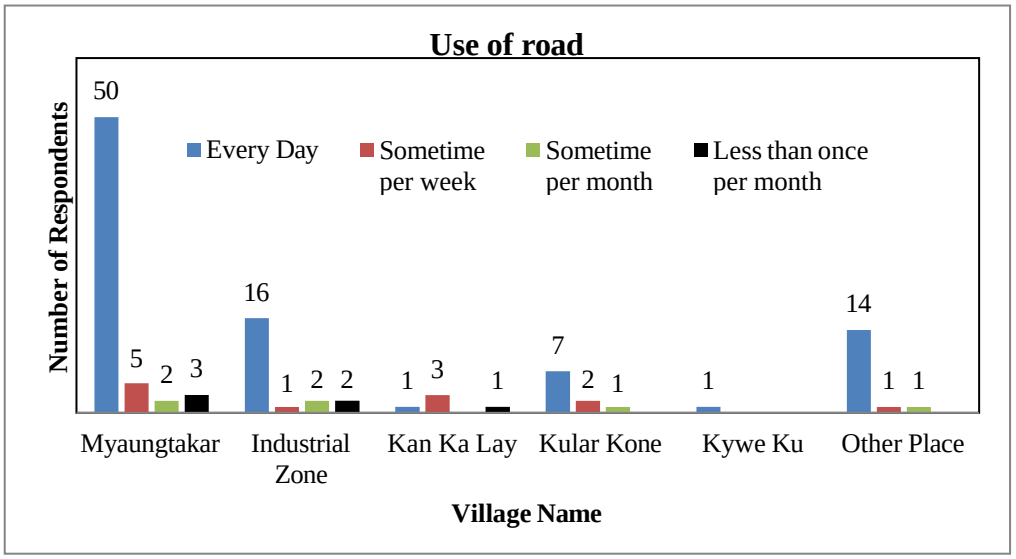
Almost all the respondents satisfied the current road condition and very few people concerned about the transporation status as not meet their demand. Some think the road are bad and not enough for transportation.





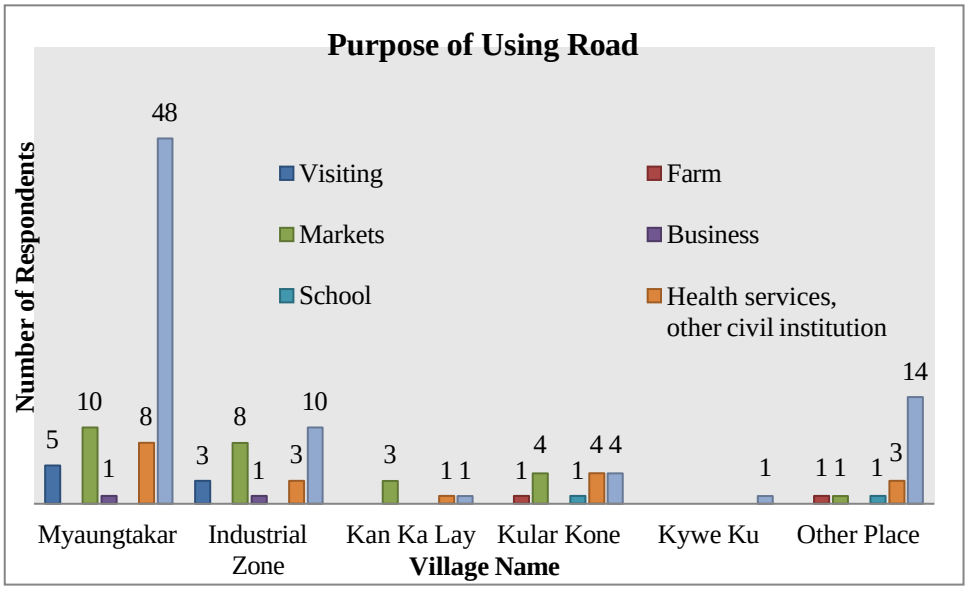
(19) Use of Road

65 % of the respondents are using the road as daily routine and the rest rarely used the road as per week and some might use very rarely less than once per month.



(20) Purpose of using Road

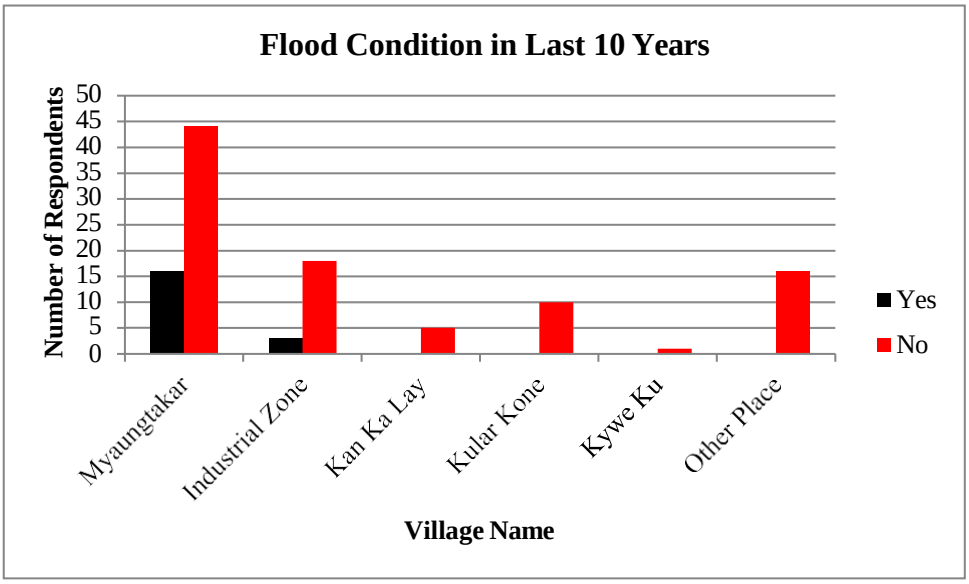
The local people used the roads for various reasons for visiting to another area, markets, farm, school, business but mostly from all survey area, they used the current road for health services and other civil institutions.



4.6.3.4 Hazards on Natural Disasters

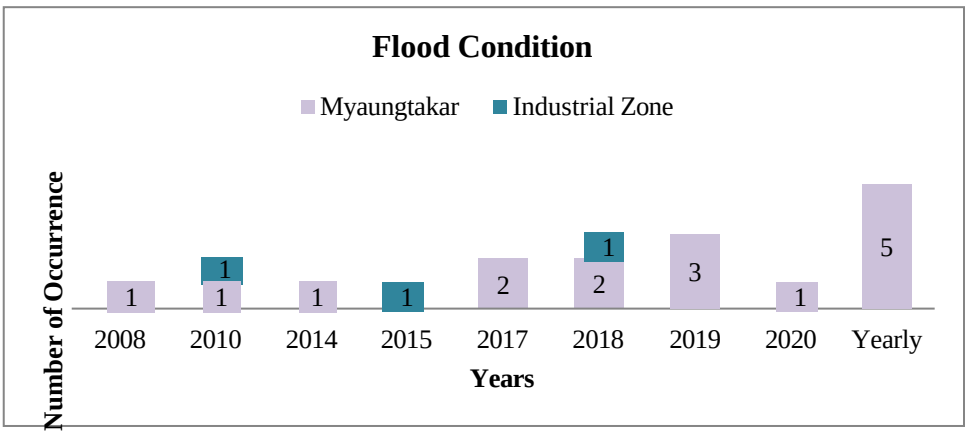
1) Flood Condition in the Study Area

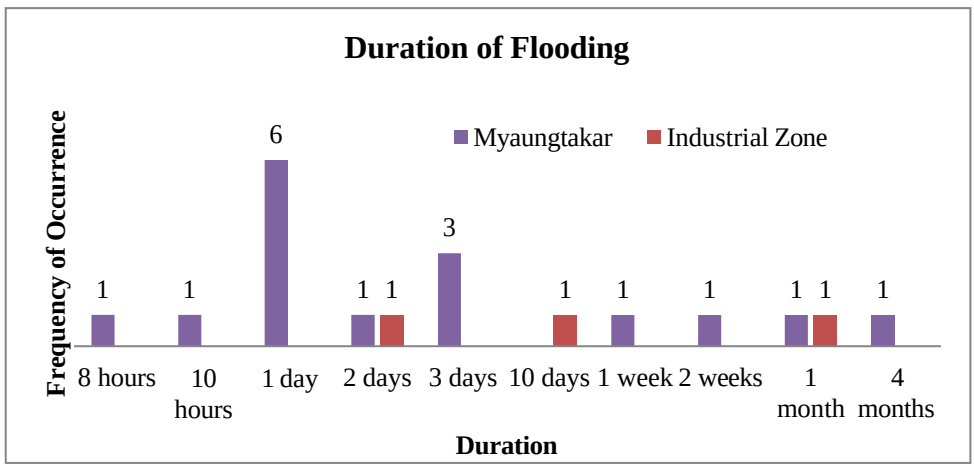
Mostly, the respondents have no flood experience in the area of last 10 years aga. Some respondents from Myaung Ta Kar village and Industrial zone may have some flood experience.



(21) Flood Occurrence in the Survey Area

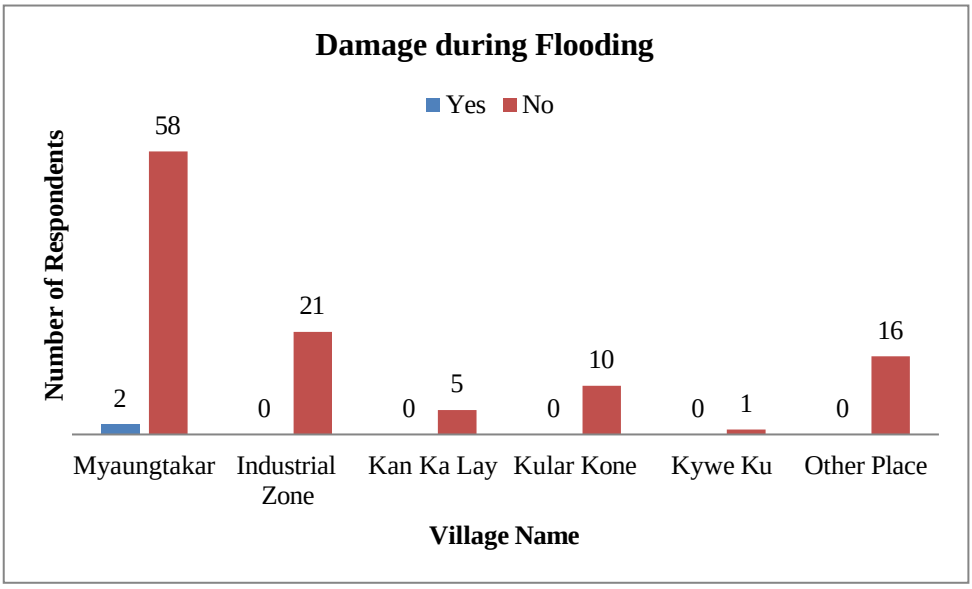
When the flood experience in two survey areas, which have flood experienced in last 10 years, Myaung Ta Kar village was affected by flood more than the industrial zone, during 2008 to current with flood affected duration from 8 hours to four months.





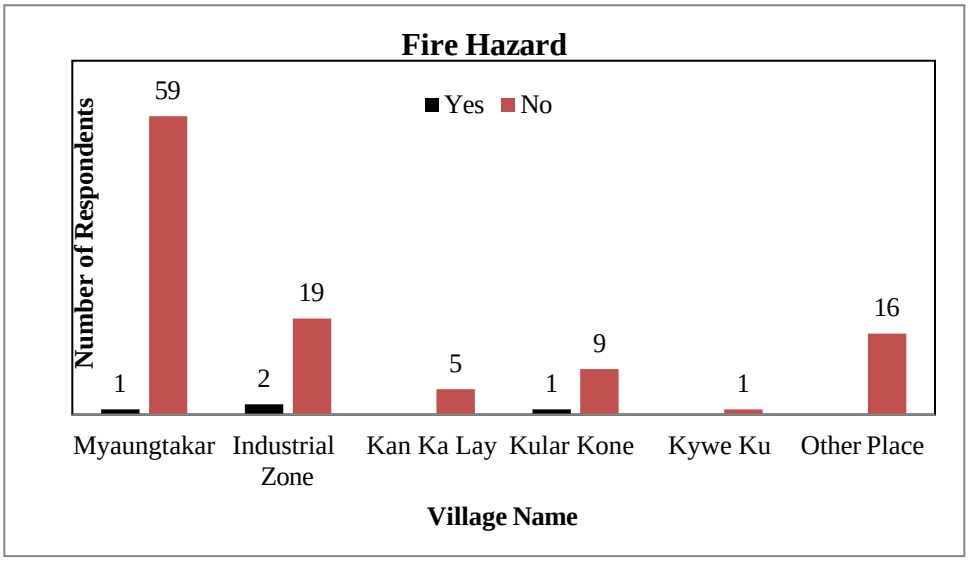
(22) Damage of Flooding

Among the survey areas, Myaung Ta Kar village has some damage and loss due to flood, but very little.



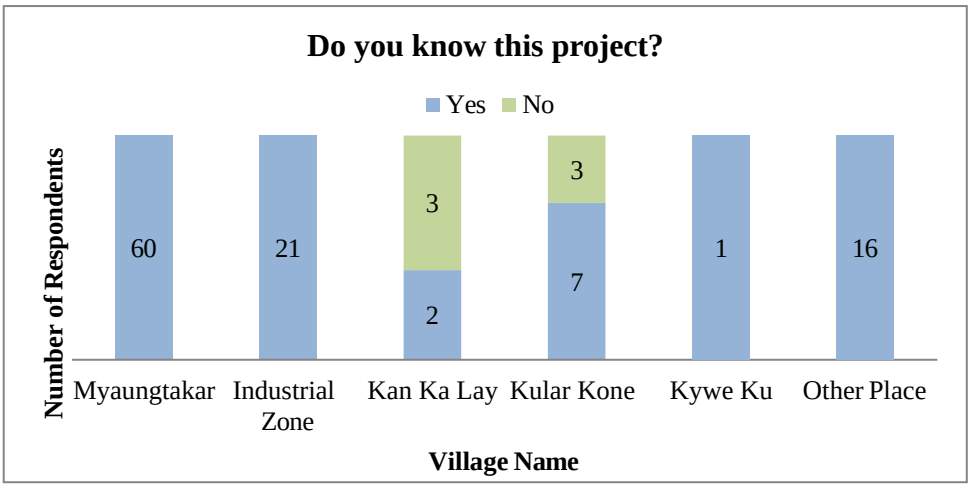
4.6.3.5 Fire Hazards

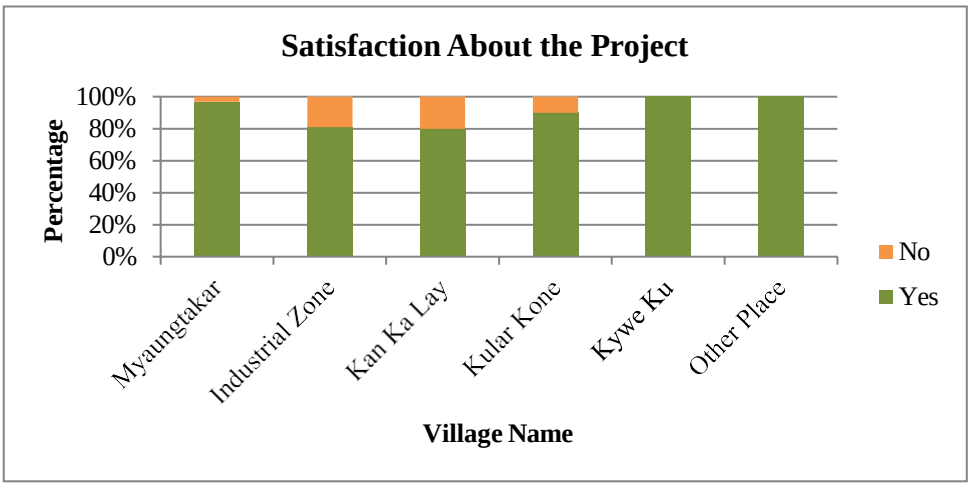
The fire hazards were occurred in Myaung Ta Kar village, Kular Kone village and the industrial zone itself.



4.6.3.6 People Concern on YMI Project

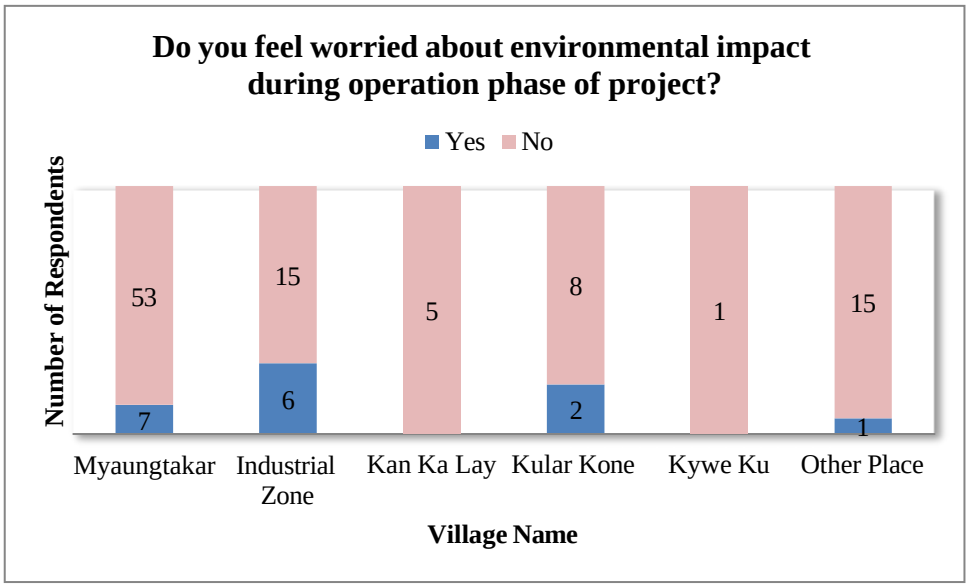
Almost all respondents heard about the YMI project and very few people from Kular Kone and Kan Ka Lay villages responded as not with the satisfaction rates over 90 % of the respondents.





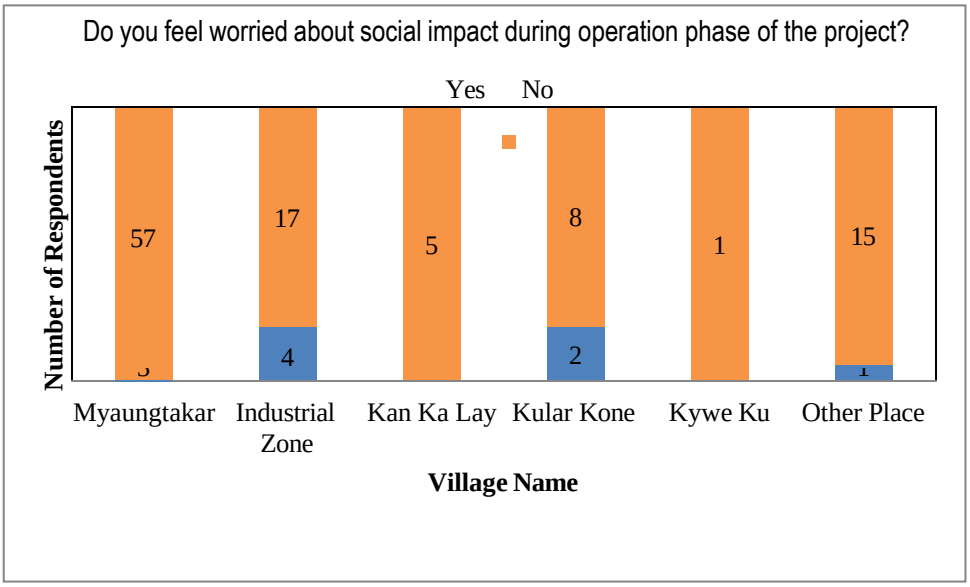
4.6.3.7 Concerns on Environmental Impacts during Project Operation Phase

A few people (only 14 % of the total respondents) from Myaung Ta Kar, Industrial Zone, Kular Kone and some migrate workers from other area have concerns about the environmental impacts due to project operation activities such as leakage of lead in water course, and stack emission etc.



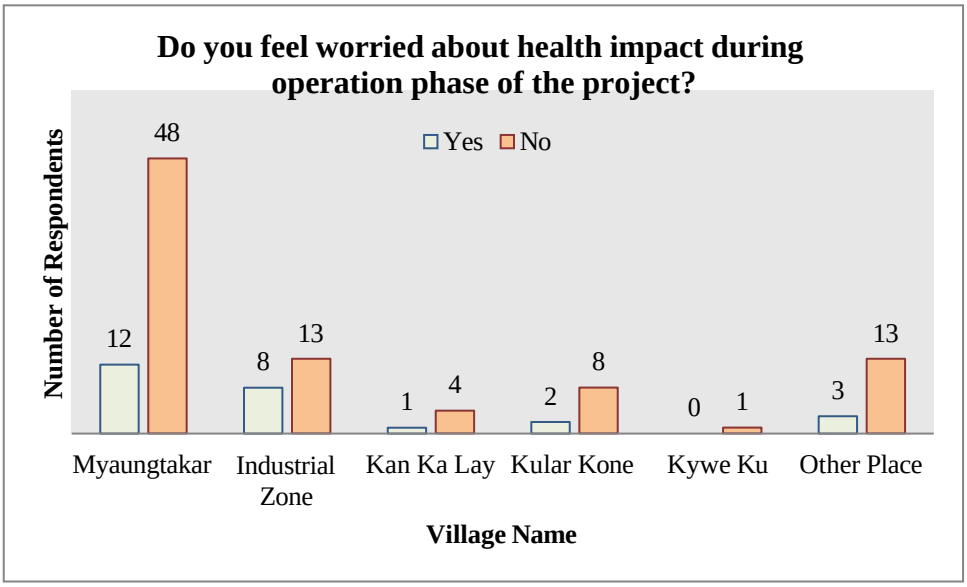
4.6.3.8 Concerns on Social Impacts during Project Operation Phase

Few people might think they have social impacts due to project operation such as social problem which the migrate workers can bring into the project area, and some might have the concern about the international workers working in the industrial operation.



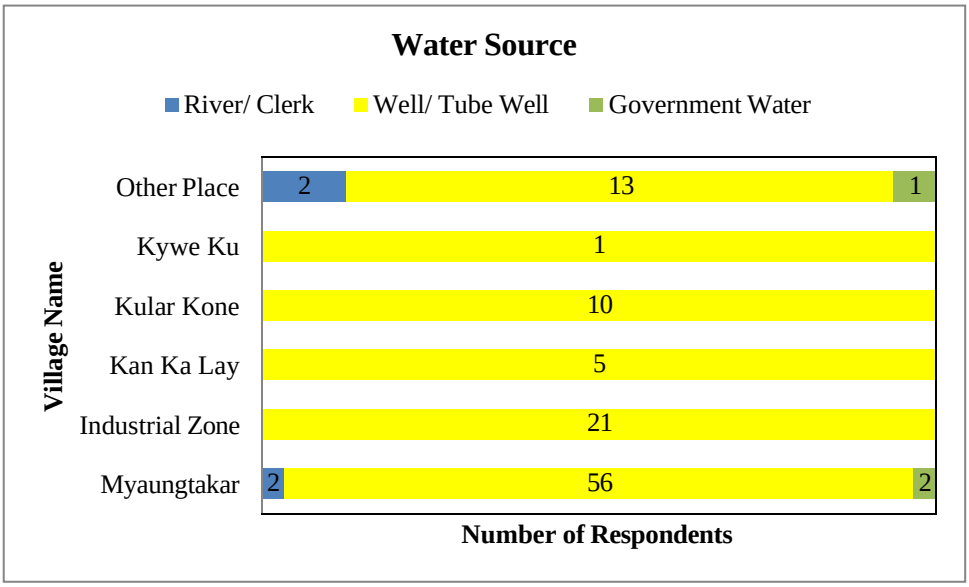
4.6.3.9 Concerns on Health Impacts during Project Operation Phase

Almost all the survey area has concern about the health problem due to project operation activities. Because some area have experienced about the smoke emission from the fertilizer factory. According to their experiences, a child was dead due to mercury toxicity in recent years and some might have the health problems due to smoke emission from fertilizer factory in the industrial zone.



4.6.3.10 Water Source

Mostly, the survey area has the water sources from underground tube well water and very few people might have water access from civil pipeline and river water.



4.7 Cultural and Visual Components

There was no cultural and/or historical place and buildings in the project area because it was operated in the designated industrial zone and any project activity does not relate with the cultural components. No visual landscape area was observed in the project area.

CHAPTER 5

KEY POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The key potential environmental impacts both negative and positive were assessed based on the project activities. Since the scoping is conducted before the detailed field investigation was made, the information from the recent reconnaissance by the EIA study team with preliminary assessment checklist/matrix depending on preliminary site studies and expert judgments were used to determine which are the most critical issues to study and will involve community participation to some degree.

The key environmental and social impacts of the project were preliminarily identified in the scoping process. This section aims to identify the key environmental and social impacts of the Project through a scoping process. Potential impacts have been identified through a systematic process whereby the activities (both planned and unplanned) associated with the Project have been considered with respect to their potential to interact with environmental and social resources / receptors.

5.1 Scoping Methodology and Approach

Since scoping is the preliminary stage of EIA study, the key potential impacts of the proposed project have to be preliminary identified and assessed. The assessed impacts are then evaluated to be known whether the impact is positive or negative with some extents. The criteria for the evaluation of environmental impacts are presented in Table 5.1-1. The impacts evaluated in this section are further needed to take detail assessment during the preparation of full EIA report.

Table 5.1-1: Methodology and Approach

Impact Level	Explanation of Impacts	Mitigation Measures	Residual Impacts
Critical (A)	**-impact is irreversible with extensive and severe damages to ecology and socioeconomic values** **-issues cannot be resolved**	**Cannot mitigate and should find the alternative approach.**	**Need to be changed, relocated or abandoned**
Major (B)	**-impact is substantial, but it can be reduced technically and/or adequate management measures**	√	**Residual impact will be minor.**
Moderate (C)	**-impact is moderate in terms of extent and severity** **-can effectively reduce using simple measures**	√	**Residual impact will be insignificant.**
Minor (D)	**-impact magnitude is small in a small area**	**Control measures**	**Residual impact will be negligible.**

	-easily manage through good implementation practices		
Insignificant (E)	**-impact is very small compared to Level 2** **-easily mitigate through good implementation practices**	**x**	**Residual impact will never become significant.**
Nature of Impact	**Positive impact (+)**	**An interaction will possibly lead to positive impacts**	
	Negative impact (-)	**An interaction will possibly lead to negative impacts**	

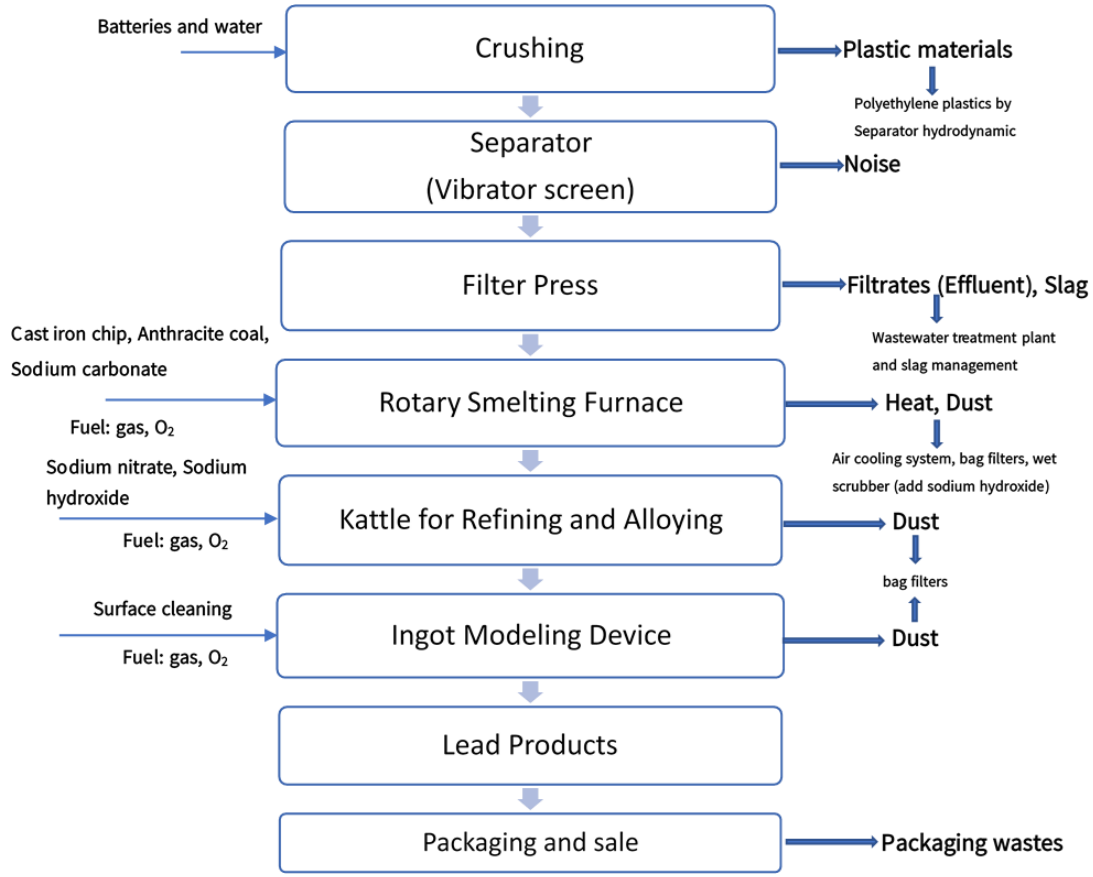
5.2 Preliminary Impact Assessment and Mitigation Measures

The potential impacts which are likely expected during the design phase, construction phase and production and operation phases are shown in the following table. However, the factory is already constructed the facilities and currently in the production and operation phase.

5.2.1 Estimation of Emissions from Lead Smelting and Refining Process

Emissions from batteries braking are mainly sulfuric acid mist and dusts. Emissions from crushing are also mainly dusts. Smelting rotary furnace emits particulate, sulfur oxides and nitrogen. Wet scrubbers are sometimes used to reduce SO_2 emissions. Baghouse filters are set to control the particulate emissions. Kettle furnaces for melting, refining and alloying are relatively minor emission sources. The kettles are hooded, with fumes and dusts typically vented to baghouse.

The overall process emission and effluents are illustrated as in the flow chart.



Staff wastes and kitchen wastes are also expected to be occurred and managed according to the municipality guidelines.

Table 5.2.1-1: Predictions of the Potential Positive/Negative Impacts from the Lead Factory

Sr. No.	Aspect/Activity	Minor (D)	Moderate (C)	Major (B)	Insignificant (E)	Critical (A)	Need to be explored
1	**Investigation and design Phase**						
1.1	Soil Investigation				√		
2	**Construction Phase**						
2.1	Impact on fauna	√					
2.2	Impact on flora	√					
2.3	Impact on water resource	√					
2.4	Land value increase	√					
2.5	Influx of labour	√					
2.6	Dust		√				

2.7	**Noise Nuisance**		√				
2.8	**Construction Accidents**	√					
3	**Production & Operation Phase**						
3.1	**Impact on Fauna**				√		
3.2	**Impact on Flora**				√		
3.3	**Impact on water availability for other uses**		√				
3.4	**Impact on groundwater**	√					
3.5	**Impact on surface water**		√				
3.6	**Employment Opportunities**		√				
3.7	**Influx of labour from other area**	√					
3.8	**Loss of historical and cultural assets**				√		
3.9	**air emissions**		√				
3.10	**Noise nuisance**	√					
3.11	**Solid waste**		√				
3.12	**Chemical Hazards**			√			
3.13	**Health Hazards**			√			
3.14	**Transportation**	√					
3.15	**Soil**			√			

5.3 Risks Assessment

The principal objective of the risk assessment study is to identify and quantify the major hazards and the risk associated with various operations of the proposed project, which may lead to emergency consequences (disasters) affecting the public safety and health. Based on this information, an emergency preparedness plan is to be prepared to mitigate the consequences. Industrial accidents result in great personal and financial loss. Many facilities involve various manufacturing processes that have the potential for accidents which may be catastrophic to the plant, work force, environment, or public.

Risk analysis involves the identification and assessment of risks; the neighboring populations are exposed to as a result of hazards present in the projects' operations. This requires a thorough knowledge of failure probability, credible accident scenario, vulnerability of populations etc. The risk analysis is often confined to maximum credible accident studies.

In this chapter, the identification of various hazards, maximum credible accident analysis, and consequence analysis are addressed, which gives a broad identification of risks involved. Based on the risk assessment, disaster

management plan has been presented. The major hazardous anticipated in the proposed project are illustrated below.

- Hazardous pertaining to fires in project/plant area
- Fire in diesel storage areas, garbage storage areas and disposal areas
- Natural disasters viz. Earthquakes, flooding, etc.
- Electrical accidents
- Flooding from man-made causes

5.3.1 Hazard Identification

Identification of hazards in the proposed project is of primary significance in the analysis, Quantification and cost-effective control of accidents involving chemicals and process. A classical definition of hazard states that hazard is in fact the characteristic of system/plant/process that presents potential for an accident. Hence all the components of a system/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.

5.3.2 Hazard Assessment and Evaluation

A preliminary hazard analysis is carried out to identify the major hazards associated with storage and the process of the plant. This is followed by consequence analysis to quantify these hazards.

Physical and Health Occupational Hazards in any Industry can be broadly classified into the following categories:

I. Mechanical Risks

II. Electrical Risks

III. Fire/Explosion Risks

IV. High/low Temperature Exposure Risks

V. Toxic/Carcinogenic Chemicals Exposure Risks

VI. Corrosive/Reactive/Radioactive Chemicals Exposure Risks

5.3.3 Electrical Hazards

Electrical hazards leading to fire and explosion in switchgear and other equipment mainly due to failure of circuit breakers, insulators, fuses, and poor maintenance etc. Nevertheless, all these hazards lead to localized accidents only.

5.3.4. Fire Hazards

There could be other areas in the factory that have a potential for fire hazard and require adequate firefighting equipment for example, the raw material storages. These are considered here since uncontrolled fire may trigger the above emergencies due to domino effect.

5.3.5 Hazardous Chemicals Release

There are various hazardous chemicals (especially lead toxicity, flammable battery and acids), which might be released from manufacturing and other activities in this industrial estate. Separate storage area will be provided for these chemicals and will be handled with at most care following the safety norms for handling of hazardous chemicals.

5.3.6 Risk Mitigation Plan

Risk mitigation plans should:

- Characterize the root causes of risks that have been identified and quantified in earlier phases of the risk management process;
- Evaluate risk interactions and common causes;
- Identify alternative mitigation strategies, methods, and tools for each major risk;
- Assess and prioritize mitigation alternatives;
- Select and commit the resources required for specific risk mitigation alternatives;
- Communicate planning results to all project participants for implementation.

5.4 Cumulative Impact Assessment

The cumulative impacts should be assessed as the successive, incremental and/or combine effects arising from the project together with other existing and/or future projects, other development activities within a defined spatial and temporal framework in two aspects:

i) the surrounding natural and social environments

ii) on the project itself

5.4.1 Methodology and Approach: Rapid Cumulative Impact Assessment (RCIA)

Full-fledged CIA requires a multi-party coordination of data collection and assessment efforts including the (local, responsible) government unit as a key agent in order to assess collective and time-consuming assessment of key environmental and social impacts of a range of projects in the past, present and in the near future in the broader areas of influence beyond an area of direct influence of a particular project. Thus, it is beyond the scope of an EIA assessor of an EIA study team[2].

5.4.2 Cumulative Impact Assessment

- Brief descriptions and maps of relevant existing and future private and public projects and developments
- Identification and assessment of the potential cumulative impacts on the components in the surrounding environment and the Project's contribution to such impacts

[2] For more details of the definition of CIA and its commonly accepted methodology, see for example, "IFC Good Practice Handbook: Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets" (2013, available at:https://www.ifc.org/wps/wcm/connect/3aebf50041c11f8383ba8700caa2aa08/IFC_GoodPracticeHandbook_CumulativeImpactAssessment.pdf?MOD= AJPERES)

- Determination of the leverage and influence that the Project may have over the significant and project-related cumulative impacts
- Description of measures to mitigate the Project's contribution to the cumulative impacts

Cumulative impacts on VECs will be assessed as follows:

- Identification of VECs and Boundaries
- Relevant Existing and Future Private and Public Project Development
- Assessment of Cumulative Impacts on VECs
- Design of the Management Strategies: Measures to Mitigate the Project's Contribution to the Cumulative Impacts

5.5 Mitigation Measures

Since the project is already in the operation phase with the expected impacts upon the ambient air quality, water quality and soil quality due to the disposal solid wastes (soils) which are eliminated after lead production as the byproduct.

Also, there are predicted that the chemical hazards which can affect on the health condition especially the workers who are working in the operation process.

Thus, the main impacts of the projects as follows:

1) Air Emissions
2) Industrial wastewater
3) Solid Wastes (Industrial byproducts)
4) Transportation
5) Occupational Health and Safety

Since the project is operated at the designated area of the Industrial Zone, no other impacts such as those on cultural, religious, aesthetic, and other social related impacts, are foreseen.

5.5.1 Mitigation Measures on Air Quality

The air emission impacts are expected from the metal particles from processing lead production. The factory adopted the Korea technology for cleaning air emissions including Rotary Furnace**,** Bag House, Wet Scrubber, Cyclone, Dust Collection Line and Blowing Motor and Fan. The factory managed the berth conveyors in every production stages to avoid contact of dust particles to the workers.

Figure 5.5.1-1: Air Emission Control Units in YMI Factory

5.5.2 Mitigation Measures on Water Quality

The YMI factory is expected to use about 600 m^3/day of water for industrial consumption and workers/staff in use. The septic tank system is used for toilet and flush wastewater and all the industrial wastewater are treated with the treatment facilities and reused the treated effluent in turn in the production process itself from settling ponds.

Wastewater treatment process is mentioned as shown in Figure 5.5.2-1, 5.5.2-2and 5.5.2-3. In the wastewater treatment process, Closed circuit system by reusing the treated water into the operation.

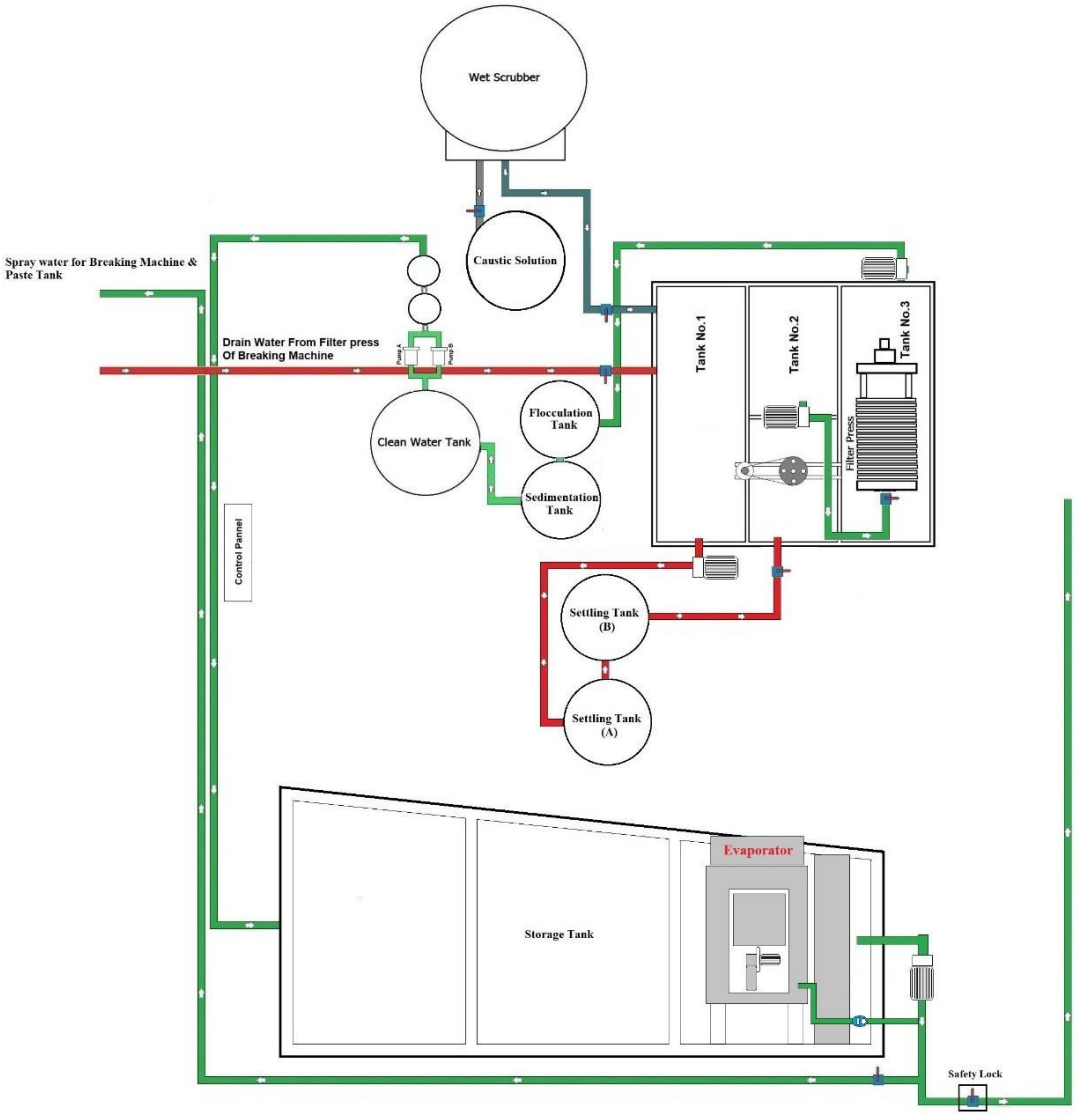


Figure 5.5.2-1: Layout of Wastewater Treatment

Figure 5.5.2-2: Wastewater Treatment Process

Water evaporation machinery unit was trying to install at YMI for the extra effluent water which might not be reused in the operation process. Therefore, "0" discharge of industrial wastewater from YMI to the surrounding water bodies is likely to expect.

For domestic wastewater, especially for strong wastewater from toilet is managed under control by installing the septic tank in the toilet units.

5.5.3 Mitigation Measures on Solid Wastes

The soil particles are likely to be as the byproducts of the production process and the YMI factory is planning to store them at the storage house of designated area after consultation with the authority. Currently, they are stored in cover with the concrete floor and wall to avoid draining into the underground and into the drainage.

Figure 5.5.3-1: Byproducts as Soil Particles from YMI

Storage facilities or 'bins' shall have 'easy to operate' design for handling, transfer and transportation of waste. Bins for storage of bio-degradable wastes, those for storage of recyclable wastes (plastics and papers) and those for storage of other hazardous wastes were labelled as shown. However, the YMI has a separate kitchen room inside the factory and no worker are allowed to eat nearby the operation machines and the food wastes (biodegradable wastes) can be collected at the dining room area only.

Manual handling of waste will be prohibited. If unavoidable due to constraints, manual handling will be carried out under proper precaution with due care for safety of workers.

Figure 5.5.3-2: Storage Bins at YMI

5.5.4 Mitigation Measures on Workplace Safety

The labeling and sign boards are managed as necessary at the workplace for occupational and visitor safety controls. The YMI is planned to have "0" accident in the workplace and still the target met with the requirements.

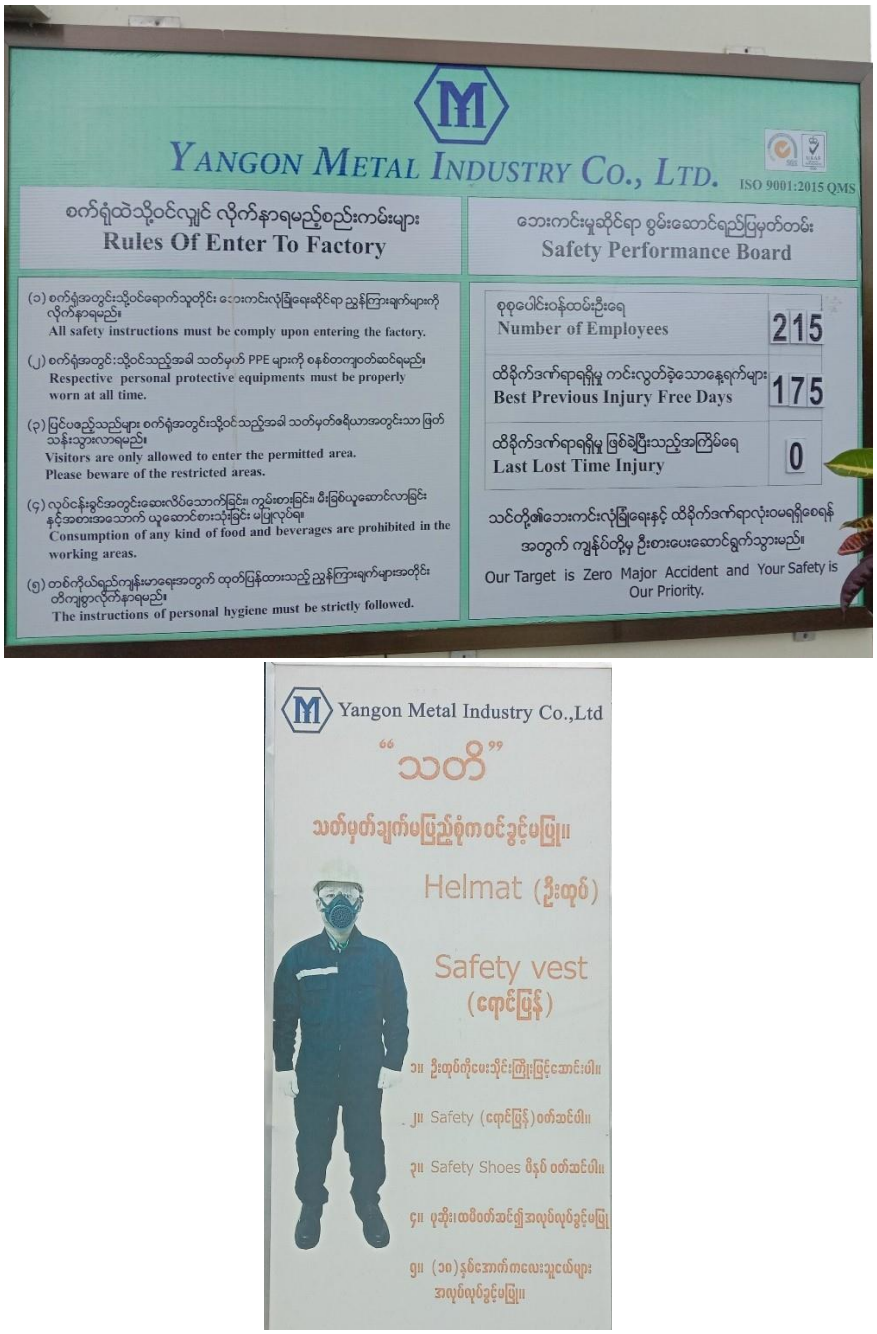


Figure 5.5.4-1: Occupation Safety Control Units

5.5.5 Mitigation Measures on Vehicle Parking Area

The YMI managed the parking area of workers for various types of vehicles and keep cleaning the parking area and covered with concrete floor and shady roof to avoid oil spill into the soil and hot conditions.

Figure 5.5.5-1: Parking Area for Bicycles and Motorbikes

5.5.6 Mitigation Measures on Biodiversity

The YMI keep maintain the green area inside and outside the factory compound. Nobody is allowed to pick up flowers and cut the trees without necessary.

Figure 5.5.6-1: Green Area inside and Outside the Factory Compound

5.6 Mitigation Measures on Transportation Scheme

The raw materials are used battery matters and sometimes it might be residues of acids and battery products inside. Also, the byproducts (soil particles) might be contaminated with metals and some Sulphur compounds. Therefore, when transporting in and out of raw materials and byproducts & products will be taken very carefully not to contact manually and to avoid the accidental releases that can affect to the occupational safety and health.

YMI used the transporting vehicles containing acid and battery proof container inside to avoid accidental spillage that can harm to workers and people along the transporting route as shown in Figure 5.6-1.

Figure 5.6-1: Transporting Vehicle Used at YMI

5.7 Emergency Response Plan

The following constitute the main objectives of the Emergency Response and Rescue Plan.

- Ensure employees are aware of their responsibilities in an emergency situation.
- Outline basic procedures to follow during safety related emergencies.

The activities will include:

1. Maintenance of Emergency Contacts

a) Key Management Team Members

b) External emergency service contacts such as the Fire Services Department of Hmawby, Township Police Department, company subscribed clinics and township hospitals, including contact numbers of the doctors in charge.

2) Update and post all Safety Notice Boards in various sections of the project area with:

a) Emergency Plans which will clearly indicate exit routes, location of first aid boxes, fire extinguishers and Assembly Points (that will be clearly marked and designated in the project areas).

b) Emergency Toolboxes/rescue equipment.

c) Company Ambulance contact numbers.

5.7.1 Fire Fighting Equipment

YMI will institute the following measures to enhance fire safety preparedness:

1) All offices will be fitted with smoke detectors to offer early warning to employees in case of fire. The workplaces will be provided with fire alarms which will be activated in case of fire.

2) Electrical substations and other critical installations will be equipped with specialized automatic fire protection and control systems to detect and trigger the fire extinguishing agent.

3) All working areas will be provided with suitable fire extinguishers which will be mounted in easily accessible locations.

4) At least a square meter of the area where a fire extinguisher has been mounted will be kept clear.

5) Fire Extinguisher locations will be posted with ''Fire Extinguisher'' signs and will be mounted at eye level.

6) In addition to fire extinguishers, there will be designated points for connecting fire hoses around the project site. These points will be regularly serviced as per fire regulatory requirements.

5.8 Health Impact Assessment

For the health sector, the survey conducts the most frequent disease, the significant figures of diseases occurred within 5-10 years, and the birth and mortality of their households and the employees. All of the respondents say that there is no incident about these in their households and workplaces. There is no official record for health impacts within the project area based on the desktop survey. Therefore, the health survey team conducted health impacts on community and occupational health conditions including the lead contaminated health impacts in the area using the health survey questionnaires and personal examination with a registered medical doctor.

5.8.1 Community Health Survey

A medical doctor (Dr. Chan Myae Thu with general medical license number:48517) joined the community health survey on the same date of the socioeconomic survey. Health survey questionaire was prepared by the health consultant and attached in Annex-5, survey form for Covid 19 infectious disease in Annex 5-1 and questionnaire for Key Informant Interview in Annex 5-2.

Title	Kan Ka Lay Village	Kular Kone village tract	Myaung Ta Kar village tract	Remarks
Clinic/Medical service	-	Private clinic (1unit)	- Private clinic (4 units) - Rural Healthcare centre (1)	
Community Help/Charity	-	Yes (2 units)	Fire service (1 unit) Charity (2 units)	-Mu Di Tar, -Thu Kha Kar Yi (Youth Charity Team) -Arr Yu Charity Team
Disability	1	8	37	

Chronic patient	-	2	-	
Toilet Facility	Flood toilet with pit	Flood toilet with pit	Flood toilet without pit	
Waste disposal	Collect and burning/ Designated area by civil administrative	Collect and burning/ Designated area by civil administrative	Collect and burning	
illness	Common cold	Common cold	Common cold/Flu	
Mostly visit to healthcare facility	Government hospital with regional healthcare	Private clinic with doctors	Private clinic with doctors	
Noise concern from industrial zone	No	Yes	No	Day and night time (assuming from the iron industry in industrial zone)
Any concern on health problem	No	Lungs/impact on respiration/dust particles	No	

Figure 5.8.1-1: Photographic Records of Staff Health Survey in YMI Factory Clinic

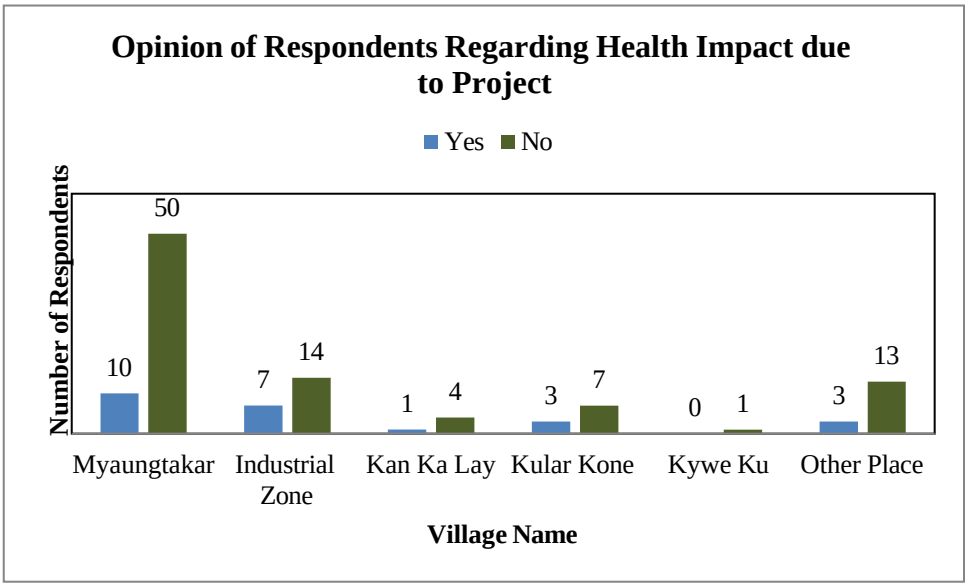
Figure 55.8.1-2: Photographic Records of Community Health Survey at the Affected Villages

During the community health survey, the basic health condition of the respondents was examined by the doctor and the historical health issue was investigated by using health survey questionnaire.

Commonly, the villages suffered some basic illness such as common cold and seasonal flu. Based on the investigation results, especially, almost all the respondents from Kan Ka Lay village are facing the health problems such as high blood pressure and stroke. It might be because of their eating habits based on their responses during the survey. Because most of the village people are Kayin and they used to eat porks in various ways and less habit to eat vegetables.

5.8.2 Community Health Concerns Due to Lead Production Process

According to community health survey results including the YMI staffs' responses, about 20 % of the respondents from Myaung Ta Kar village, Industrial zone, Kan Ka Lay village and the migrate workers have some concerns about the project activity of lead production process.



5.8.3 Investigation Results of Community Health Survey

The EKTA health consultant examined and investigated the responses of the respondents in relation with the possible health damage due to lead toxicity. Over 90 % of the respondents including the YMI employees gave the positive feedbacks on health problems in the meanwhile. There was no bad comment and/or feedback of negative health impact related with lead leakage or toxicity although about 20 % of the respondents think the negative impact on health due to project operation. When examined by questionnaire survey on community health condition, very few people said they have some symptoms but those are related to the previous scenario of the respondents before the project operation.

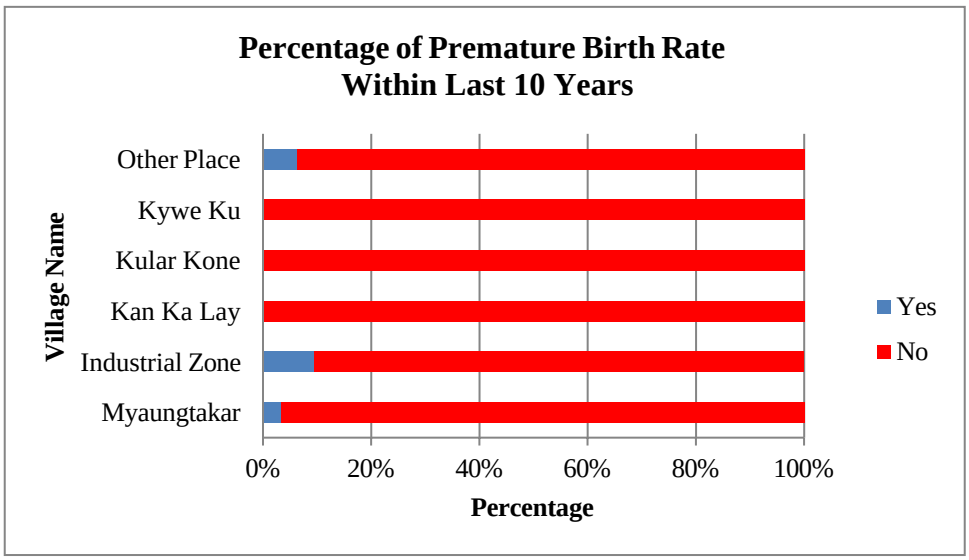
According to the survey result, the project region is commonly free of communicable infectious diseases except for some common cold and seasonal flu. There was no recent history of disease outbreaks scenario in the project region.

5.8.4 Investigation Results on Lead Contamination Characteristics

Lead contamination characteristics are briefly comprised of the following conditions. Mostly the respondents are currently working in the YMI operation process.

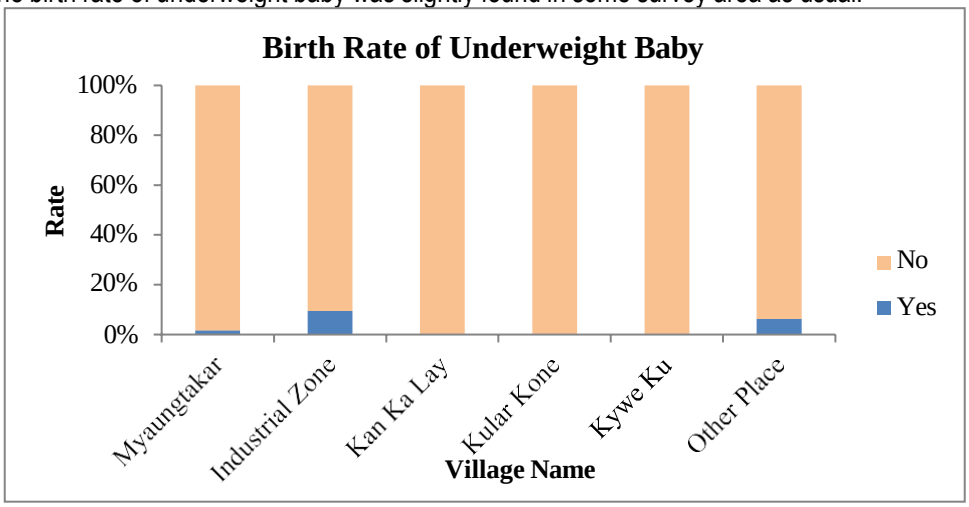
(1) Percentage of Premature Birth Rate Within Last 10 Years

In the project area, the birth rate (%) doesn't change much in all survey area, about 0-5 %.



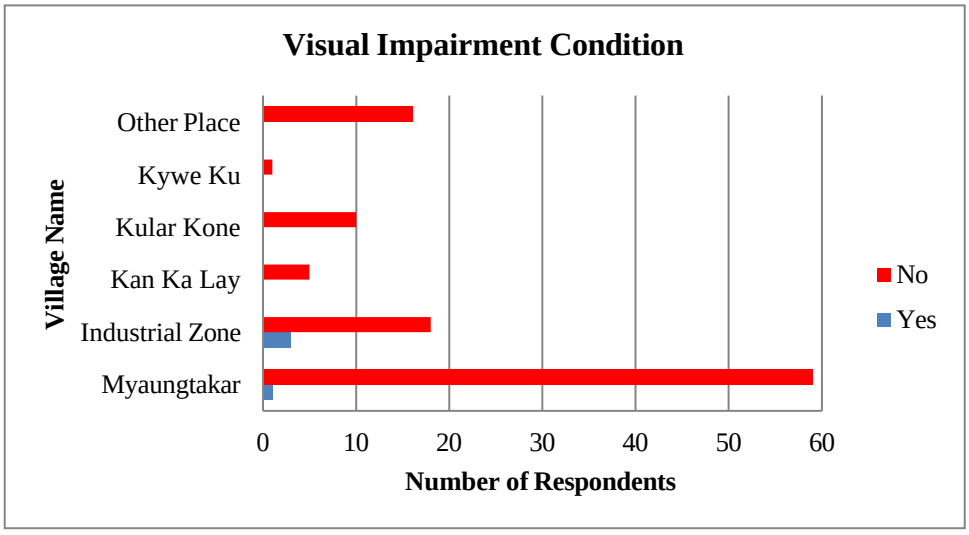
(2) Birth Rate of Underweight Baby

Also, the birth rate of underweight baby was slightly found in some survey area as usual.



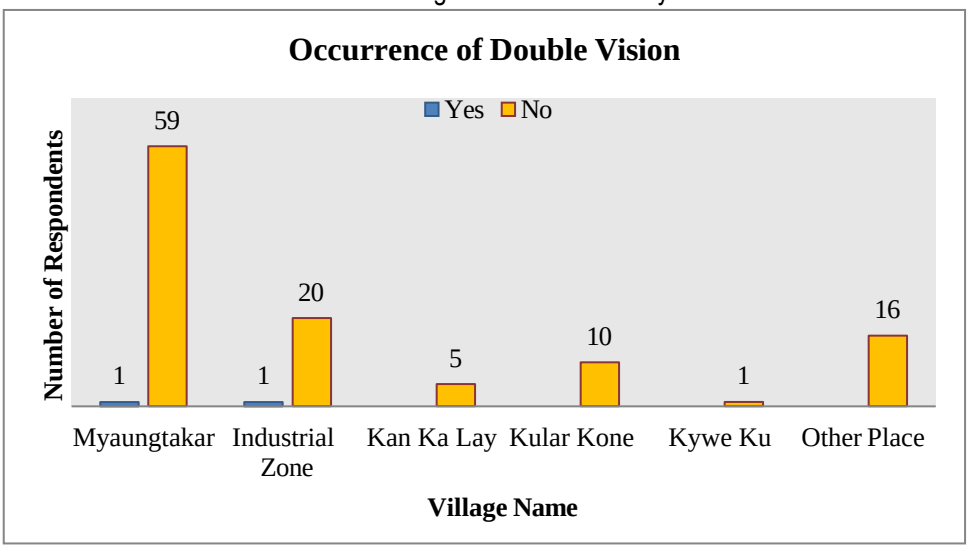
(3) Visual Impairment Condition

Visual impairment condition within the survey area was very low due to previously suffered.



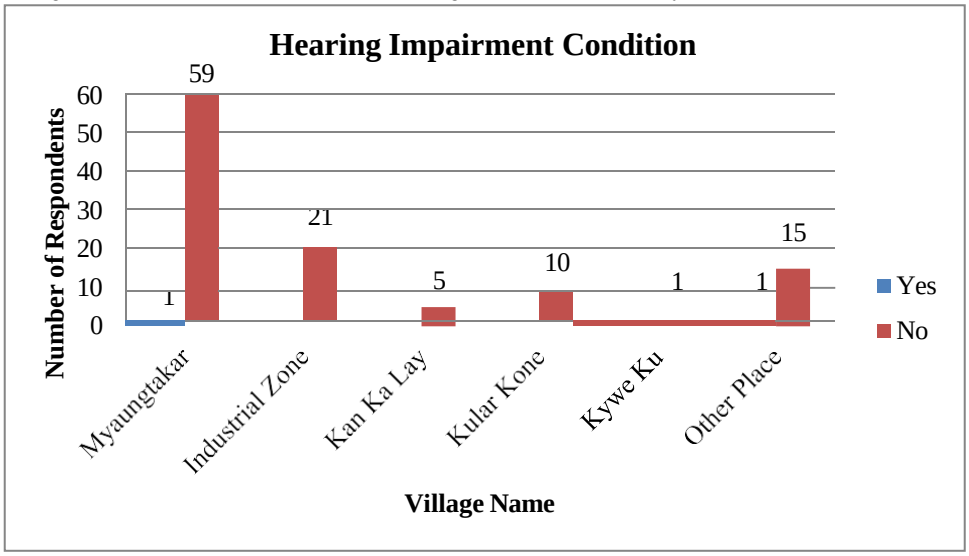
(4) Occurrence of Double Vision

Occurrence of double vision was almost negative in all the survey area.



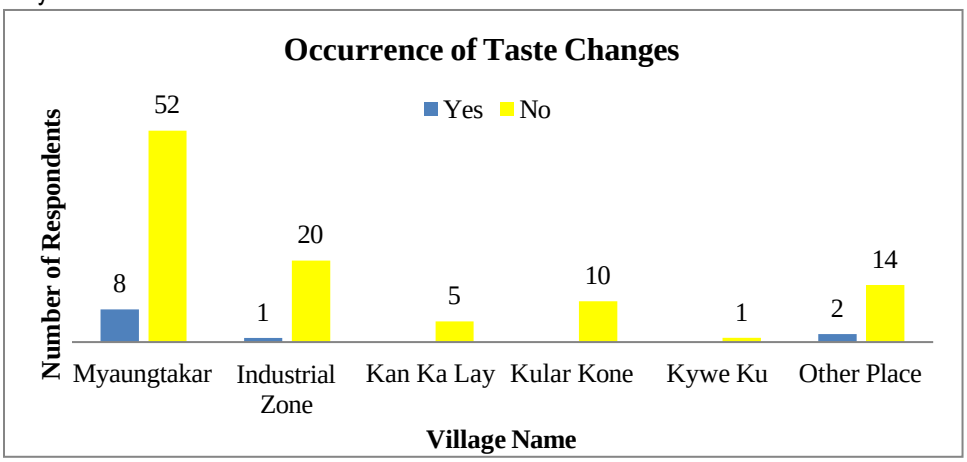
(5) Hearing Impairment Condition

Hearing impairment condition was almost negative in all the survey area.



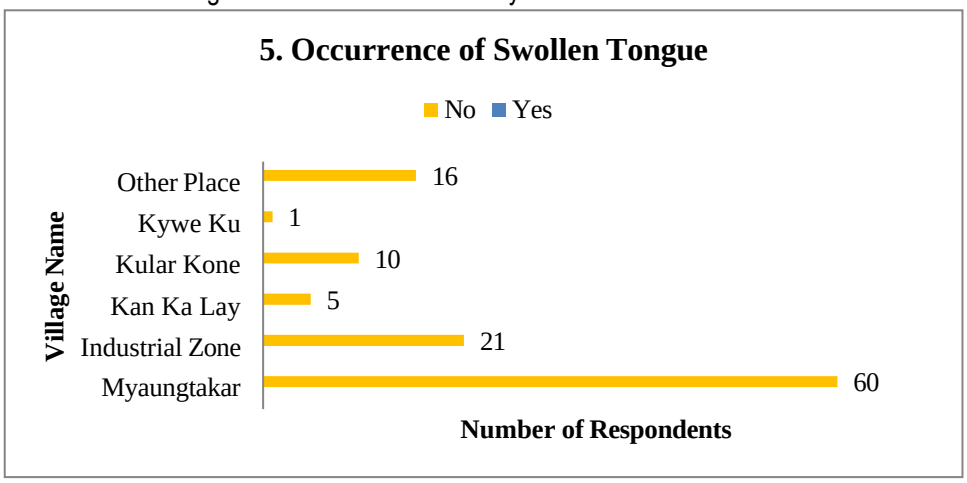
(6) Occurrence of Taste Changes

Occurrence of taste changes was slightly present in massive in the survey area, but the percentage is very low and cannot be concluded due to lead contamination.



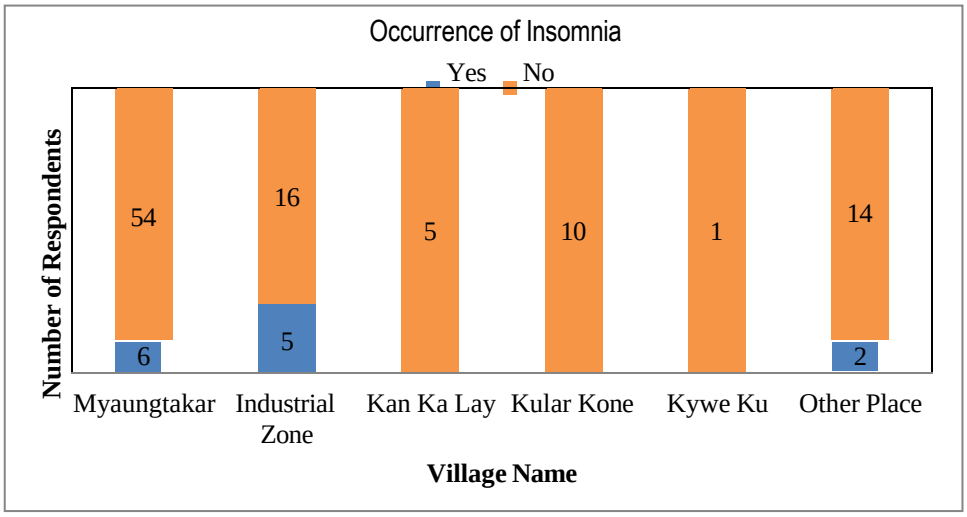
(7) Occurrence of Swollen Tongue

Occurrence of swollen tongue is absent in all the survey area.



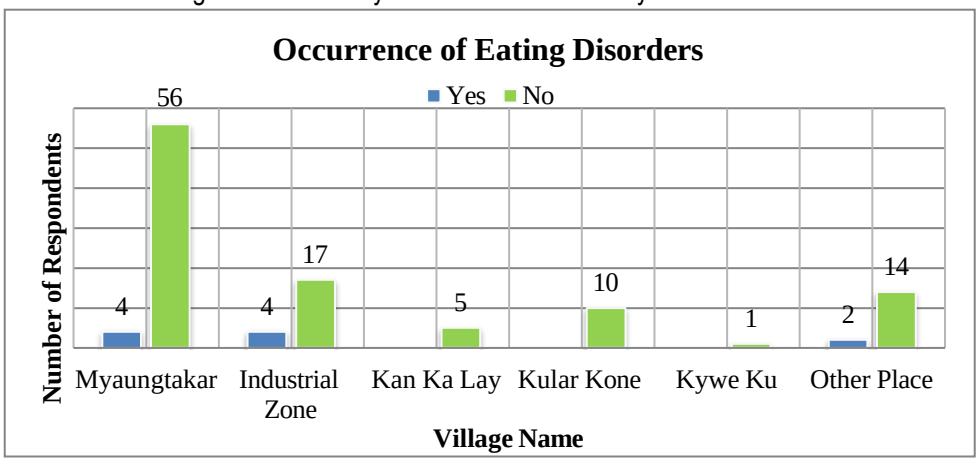
(8) Occurrence of Insomnia

Some might have the occurrence of insomnia using the mobile internet and the amount is only 12 % of the total respondents.



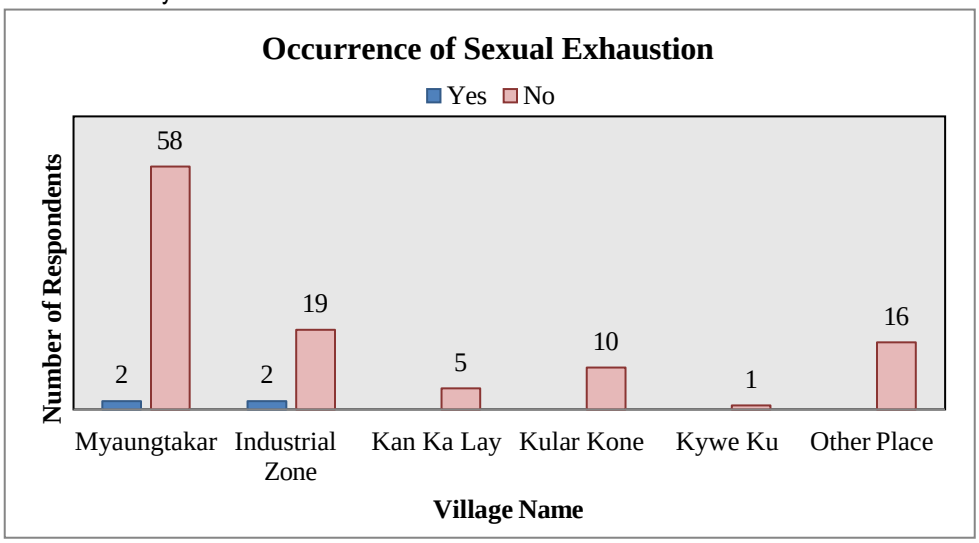
(9) Occurrence of Eating Disorders

Occurrence of eating disorders is only below 10% for all survey area.



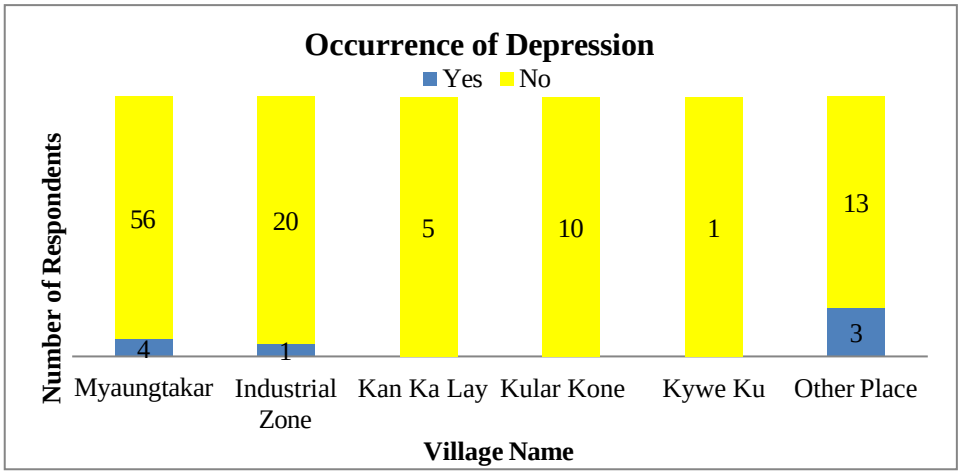
(10) Occurrence of Sexual Exhaustion

Occurrence of sexual exhaustion was slightly low in Myaung Ta Kar village and industrial zone and totally absent in other survey area.



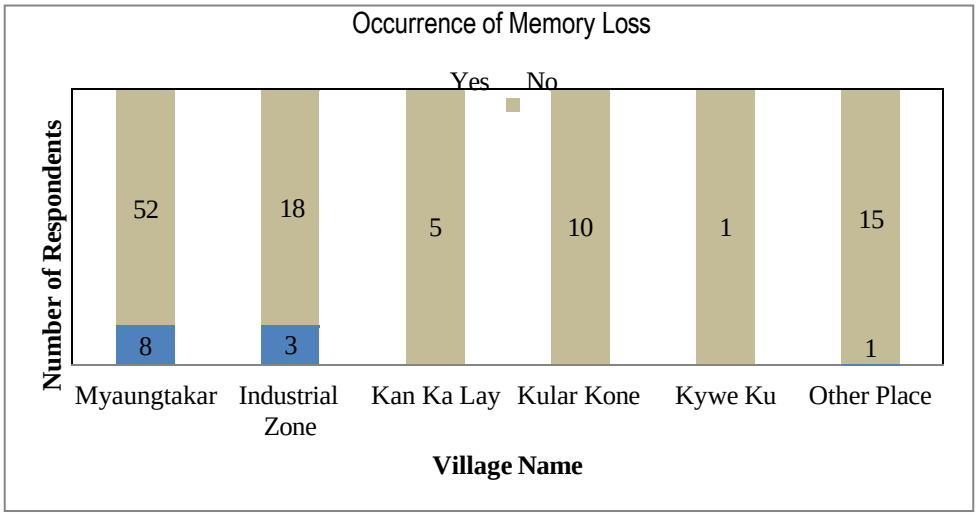
(11) Occurrence of Depression

Some respondents may have the depression about lead contamination because it was the feedback from industrial workers.



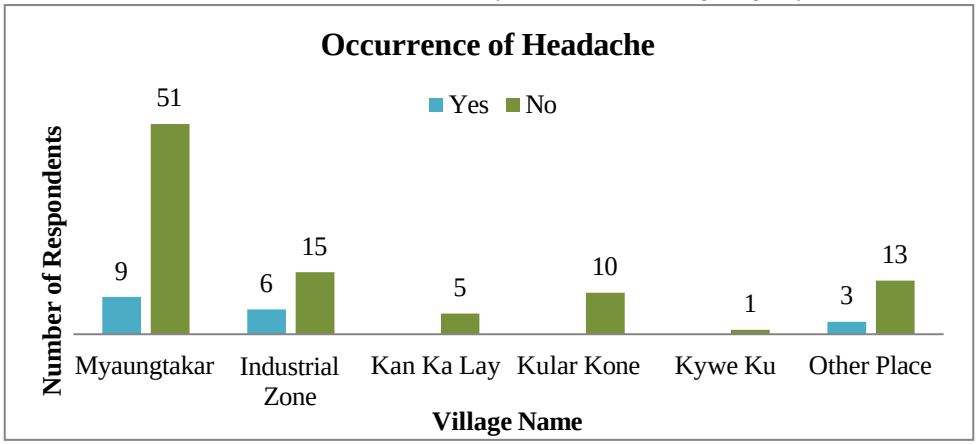
(12) Occurrence of Memory Loss

Occurrence of memory loss is about by the respondent's age and it is also slightly low percent in all the survey area.



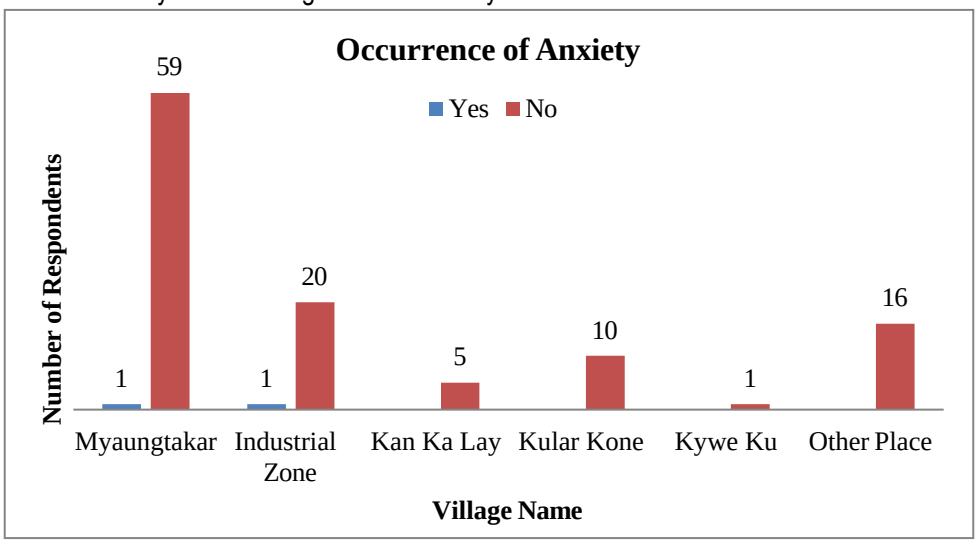
(13) Occurrence of Headache

Occurrence of headache is over 10 % in all the survey area while working long days.



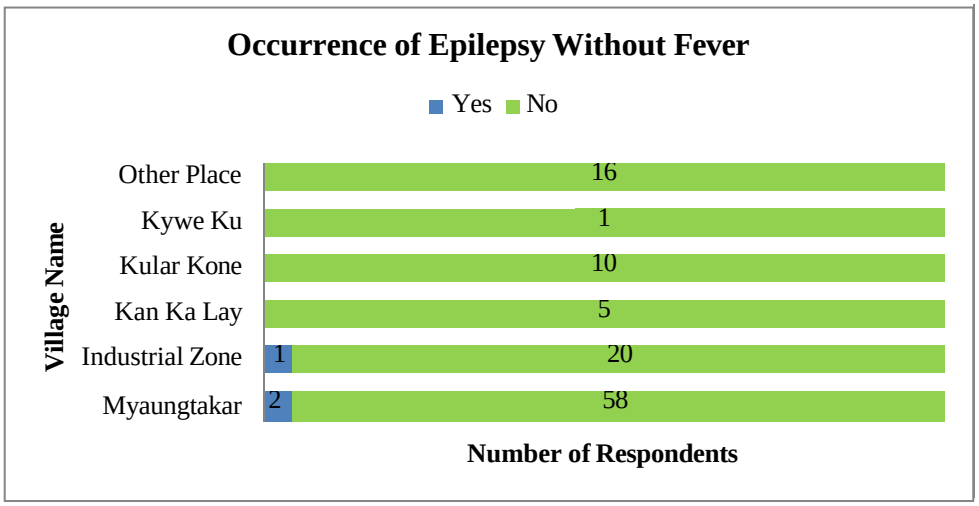
(14) Occurrence of Anxiety

Occurrence of anxiety is almost negative in all survey area.



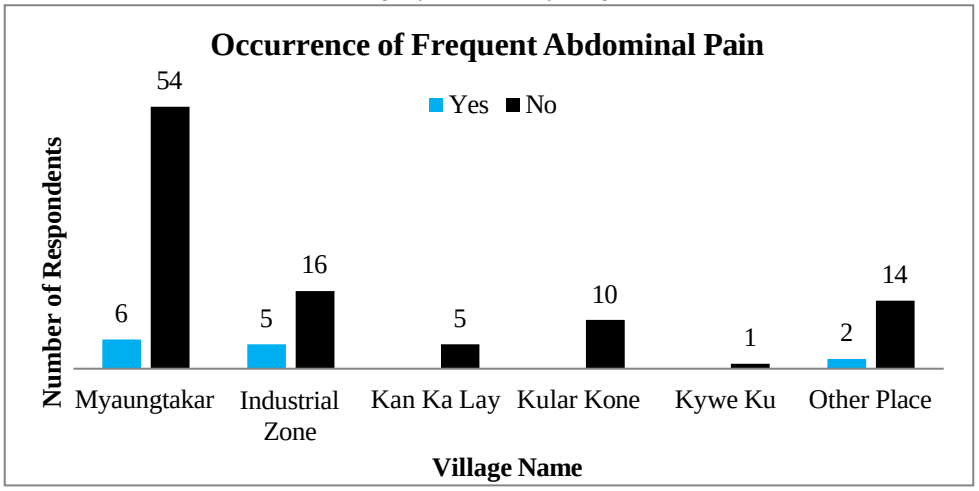
(15) Occurrence of Epilepsy without Fever

Occurrence of Epilepsy without fever was slightly present in Myaung Ta Kar and Industrial zone.



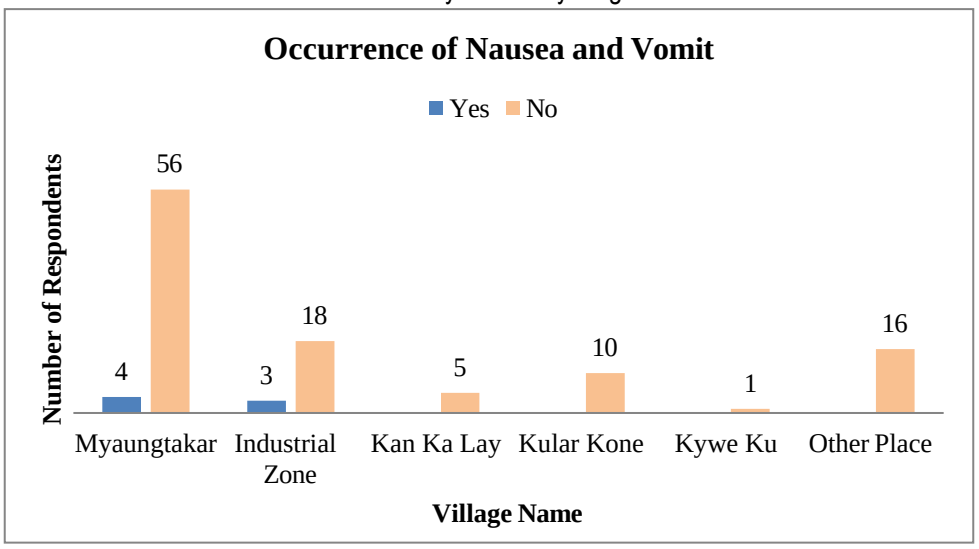
(16) Occurrence of Frequent Abdominal Pain

Occurrence of frequent abdominal pain slightly found in Myaung Ta Kar, Industrial zone and other place.



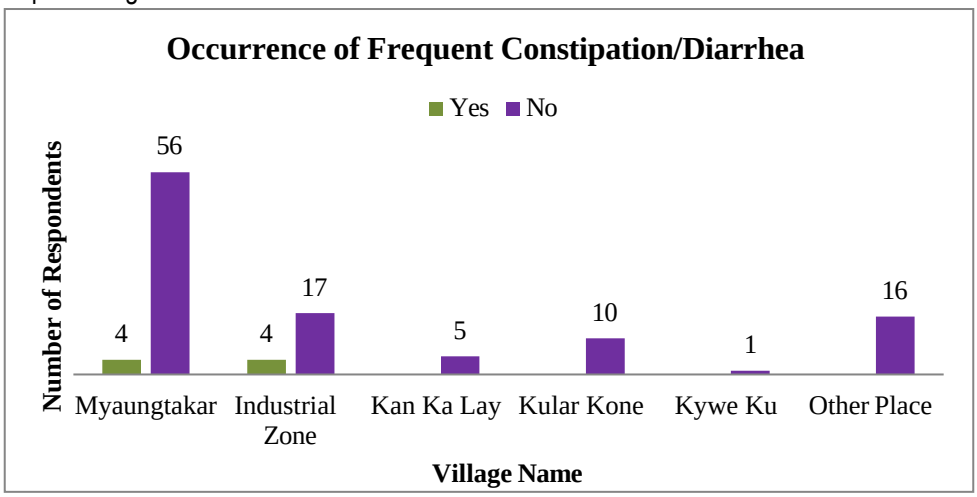
(17) Occurrence of Nausea and Vomit

Occurrence of Nausea and Vomit was found very little in Myaung Ta Kar and Industrial zone.



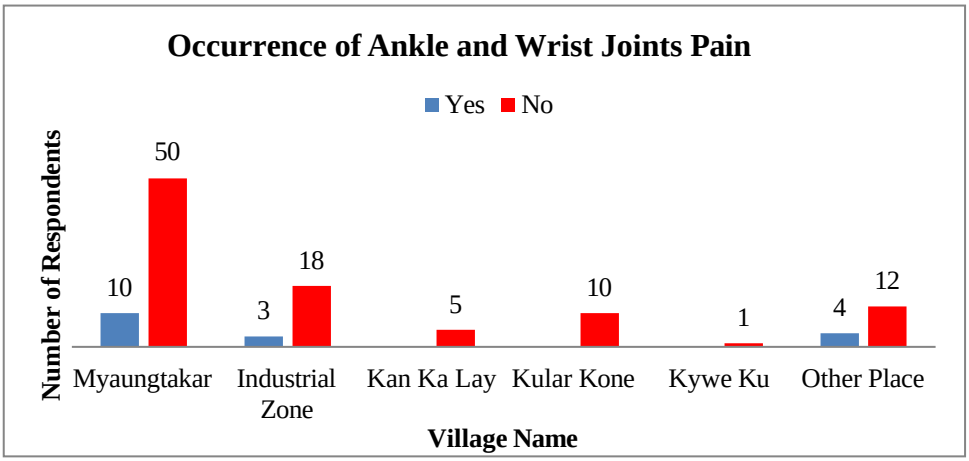
(18) Occurrence of Frequent Constipation/Diarrhea

Occurrence of Frequent Constipation/Diarrhea was also found in Myaung Ta Kar and industrial zone, but very low percentage.



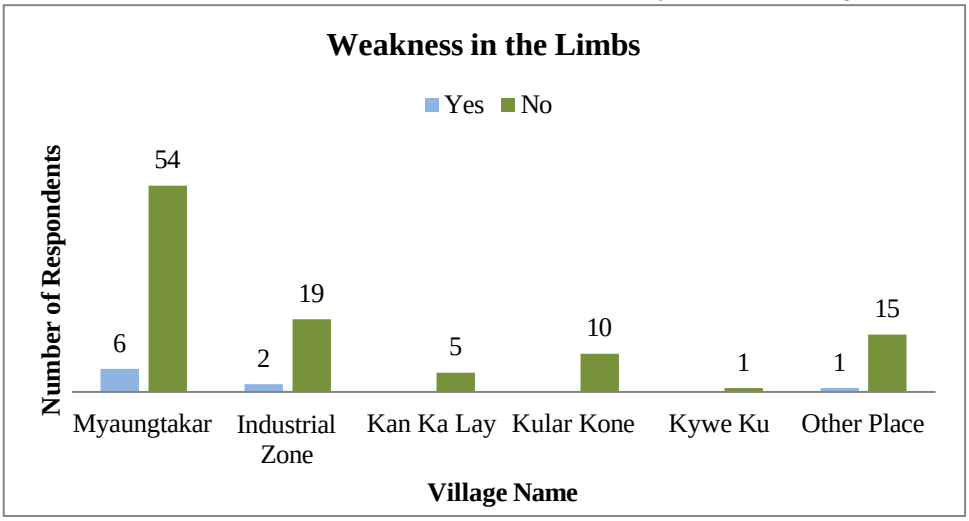
(19) Occurrence of Ankle and Wrist Joints Pain

Occurrence of Ankle and Wrist Joints Pain was also found above 10 % of the respondents, mostly the industrial workers.



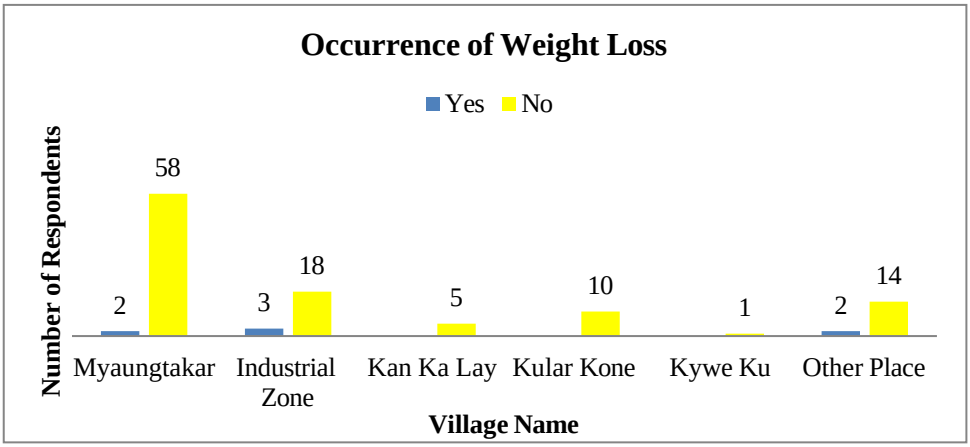
(20) Weakness in the Limbs

Weakness in the Limbs was also found in industrial workers, with very little in percentage.



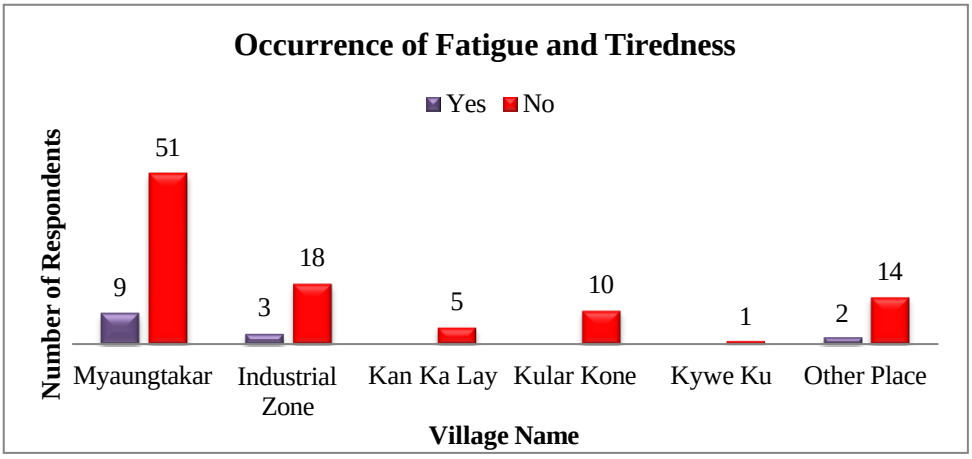
(21) Occurrence of Weight Loss

Occurrence of Weight Loss was also found in industrial workers, with very little in percentage.



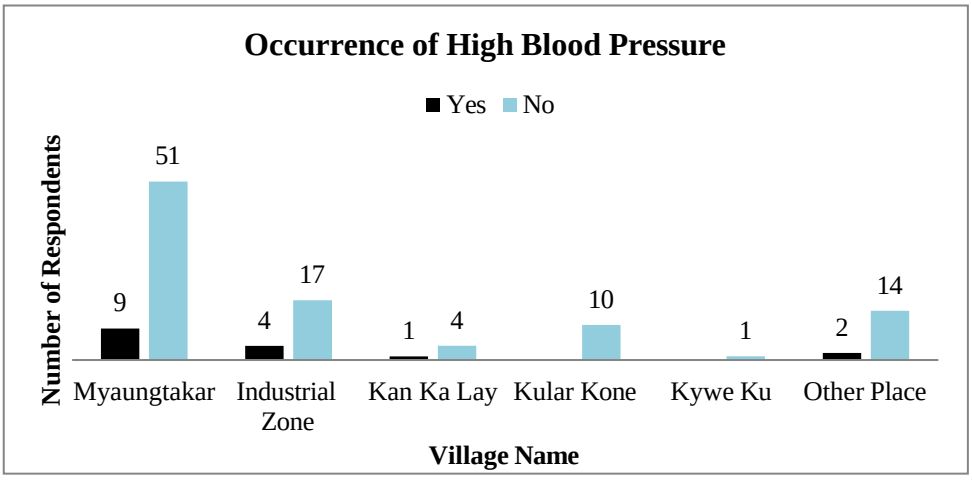
(22) Occurrence of Fatigue and Tiredness

Occurrence of Fatigue and Tiredness was also found in industrial workers, with very little in percentage.



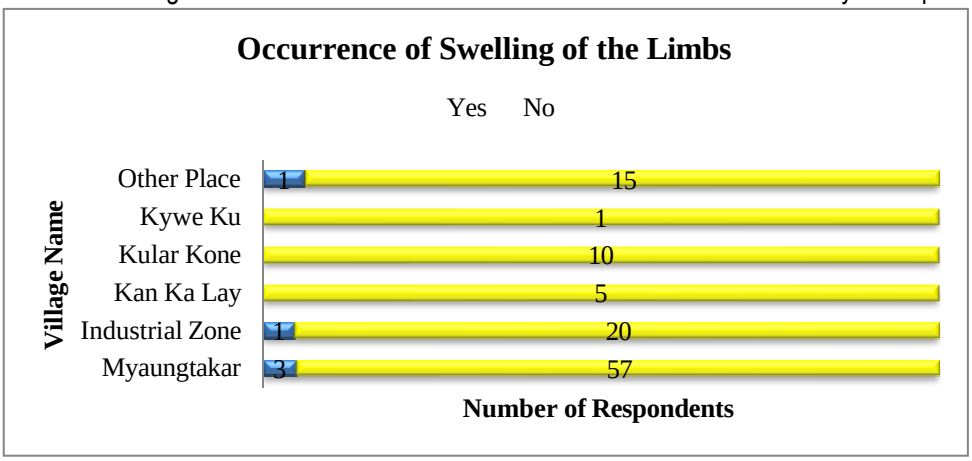
(23) Occurrence of High Blood Pressure

Occurrence of High Blood Pressure was also found nearly in all survey area but with little amount.



(24) Occurrence of Swelling of the Limbs

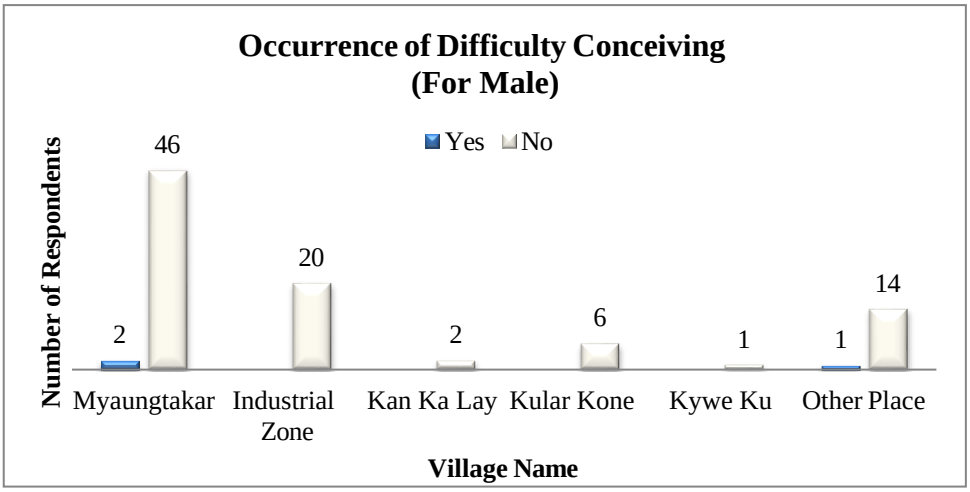
Occurrence of Swelling of the Limbs was found in some industrial workers but with very small percentage.



5.8.5 Occupational Health Impact Surveys on Reproductive Characteristics and Child Development

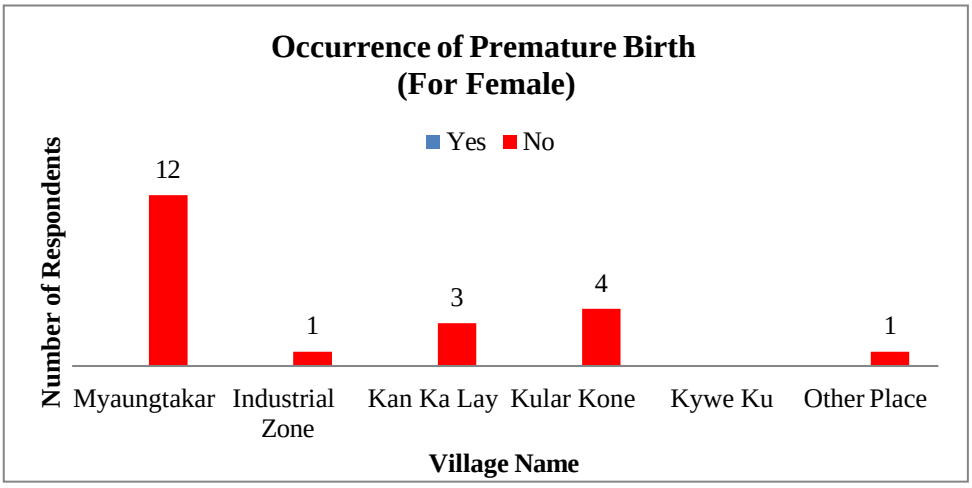
(25) Occurrence of Difficulty Conceiving

Occurrence of Difficulty Conceiving was found in some male workers and this question is intended only for the male respondents.



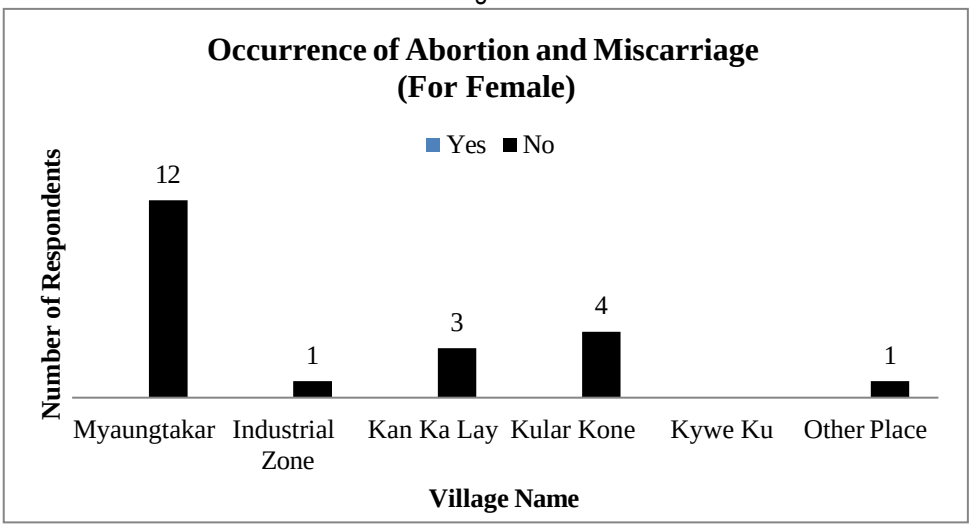
(26) Occurrence of Premature Birth

Occurrence of premature birth is absent in female workers and this question is intended to female workers only.



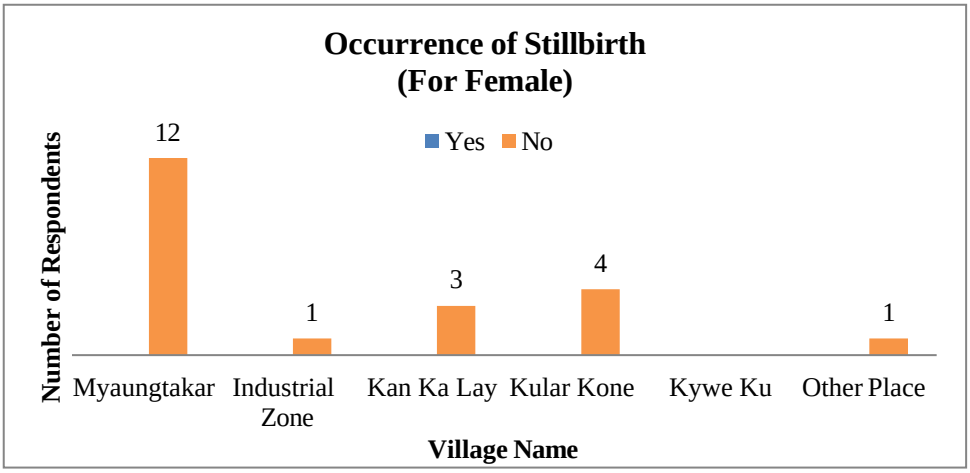
(27) Occurrence of Abortion and Miscarriage

There was no occurrence of Abortion and Miscarriage in female workers.



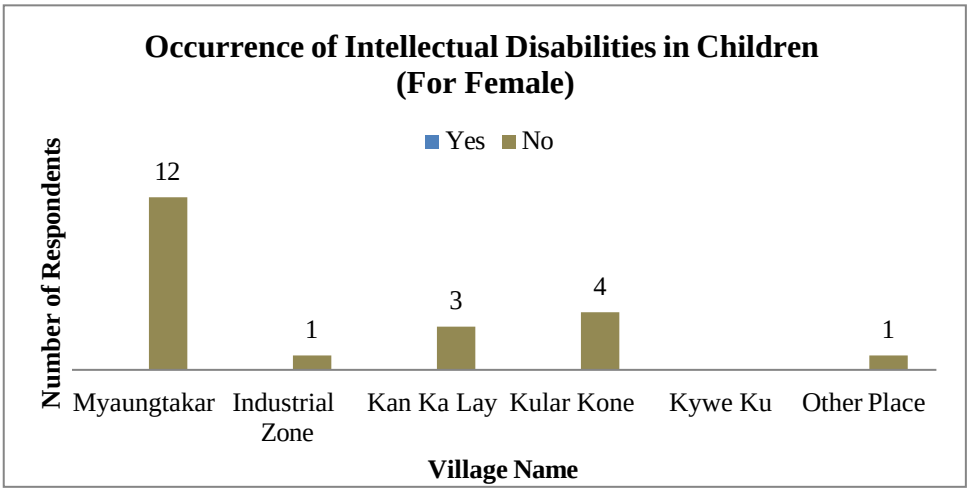
(28) Occurrence of Stillbirth

There was no occurrence of stillbirth in female workers.



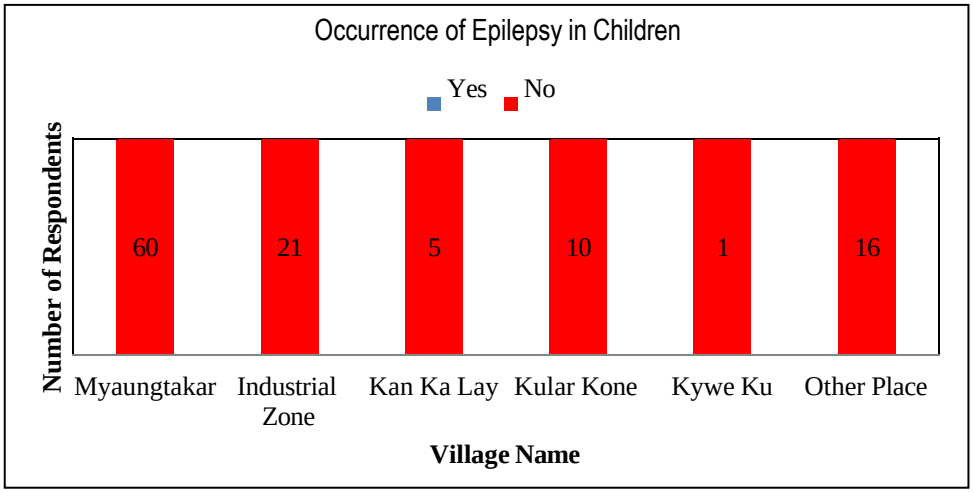
(29) Occurrence of Intellectual Disabilities in Children

There was no occurrence of disabilities in children for female workers.



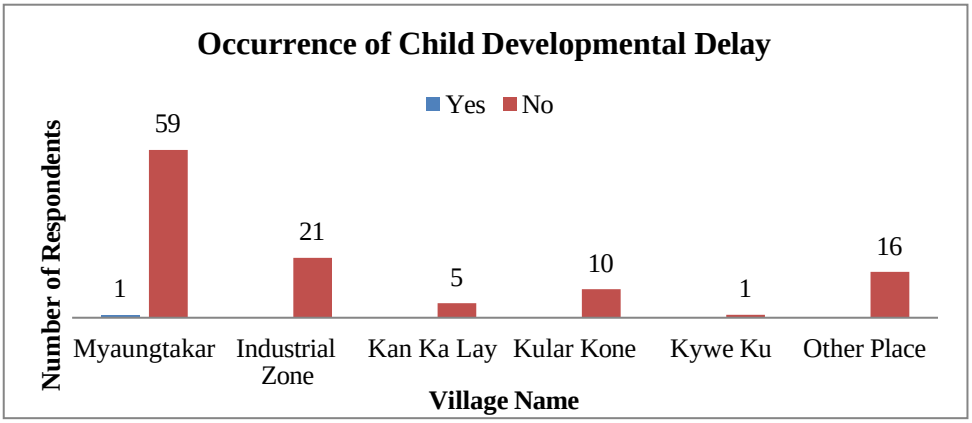
(30) Occurrence of Epilepsy in Children

There was absent of occurrence of Epilepsy in Children in all industrial workers.



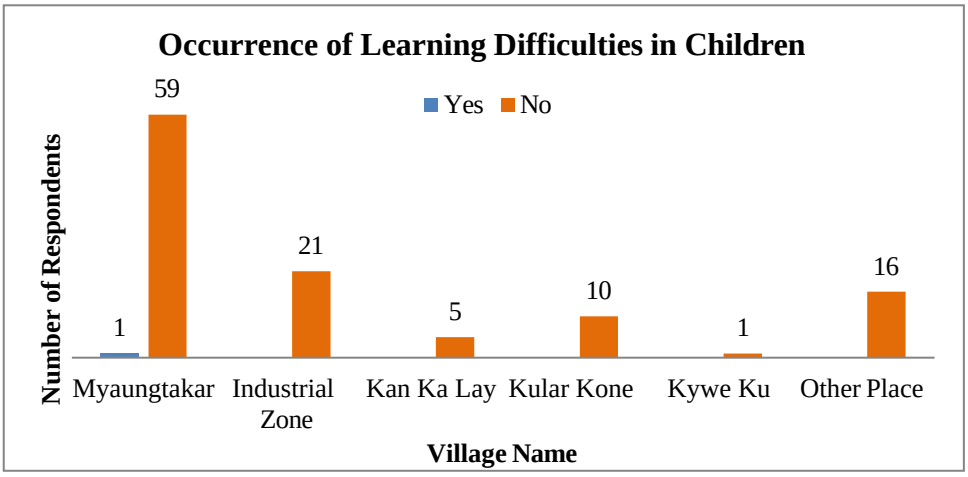
(31) Occurrence of Child Development Delay

There was almost absent of occurrence of Epilepsy in Children in all industrial workers.



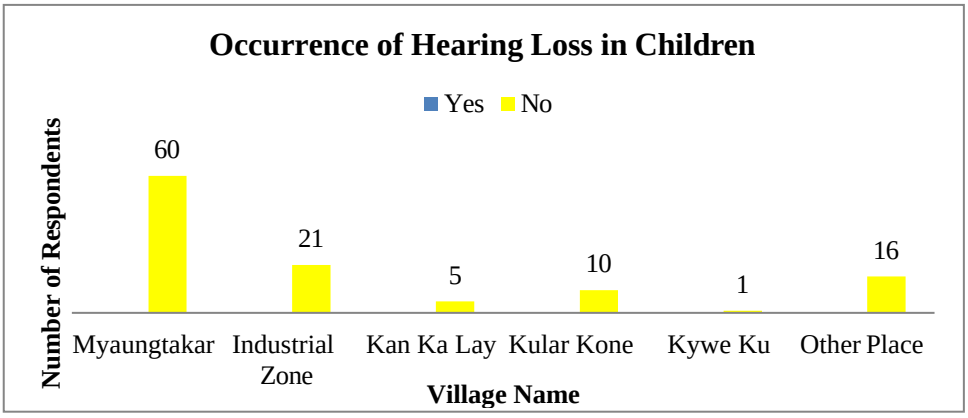
(32) Occurrence of Difficulty in Learning of Children

There was absent in occurrence of difficulties in learning ability of children.



(33) Occurrence of Hearing Loss in Children

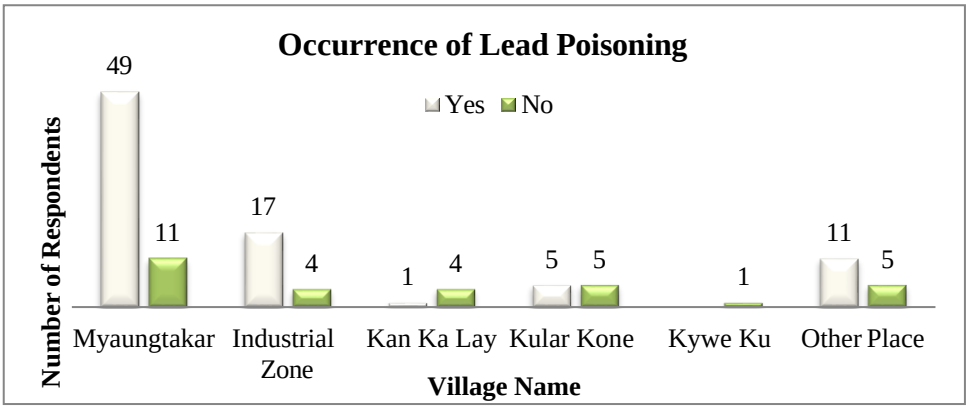
There was totally absent in occurrence of hearing loss in children in all survey area.



5.8.6 Health Assessment on Lead Poisoning Characteristics

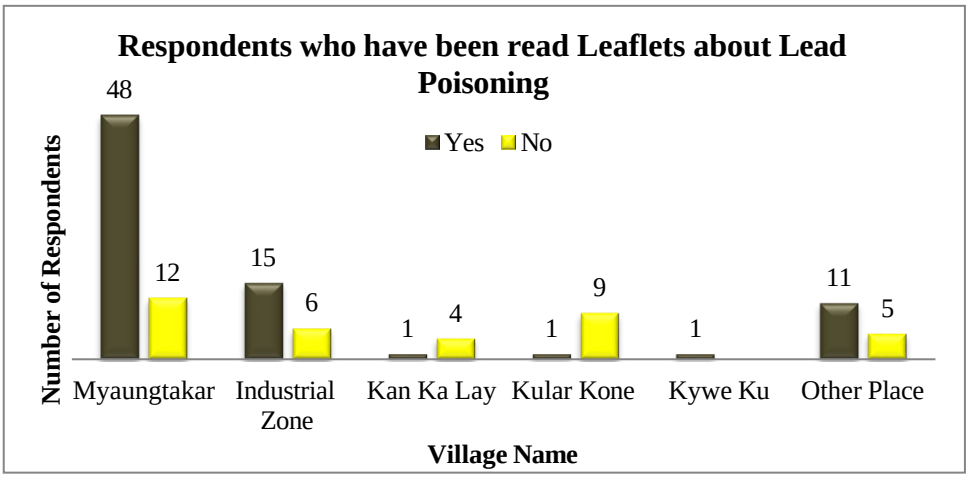
(34) Occurrence of Lead Poisoning

Occurrence of lead poisoning characteristics are found in all survey area except for Kywe Ku. The peak was found in the respondents from Myaung Ta Kar village, almost all the respondents are industrial workers.



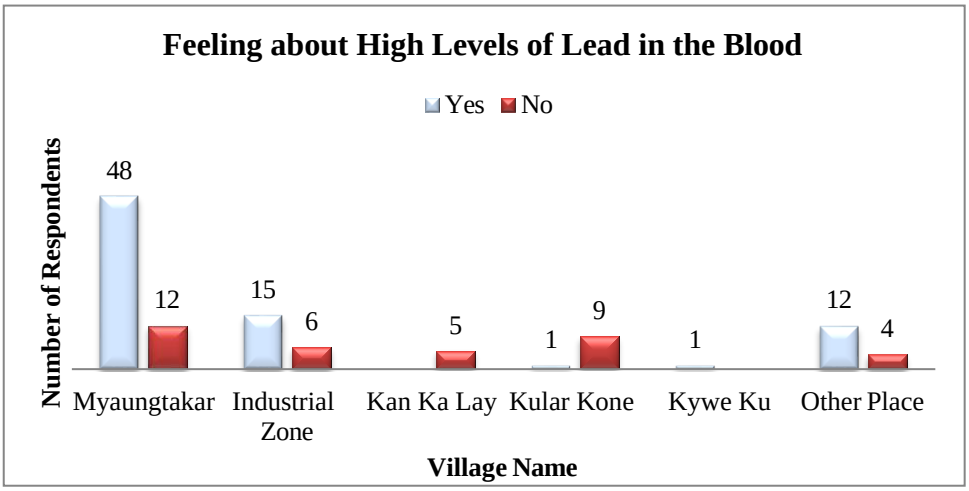
(35) Leaflets about Lead Poisoning

Leaflets about lead poisoning in some industrial workers are read, with above 50 %.



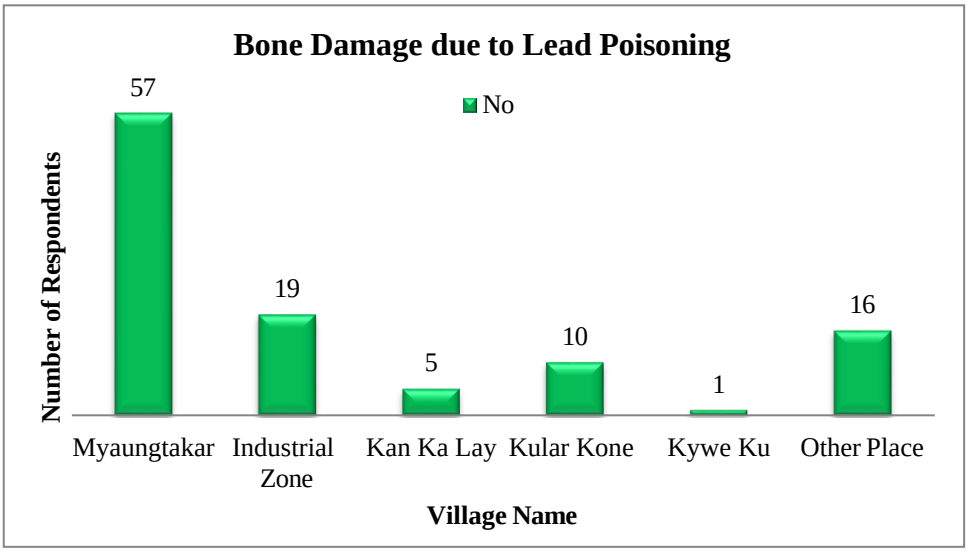
(36) Feeling about High Levels of Lead in the Blood

Most of respondents feel that they are positive of lead in their blood. But Kan Ka Lay and Kular Kone has no positive.



(37) Bone Damage due to Lead Poisoning

There was no bone damage due to lead poisoning in all survey area.

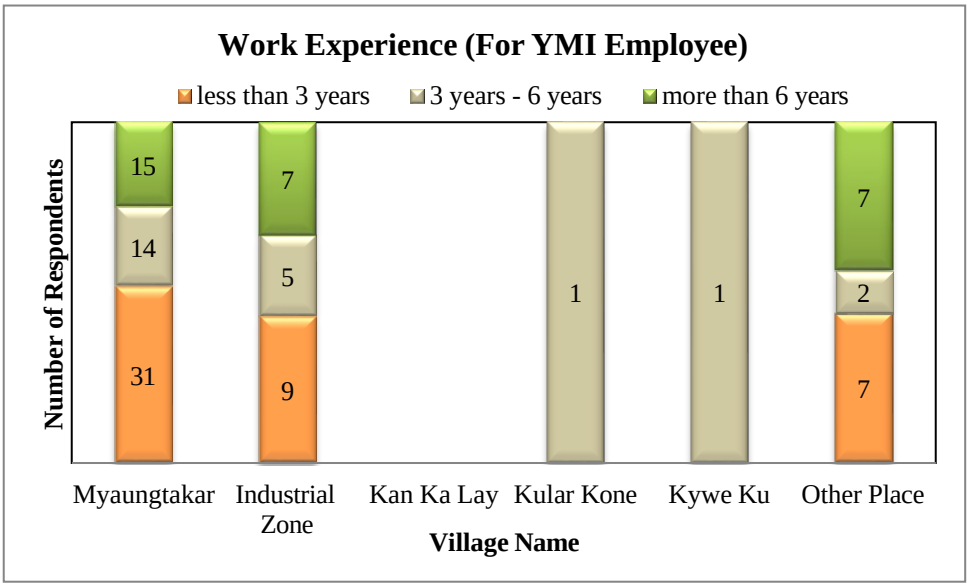


5.8.7 Occupational Health Survey Results

Special questions are also prepared by the health consultant for the respondents who are working in the YMI factory for lead production process.

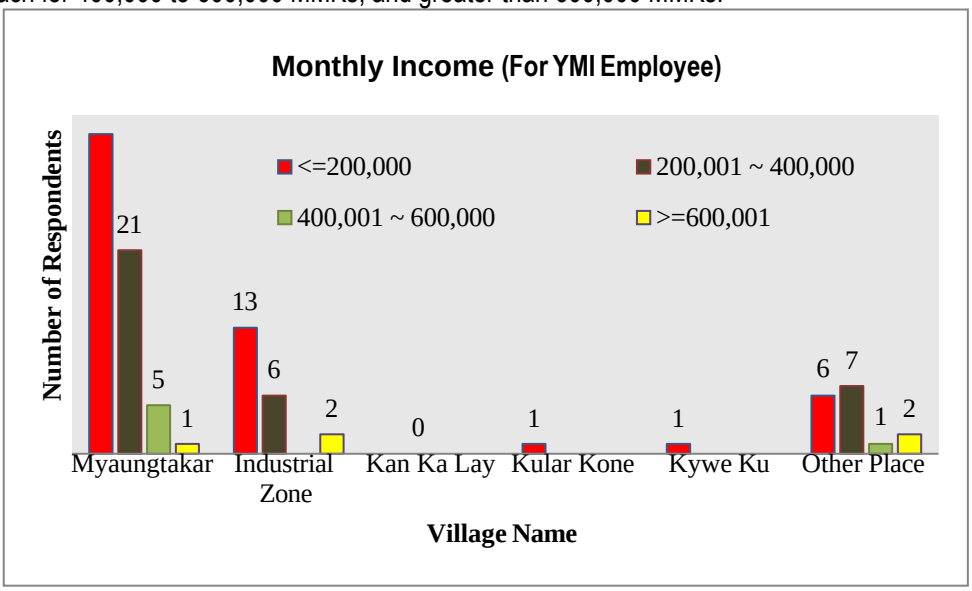
(1) Work Experience

The workers from nearby villages, such as Myaung Ta Kar, Kular Kone, Kywe Ku, Kan Ka Lay, Industrial zone and other area from Ayeyarwaddy and Mandalay region are currently working in YMI factory. About half of the respondents have the working experience of less than 3 years, about 20 % are less than 6 years, and more than 6 years stand at 30 %.



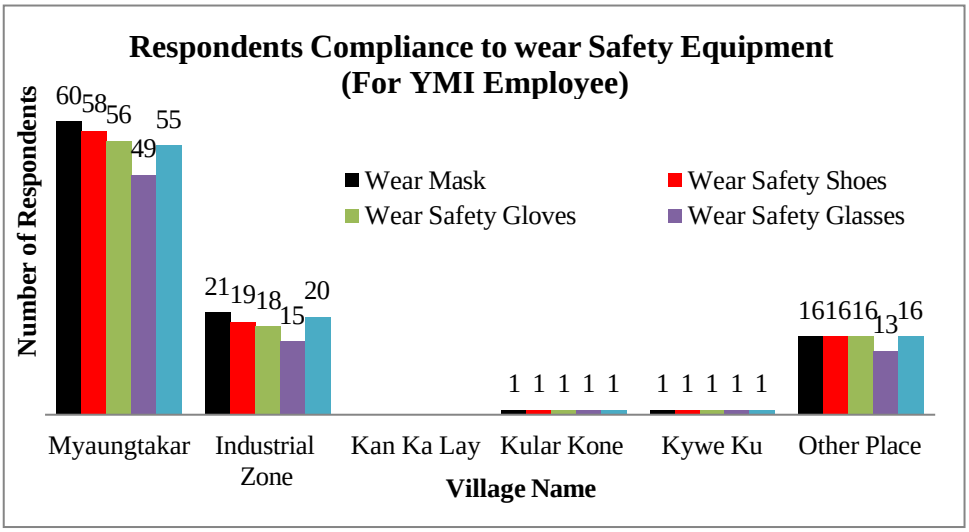
(2) Monthly Income

The monthly income for the workers is within the rate of less than 200,000 to greater than 600,000 in MMKs. About 55 % of the respondents got the salary of less than 200,000 MMKs, 35 % for 200,000 to 400,000 MMKs, only 5 % each for 400,000 to 600,000 MMKs, and greater than 600,000 MMKs.



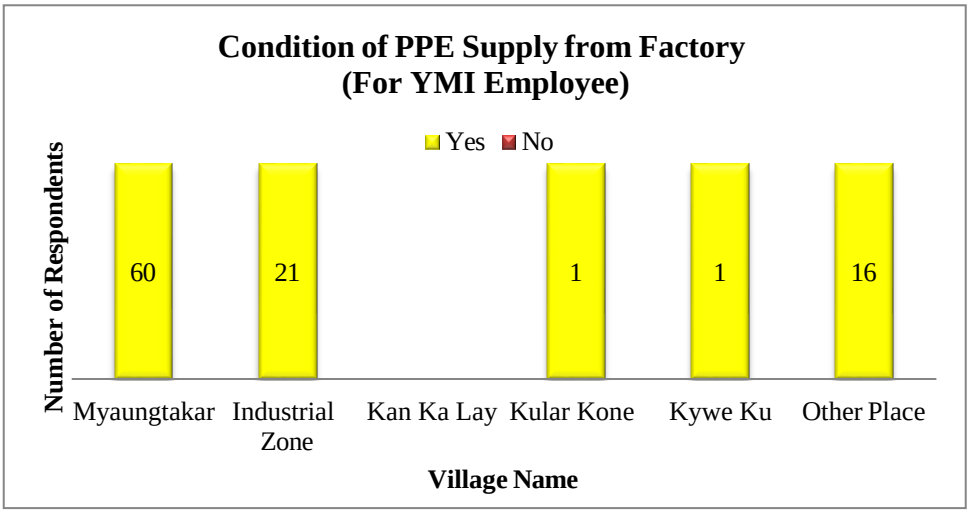
(3) Respondents who Compliance to wear Safety Equipment at Workplace

Compliance to wear safety equipment of the workers was also assessed. The safety equipment includes mask, safety shoes, safety gloves and safety glasses. Some workers from Myaung Ta Kar village and Industrial zone are less compliance compared to other survey area.



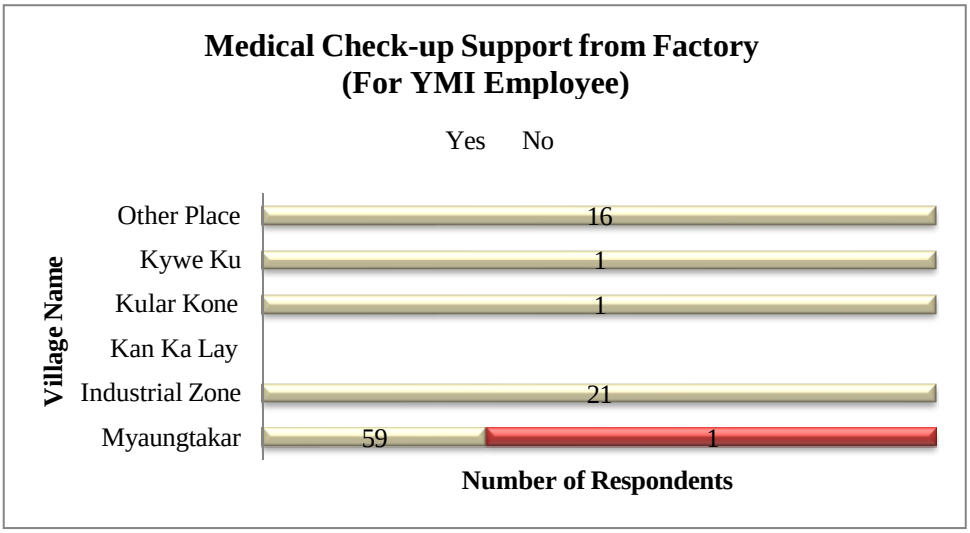
(4) Condition of PPE Supply from Factory

When assessing PPE supply from factory, all the workers gave feedbacks 100 % of compliance by the factory.



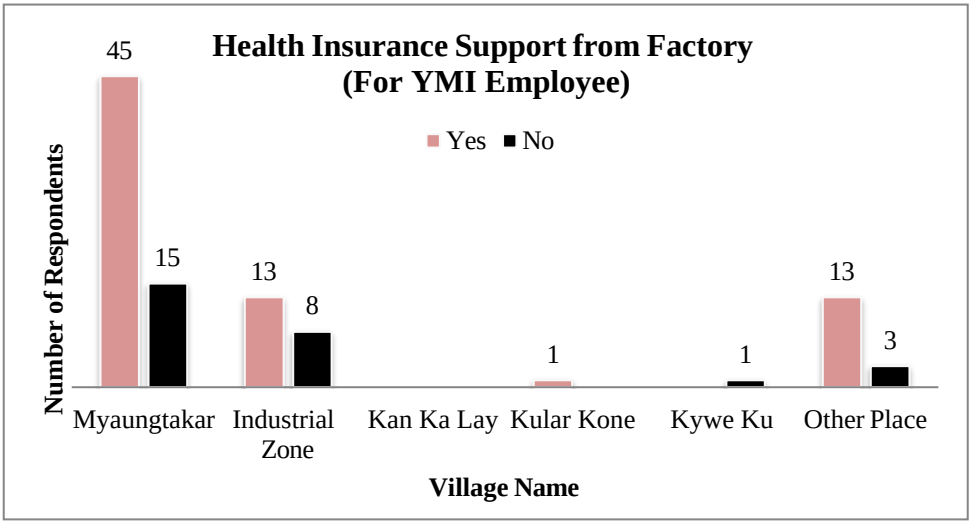
(5) Medical Check-up Support from Factory

Medical check up support from factory was also 100 % compliance except for a new worker, who is still under processing for medical checkup.



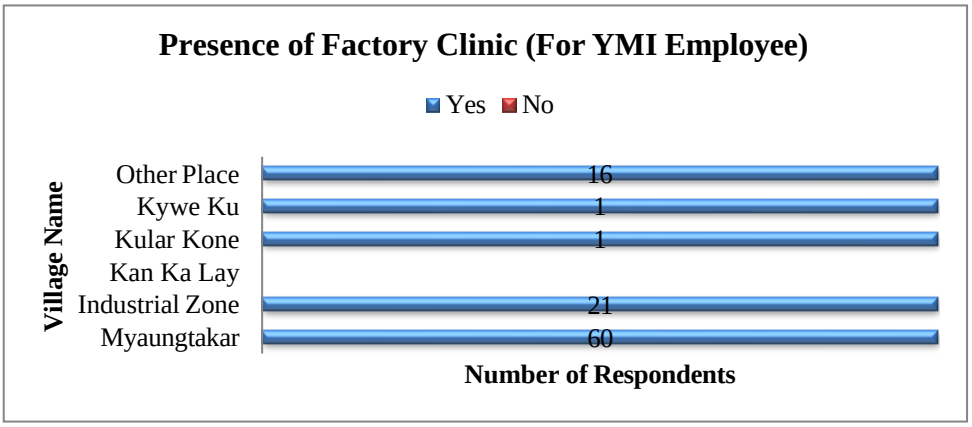
(6) Health Insurance Support from Factory

Almost 75 % of workers gave feedback they got the health insurance support from factory, where 25 % are not.



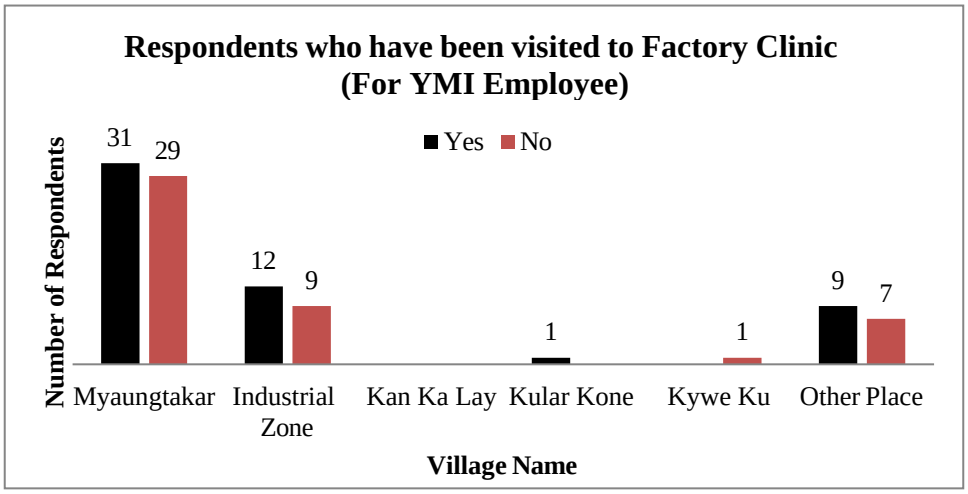
(7) Presence of Factory Clinic

The factory supported the onsite factory clinic for its workers for medical care.



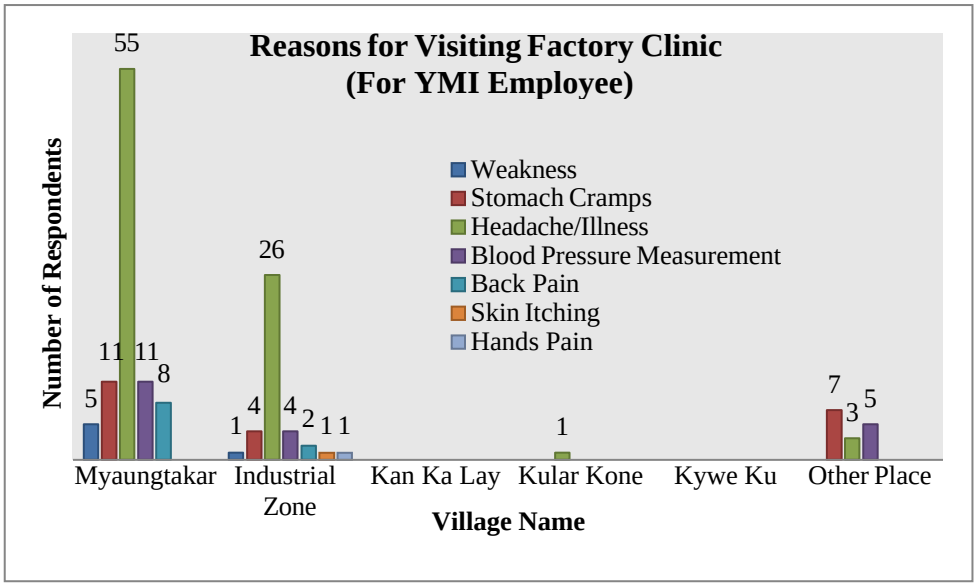
(8) Respondents who have been visited to Factory Clinic

About 55 % of workers have been visited to the factory clinic for health care and assessment.



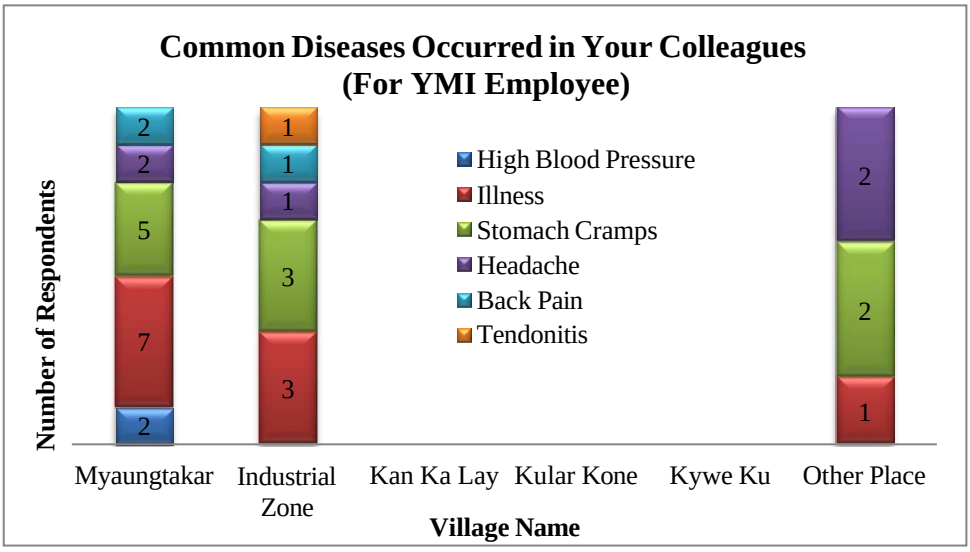
(9) Reasons for visiting Factory Clinic

The reasons for visiting the factory clinic are for various purposes, such as weakness, stomach cramps, headache/illness, blood pressure measurement, back pain, skin itching and hands pain etc. Most of the workers visited the factory clinic for headache and illness, about 70 %.



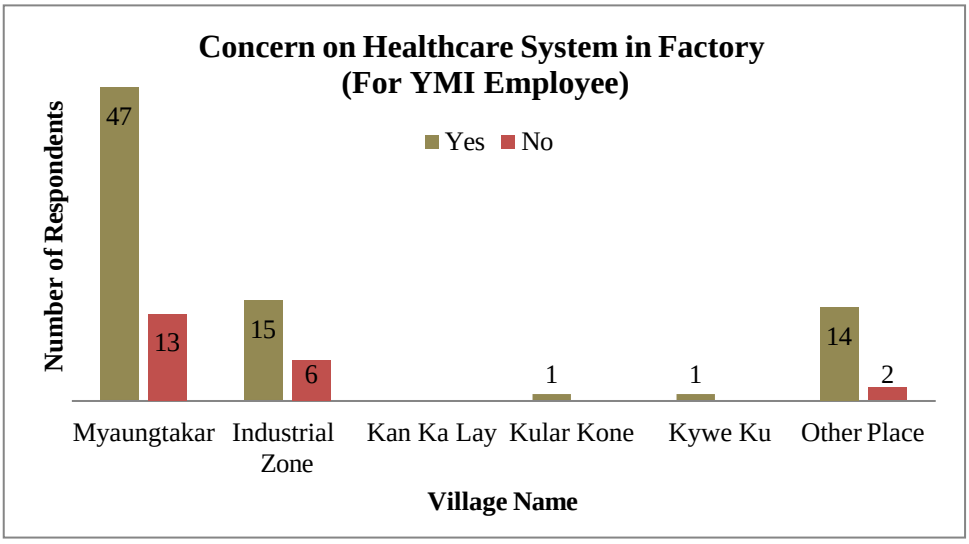
(10) Common Diseases Occurred in Your Colleagues

The workers are also assessed the occurrence of common diseases in their colleagues and the survey result showed various common diseases, such as high blood pressure, illness, stomach cramps, headache, back pain and tendonitis, but very little amount.



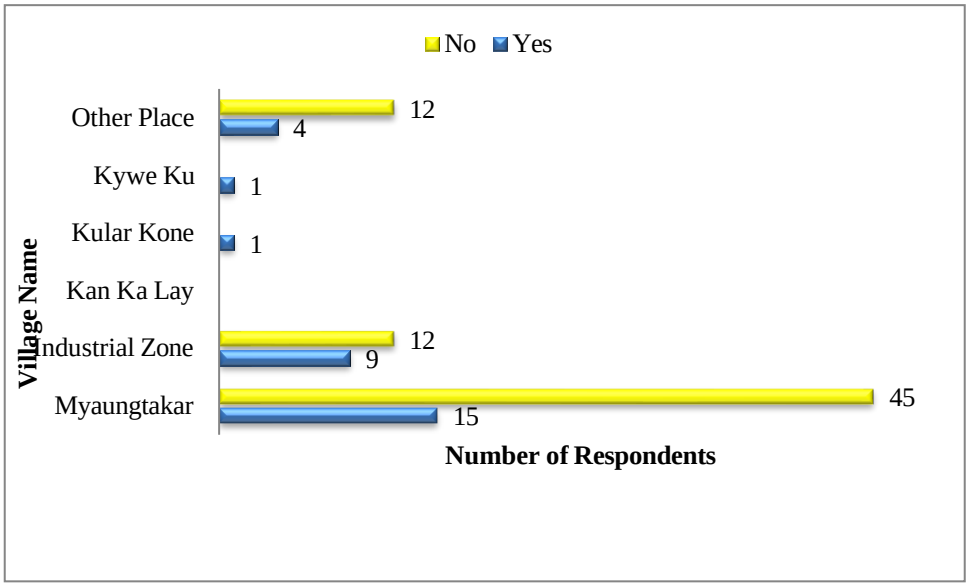
(11) Concern on Healthcare System provided in Factory

The health survey team also assessed the concern on healthcare system of the workers in factory and nearly 80 % of the workers think the healthcare facility in the factory are enough and the rest are not.



(12) Concern on Negative Impact on Health from Factory Manufacturing Process

On the survey of negative health impact from factory manufacturing process, 30 % of workers said "Yes" and about 70 % are "No".



5.8.8 Survey Results on Covid-19 Infection

During the survey period (August 2020), there was no widely spread of Covid-19 infection within the project area. With the reflects of the Government television programs and media (Facebook pages, celebrity page etc.) and Government announcements about the Covid-19 notifications, the people in the project region are aware of respiratory system related health issue and willing to follow the restrictions and guidelines from the concerned Ministry of Health and Sport (MOHS) in both the industrial zone and village communities. The health survey questionnaire was attached in Annex-5 of this EIA report.

The preventive measures have been observed during the survey period as per the following. The factory completely developed the incident management plan specific to this crisis and be compliance with the MOHS guidelines for sanitation facilities and social distancing rules. The followings are some examples of response plans for Covid-19 crisis:

- Implement a single entry with temperature and hygiene check.
- Install hand washing facilities at the factory entry.
- Keep the workplace clean and disinfected. Focus on all the surfaces that come into most contact with the staff (desks, telephones, working tables, door handles and knobs...)
- Allocate and make mandatory to wear protective equipment (face masks, hairnets, white coats, goggles) for all staff and visitors.
- Promote constant hand washing among the workers, contractors, and costumers. Provide all the necessary supplies for cleaning and disinfection.
- Promote the frequent use of alcohol-based hand sanitizers.
- Train all staff on hygiene and biosecurity.
- Brief all staff on the protocols to follow in case of the detection of any symptom related to COVID-19.
- Poster presentation at the required and suitable places in the factory for Covid-19 awareness and relief plan
- Restricting non-essential physical contact as much as possible.
- Compliance with MOHS room for facility quarantine rules and regulations while transporting raw/finished products from and to the factory.

5.8.9 Attitude of the Respondents on Proposed Project

It is also important to explore the attitude of the people who are living in nearby areas of the proposed project and the factory employees. These people are mostly from the villages of Myaung Ta Kar, Kular Kone, Kan Ka Lay, and Myaung Ta Kar Industrial Zone and the people from other area like Mandalay and Ayeyarwaddy regions who are living for work opportunities. Mostly they are the project affected persons (PAPs) who will have both benefits and adverse effects, and it is required to consider how they will be affected and to what degree on their health, and what influence they could have on the project. The assessment team consulted about the attitude and opinion of these respondents about the health impacts of the proposed project in this survey and personal health examination.

According to the survey result, over 95% of the respondents have already known that the YMI lead refinery project have been developed in the Myaung Ta Kar Industrial Zone and over 90% of those respondents express that the information that they acquired about the project is complete and satisfied and clarified on what kind of information on which they want to know furthermore; and this information are concerned with" job opportunities for local villagers" and "types of the factories haven been developed in this industrial zone". Only 10 % of total respondents worried about the project that the project operators are not following the national regulations and guidelines which should be consistent with the factory implementations.

The existing condition of the project site is in operation phase and there are some operations with heavy machineries. Only a few respondents mention that the environmental impacts such as noise disturbances by these activities, dust emission and lead contamination health effect to the people.

The detail survey result is listed in Table 5.8-1.

Table 5.8.9-1: Attitude on Implementation of the YMI Project

Very Like	Like	Not Describe	Dislike
41.5%	40.5%	3 %	5 %

Source: Survey data (May 2020)

Again, almost all the respondents describe that there would be no impact on their existing livelihoods by the developing of this project. Commonly, the respondents are expecting that this project would upkeep to improve their living standard.

The health survey is also intending to explore the thoughts of respondents, whether they are worrying or not on the potential health impacts by the proposed project in both construction and operation phases. For this questionnaire section, 70% of total respondents describe that they are not worrying for both social and cultural impacts and health impacts. The other 30% are worrying on (i) noise disturbance from industrial processes, (ii) health impact by lead contamination, (iii) dust emissions and (iv) inconsistency of the national regulations and guidelines that should be followed by the operators and implementers.

Some of the respondents as well as interviewees also prompt about their wishes of things to be provided by project proponent for their community. These things are listed below.

- To provide for maintaining and upgrading village roads
- To provide needs of public health care for villagers
- To provide vocational training for villagers to meet with new jobs created by the industrial zone
- To care about the occupational health

Besides these facts, some of respondents and interviewees also highlight their specific suggestions associated with their concerns. These specific suggestions are as below:

- The project should formulate a proper Standard Operation Procedure (SOP) to control the factory operation
- The project should prohibit to ensure the factories will not use the toxic material
- The project should encourage the investors to practice the priority policy of job for local residents

5.8.10 Mitigation Measures on Health Impacts

YMI exactly followed the rules and guidelines for the occupational health safety and also three meals including the lead toxicity degrading foods such as banana are provided to the workers. Every worker has to be checked every 6 months for general medical check and blood testing for lead percent was continuously inspected by the medical doctor. If there is any suspected increased level of lead, the one who must be transferred to the office and sales department without affecting his current enjoyment and work opportunities. Blood test results are inspected for lead concentration in blood and recorded.

As mentioned in Table 5.2-1, the health impact is a major hazard especially on the workers who are exposure to lead toxic. The factory implemented the following mitigation measures for the occupational healthcare.

1) Enforcement of wearing complete PPE during the operation

2) Provide of meal (3 meals and other lead toxic reducing fruits, e.g., banana) to the workers
3) Alternate the working assign for the workers who are working in the factory operation
4) Install the enough bathroom and air shower machine for workers at the exit of factory operation
5) Provide the uniforms and the space for keeping the uniforms
6) Regular medical checkup for every worker
7) If the blood test level of lead is exceeding the target limit after regular examination and keep records, the workers will be shifted to the sale department with the same salary and the occupational right
8) Support of first aid kits and healthcare center inside the factory

Figure 5.8.10-1: Sanitary Toilet, Bathroom, Closing Room and Eye Shower

Figure 5.8.10-2: Air Blower Before Kitchen Room, Washing Facilities and Dining Room

Figure 5.8.10-3: Support of First Aid Room and Onsite Healthcare Centre

5.8.11 Preventive Measures for Covid-19 Infectious Disease

The preventive measures have been observed during the survey period as per the following. The factory completely developed the incident management plan specific to this crisis and be compliance with the MOHS guidelines for sanitation facilities and social distancing rules. The followings are some examples of response plans for Covid-19 crisis:

- Implement a single entry with temperature and hygiene check.
- Install hand washing facilities at the factory entry.
- Keep the workplace clean and disinfected. Focus on all the surfaces that come into most contact with the staff (desks, telephones, working tables, door handles and knobs...)
- Allocate and make mandatory to wear protective equipment (face masks, hairnets, white coats, goggles) for all staff and visitors.
- Promote constant hand washing among the workers, contractors, and costumers. Provide all the necessary supplies for cleaning and disinfection.
- Promote the frequent use of alcohol-based hand sanitizers.
- Train all staff on hygiene and biosecurity.
- Brief all staff on the protocols to follow in case of the detection of any symptom related to COVID-19.
- Poster presentation at the required and suitable places in the factory for Covid-19 awareness and relief plan
- Restricting non-essential physical contact as much as possible.
- Compliance with MOHS room for facility quarantine rules and regulations while transporting raw/finished products from and to the factory.

5.9 Mitigation Measures on Social Community

Although the project was implemented in the designated Industrial zone, the project owner shall foresee the potential impacts on the surrounding community. The EIA was prepared with the following objectives:

- To identify and evaluate environmental and social risks and impacts of the project.
- To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.
- To promote improved environmental and social performance of clients through the effective use of management systems.
- To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately.
- To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.
- To conduct field assessment at the designated interval (every six months) for monitoring the project impacts to the surrounding community.

CHAPTER 6

PROJECT DISCLOSURE AND PUBLIC CONSULTATIONS

According to Article 61 of EIA procedure (2015), the Project Proponent has been undertaken the consultation meeting for a timely disclosure of all relevant information about the proposed Project and its likely adverse Impacts to the public and civil society as part of the EIA investigations, under the guidance and help of the consultants.

6.1 Stakeholder Consultation Meeting at Scoping Stage

During Covid-19 period, the number of people in a meeting are limited and so the consultants and project proponent discussed with the township GAD to make a reliable meeting for preventing people crowded at the same time and same place. Also, the materials such as hand gel, masks are supported to the meeting attendees and strictly follow the social distancing guideline in a meeting room. The meeting agenda is presented as the table below.

Table 6.1-1: Public Consultation Meeting

Item	Presenter	Designation	Title	Duration	Location
1	U Tint Myo Naing	Managing Director, YMI	Explain about company profile and project descriptions	10:00–10:10 hr	Meeting Room, Yangon Metal Industry
2	Dr. Lai Lai Win	Freelance Environmental Consultant	- Explain about project components - Share the investigation results during Field Visit in the Factory - Discuss about the baseline locations and planned parameters to be investigated for physical components, ecological components and social components - Discuss the current environmental management units within the factory - Discuss about proceeding procedures	10:10-10:45 hr	
3	Question and Answer sessions by all meeting attendees			10:45-11-35	

6.2 Meeting Invitation

The meeting invitation was made by public addressing through the phone calls and sending the meeting invitation cards to the concerned government offices and the village head office. The meeting presentation is attached as the Annex 4.

The public and civil society including the government departments attended the meeting and the attendees are listed as the following table.

Table 6.2-1: List of Meeting Attendances

No.	Stakeholders	Position	Department	Contact
1	U Khin Zaw	Sub department officer (Electric)	Directorate of Industrial Supervision and Inspection: DISI	09 795515827
2	U Maung Nge	Security Officer/ Myaungtagar Industrial Zone	Police Station	09 970553663
3	U Hla Soe	Administrator	Forest Department (Hmawby)	09 423669902
4	U Kyaw Htay	Head	Kularkone Village Tract	09 5059798
5	U Kyaw Htoo	Factory Officer	Yangon Metal Industry	09 254043654
6	U Myo Thu	Safety Manager	Yangon Metal Industry	09 959560310
7	U Moe Kyaw Thu	Assistant Manager (QC)	Yangon Metal Industry	09 450063177
8	U Nyi Nyi Tun	Admin Manager	Yangon Metal Industry	09 420124349
9	U Myo Nyunt Aung	Deputy Factory Manager	KMN Galvanizing	09 979765226
10	U Tint Myo Naing	MD	Yangon Metal Industry	09 5103779
11	Dr. Kyaw Nyein Aye	Environmental Consultant	EKTA	09 5038656
12	Dr. Lai Lai Win	Environmental Consultant	EKTA	09 797241421
13	Daw Nan Thazin Oo	Social	EKTA	09 777006389
14	Daw Ei Ei Win Myat	Social	EKTA	09 777006391

6.3 Meeting Outcomes

During question and answer session of the meeting, some stakeholders discussed about the benefit and impacts of the project. However, the consultants prepared the suggestion forms for meeting attendees those who doesn't have a chance to discuss during the meeting or who would like to write down their suggestions. The meeting suggestion form was attached in Annex 4.

6.3.1 Questions and Answers Session at EIA Scoping Stage

Stakeholders	Questions	Answers
U Kyaw Htay (Head, Kular Kone village tract)	Thanks for getting a chance of discussion in Yangon Metal Industry's environmental meeting. Unlike this factory, there was a case of child death from lead poison due to one industry in this industrial zone. I had to deal with that case a lot. I have been to this industry before with the government officials. The industry's condition is much cleaner than the former one. However, it may have requirements. I am unable to identify the requirements because I am not an expert. I want to request experts to solve requirements	U Tint Myo Naing (MD, YMI) Thanks for discussion. Since the company was established, all employees are treated like family. Uniform is ready to wear as soon as an employee enters the industry. If an employee goes back home, just need to take off uniform. In meal section, vegetable soup, fish paste and fried vegetables are served in every week and meat curry is served six days in a week. It serves three meals a day. Milk bottles are provided once a week. Eating

	systematically. As this industry produces secondary lead from waste battery, I want to suggest for monitoring employees' health every six months. It is impossible for employees to afford medical examination expense. Our administration party is always trying not to harm locals. Therefore, I want to give suggestion which not to appear employees' grievances due to this industry.	banana in everyday is mandatory for all employees. In medical examination section, all employees are checked medical examination once a year by company's fund. According to medical examination result, if we doubt the maximum level of lead occurs in an employee, that employee is transferred to other department like sale and admin department.
	Thanks for explaining. We all are expecting the benefits from the discussion. Also thanks for well implementation. I'm glad to see this kind of factory development in our country.	Dr. Lai Lai Win (Environmental Consultant) I have not checked and analyzed detailed health examination data of the factory yet, However, it includes in proceeding procedure.
U Tint Myo Naing (MD, YMI)	In addition to the current pure lead manufacturing industry, there is also a battery factory. The aim of pure lead manufacturing is import substitution. In order to produce lead, purchased and installed machines from Korea. More lead is released by operating those machines. Thus, start exporting that extra lead. Now, we try to use zero drain system which does not discard wastewater outside. That system is being used in United States and Europe. If other factories want to use that system, we can share that design. Our industry attended International Secondary Lead Conference which holds twice a year. The attendant from our industry discussed about technological innovation, mechanical changes and ways to improve the environment at that conference. We practically applied those discussions in sustainable development of our company and environment.	
Dr. Kyaw Nyein Aye (MD, EKTA)	It has regulations which declare from Ministry of Labor about labor welfare such as employees' health and workplace safety. We include those regulations in writing our EIA report. Because this industry was built with international standard, the rules which announce from Yangon Metal Industry may already include those regulations. This type of industry is called recycle industry. We should welcome this type of industry. Waste materials which discard from industries are dangerous. Technologies are not up to date in our country. If it is more modern in technologies, high-valued metals can be generated from waste materials. Advanced battery technology can help reduce fuel consumption. When lead production industries are developing in our country, it is possible to reduce fuel consumption. By welcoming this kind of entrepreneur, our country will become world-class country.	
U Myo Nyunt Aung	I comprehend EIA procedure because our factory is also now executing EIA. I would like to say welcome companies which focus on the environment impacts. The main problem in Myaungtakar Industrial Zone, located in Hmawby	

(Khin Maung Nyunt Steel Products & Galvanizing Co.,Ltd)	Township, is air pollution. It is impossible to control that problem individually. All stakeholders need to be involved in solving that problem.
Dr. Lai Lai Win (Environmental Consultant)	I would like to say thank you for attending meeting. The voice of the locals is very important. I would like to request all stakeholders' suggestions from the relevant departments because your opinions are also very important. We review suggestions from this meeting and append the reviewed suggestions to EIA report and then submit to the Environmental Conservation Department (ECD).

6.3.2 Main Issues and Suggestions

Some of the distinctive suggestions have been described in the following table and the details information is attached in Annex 5, survey form for Covid 19 infectious disease in Annex 5-1 and questionnaire for Key Informant Interview in Annex 5-2.

Table 6.3.2-1: Main Issues and Suggestions at EIA Scoping Stage

No.	Stakeholders	Suggestions
1.	U Khin Zaw	▪ Air quality, groundwater quality, and surface water quality determinations will be done quickly. ▪ There must be identified with the distinctive labels to the hazardous waste bins. ▪ Should support PPE to workers who working at the breaking machines due to risk of acid remnants from the old batteries. ▪ The occupational health will be periodically checked.
2.	U Kyaw Htay (Head, Kular Kone village tract)	It's very good because the company implemented and operate the factory with the strict guidelines and principles.
3.	U Hla Soe (Forest Department, Hmawby Township)	Good Air, Water and Soil are the main components not to be impacted on the environment. As the civil development, the factories are needed to dispose the wastes systematically. The wastewater from the factory process should be disposed through the filtering pond not to landslide and should plant the trees to reduce the air pollution and environmental impacts.
4.	U Myo Nyunt Aung (KMN Galvanizing Co,.Ltd)	The environmental management plans are perfectly fit with the minimum impacts to the environment and I would like to suggest the factory keeps following the guidelines to be sustainable.
5.	U Maung Nge (Police Security Officers)	In my point of view, the factory construction state and environmental management plans are perfectly matched.

6.4 Consultation at EIA Investigation Stage and Public Disclosure Plan

All meetings were carefully documented and logged with each meeting minute and follow up activities were also recorded. The Project Proponent (YMI) posted posters at the major public locations in the affected Townships (including GAD offices, sport stadium, village's head offices) and the stakeholders are invited to the meeting through the public addressing method. The detailed minutes of meeting for the public consultation meeting are presented in Chapter 5. Also, YMI kept the printed copies of executive summary (in both English and Myanmar versions) at the industrial zone office.

The consultation and disclosure will be complied with Paragraph 65, EIA Procedure, 2015.

> **Article 65. Not later than fifteen (15) days after submission of the EIA Report to the Department, the Project Proponent shall disclose the EIA Report to civil society, PAPs, local communities and other concerned stakeholders: (i) by means of national media (i.e. newspapers); (ii) the website(s) of the Project or Project Proponent; (iii) at public meeting places (e.g. libraries, community halls); and (iv) at the offices of the Project Proponent.**

Consultation activities will not be limited to a single meeting with the interested parties but will entail a series of meetings, discussions, and opportunities for affected parties to understand the project details and be informed of the potential impacts as well as of planned mitigation measures during EIA investigation period. The second round of Stakeholder Consultation Meeting will be held after preparation of draft ESIA Report.

All meetings will be carefully documented and logged, minutes will be taken, and follow up activities will be recorded.

6.4.1 Stakeholder Consultation during EIA Investigation Stage (with Surrounding Village Community)

Focus group discussion was conducted by EKTA consultant team with the project stakeholders from YMI factory, with men and women groups in the affected villages nearby in complied with the guidelines to Covid-19 period, at least with 5-10 participants in the group discussions. Focus group discussions were conducted after submitting the EIA scoping report to ECD by contributing the Executive summary in Myanmar language.

Figure 6.4.1-1: Stakeholder Consultation of EKTA Consultants with the YMI Factory and Surrounding Village Community

6.4.2 Public Disclosure

The suggestion form was prepared by EKTA social consultant team and the key informant persons were selected from the YMI factory itself, the surrounding 5 production factories of YMI, 2 heads of village tracts and one village administrator from Myaung Ta Kar village, Kular Kone village, Kan Ka Lay village, respectively. Kywe Ku village is situated in the other side of Hlaing river from the project site and the surveyors cannot communicate with the village administrator due to difficulties in transportation during Covid-19 period. The copies of executive summary were distributed to the administrative offices and collected the suggestions and attitudes on the project activities and EIA report preparation by public address method.

Table 6.4.2-1: List of Respondents in Suggestion Forms

No.	Participants	Position	Workplace
1	U Kyaw Htay	Village Tract Administrator	Administrative office, Kular Kone village
2	U Kyaw Myo Naing	Village Tract Administrator	Administrative office, Myaung Ta Kar village
3	U Than Shwe	Village Administrative member	Administrative office, Kan Ka Lay village
4	U Kyaw Htoo	Factory Manager	Myaung Ta Kar Industrial Zone

5	U Moe Myint Win	General Manager	Myanmar Smelting & Refining Co., Ltd.
6	U Ye Kyi	Management Officer	Han Steel
7	U Nyi Nyi Tun	Admin Manager	YMI
8	U Zaw Min Yu	Admin Officer	Japfa Comfeed Mill
9	Admin Manager	Admin Office	Sogo Steel Industry
10	U Myo Nyunt Aung	Deputy Factory Manager	Khin Maung Nyunt Steel Production & Galvanizing

Administrator, Myaung Ta Kar Village Tract

Administrator, Kular Kone Village Tract

6.4.3 Key Concerns from Village Community

The KII survey questions were prepared two types, one for the information of the production factories and one for the general administrative information of the project area.

In total, 6 respondents from the production factories and 3 from the general information about the project area.

Their key concerns about the project include thinking about dust, smoke and smell generation from the project activities and some responded as they worry about the project proponent who are not following the national guidelines for the industrial development process.

Suggestions	Kan Ka Lay Village	Kular Kone Village	Myaung Ta Kar Village	Remarks
Noise concern from industrial zone	No	Yes	No	Day and night time (assuming from the iron industry in industrial zone)
Heard about YMI project	Yes	Yes	No	Explanation from project authorities
Attitude to YMI project	Like	Like	No comment	Industries are important for regional development.
Environmental concern on project activity	No	No	No	
Economic loss concern on project activity	No	No	No	
Social concern on project activity	No	Health impact	No	if the factory does not operate systematically
Other concern on project activity	Worry about smells and odors	Worry about the factory management will not follow the industrial guidelines and government regulations	No	
Comments	No comment	The factory would like to follow the industrial standards guided by the concern national ministries not only for factory profits but also for not impacting on environments	The factory should operate not to impact on air and water environments.	

6.4.4 Key Concerns from Industrial Zone

The key respondents from Myaung Ta Kar industrial zone were selected from the industries around YMI factory. Mostly they are steel factories and one com feed mill. Some factories are processing EIA works and operating with the guidelines by the concerned ministries and industrial zone committee. There was no metal industry which is same process with YMI factory, and they heard about YMI factory operations from Myaung Ta Kar Industrial zone office and public consultation during EIA processing. They have good comments on YMI factory operation units

about the environmental concerns and healthcare management for staffs. Only one concern about YMI operation is about the environmental health problem from lead toxicity if the factory is not operated under control.

6.4.5 Stakeholder Consultation during EIA Investigation Stage (with Government Stakeholder)

Public consultation meeting was conducted on 20th January, 2023 regarding to the Paragraph 63 (i) of EIA procedure 2015. The attendant list and presentation materials are attached in the Appendix of this report.
Total attendance of 20 attendees, there are 12-suggestion forms are collected. The suggestion from the attendees were mentioned that today presentation and the report outline is good enough. The consultants from EKTA lead the meeting and demonstrated by the presentation slide to explain the project background, process steps, products and the possible impacts on natural environment and society by the project activities with the respective impact mitigation and control measures, following by management and supervision activities of the factory.

Summary of Suggestions

The authorize persons from other departments give the comments about today presentation is good enough and they would like to suggest that the factory must follow the ESIA to sustain the good environmental quality surrounding area of the factory.

The summary of the Suggestions forms is as follow;

- The factory should maintain the good practice of Occupational Health and Safety.
- As the suggestion from the consultant, the suggestion box in front of the factory should implement as soon as possible.
- The factory should keep follow the YCDC rules for the solid waste disposing and can contact to YCDC (Hmawbi Department) anytime.
- For the Covid-19 vaccine, the factory should provide the full vaccine for all employees.

The Managing Director of the Yangon Metal Industry say the thankful remark to all the participants who are attended in PCM meeting and they are willing to follow the Environmental guideline from the ECD and commit to do the monitoring report for every 6 months.

Then the consultation meeting was closed at 11:30 am of this consultation day 20th January, 2023.

6.4.6 Further Plan for Project Communication Process

After submitting of EIA investigation report, the project proponents will communicate with the industrial zone committee and village community for any concern and complaint about the lead refining and production activities. The communication frequencies will be dependent on the complaints and regularly every six months even without any concern from the surrounding communities.

CHAPTER 7

MANAGEMENT AND MONITORING PLANS

7.1 Environmental and Social Management Plan (ESMP)

The objectives of Environmental Management Plan are:

1) As a reference and commitment for the proponent to implement the EMP for three phases of the project life cycle, construction, operation, and decommissioning phases of the project

2) It will fulfill the needs of the Environmental Conservation Department of the Ministry of Natural Resources and Environmental Conservation (MONREC).

3) Serve as a guiding document for the monitoring of environmental and social activities of the project

4) Provide detailed framework to mitigate negative impacts on the environment and management actions to be adopted for proper implementation of the project

7.1.1 ESMP Implementation Organization

In the clause 103 of Environmental Impact Assessment Procedure (2015), it is stated that:

"The Project Proponent shall fully implement the EMP, all Project commitments and conditions, and is liable to ensure that all contractors and sub-contractors of the Project comply fully with all applicable Laws, the Rules, this procedure, the EMP, Project commitments and conditions when providing services to the Project".

7.1.2 Management Sub-plans

Since the project construction phase is already established, the following parameters will be reflected for the changes in operation phase management as necessary:

(ix) Fugitive dust and air quality management
(x) Noise and vibration
(xi) Soil Erosion and Drainage Management
(xii) Solid waste management
(xiii) Domestic and Industrial Wastewater Management Plan
(xiv) Traffic management
(xv) Occupational Health and Safety Management
(xvi) Grievance Redress Mechanism

(i) Air Quality Management Plan

Objectives	▪ To maintain the ambient air quality in the construction sites and at the identified sensitive receptors meets the prescribed standards throughout the operation period ▪ To address the community concerns and complaints about air quality quickly and effectively.
Legal Requirements	National Environmental Quality (Emission) Guidelines, 2015 Yangon City Development Committee Law, 2018
Implementation Schedule	Operation phase of the project
Management Action	▪ Keep equipment and generators in good operating condition

	▪ Keep vehicles under good condition, with regular checking of vehicle condition to ensure compliance with national standards ▪ Adopt machine and equipment that energy saving and create less pollution ▪ Proper storage including covering of sand, gravel and other materials which are easily spread into the atmosphere ▪ Sprinkle and cover stockpiles ▪ Protect of all works and materials by installing green net or other measures that will prevent dust from spreading around ▪ Dust mask will be provided to the construction workers working in dusty areas ▪ Installation of air emission preventive measures, such as Rotary Furnace, Bag House, Wet Scrubber, Cyclone, Dust Collection Line and Blowing Motor and Blowing Fan.
Responsibilities	HSE Department under the guidance of YMI

(ii) Noise & Vibration Management Plan

Objectives	▪ To minimize noise and vibration of construction activities from operation machinery to generate the level of noise increase at the nearby affected residents and sensitive receptors (e.g. workers and visitors and nearby offices) ▪ To ensure that the noise and vibration levels at the identified sensitive receptors will not exceed the maximum limits prescribed by MONREC as a condition of the ECC and will be acceptable to the sensitive receptors.
Legal Requirements	National Environmental Quality (Emission) Guidelines, 2015 Yangon City Development Committee Law, 2018
Implementation Schedule	Operation phase of the project
Management Action	▪ Routine maintenance of vehicles and construction equipment ▪ Install barrier fences during operation to reduce noise disturbance, especially near sensitive receptors ▪ Develop working rules so as to, for example, avoid unnecessary use of air-horns, keep to the speed limit, turn off engines when not in operation and train drivers and operators to follow the rules ▪ Schedule to avoid much equipment operating at the same time near sensitive receptors ▪ Avoid prolonged exposure to noise (produced by equipment) by workers ▪ Alternate the workers who are working nearby noisy machines in periodic schedule ▪ Supply the workers who will be operating noisy equipment with appropriate personal noise protection gear (e.g. earmuffs, ear plugs, etc.)
Responsibilities	HSE Department under the guidance of YMI

(iii) Soil Erosion and Drainage Management Plan

Objectives	▪ To control and prevent surface water quality in case of soil erosion ▪ To prevent flash flooding in project site during heavy rain
Legal Requirements	Environmental Conservation Law, 2012 Yangon City Development Committee Law, 2018
Implementation Schedule	Operation phase of the project
Management Action	▪ Ensure that the existing protected trees will not be damaged during the operation works ▪ Adequate temporary drainage channels will be constructed to help facilitate the outflow of onsite runoff to existing drainage facilities. These temporary drainage channels will be constructed in such a manner that they, (a) feed into existing, offsite, natural/engineered drains and (b) do not result in compromise and overtopping of existing offsite drainage features ▪ Storm water will be controlled (channeled), before it enters the site, to ensure that the processing plant is not jeopardized during heavy rains.
Responsibilities	HSE Department under the guidance of YMI

(iv) Solid Waste Management Plan

Objectives	▪ To minimize all types of wastes generated at the operation works ▪ To control and prevent groundwater quality in case of dumping of solid waste
Legal Requirements	Environmental Conservation Law, 2012 Yangon City Development Committee Law, 2018
Implementation Schedule	Operation phase of the project
Management Action	▪ Comply with waste management rule under township development committee for disposing waste at disposal site ▪ Prepare a temporary waste dumping site during storage ▪ Install a signboard to prohibit waste dumping in inappropriate areas ▪ Collect residues of oils, including lubricating oil ▪ Prohibit placing the raw materials (e.g. battery materials) on roadside or any other areas outside the project site ▪ Arrange garbage bin for general waste and hazardous waste separately in different colored dustbins ▪ General waste will be cleaned out twice per week and hazardous waste will be clean out once per month
Responsibilities	HSE Department under the guidance of YMI

(v) Domestic and Industrial Wastewater Management Plan

Objectives	▪ To ensure that all wastewater generated during the operation will be adequately treated before discharge into the river ▪ To ensure installation of septic tank for domestic wastewater
Legal Requirements	Environmental Conservation Law, 2012 Yangon City Development Committee Law, 2018
Implementation Schedule	Operation phases of the project
Management Action	▪ Regular maintenance and checking of all vehicles and machinery to minimize the risk of fuel or lubricant leakages ▪ As operation activities typically generate disturbed soil, oils and other wastes, on-site collection and settling of storm water, prohibition of equipment washes down, and prevention of soil loss and toxic releases from the operation works are necessary to minimize water pollution; and ▪ Training and equipping relevant staff in protected storage and handling practices, and rapid spill response and clean up techniques ▪ Installation of septic tank system in existing toilets ▪ Provision of procure portable toilets if the existing toilets may not enough for construction workers ▪ Wastewater generated from washing of machines and operation process will be treated in a closed circular system which will be "0" discharge to the environment by installing the water evaporator in the factory. ▪ If there any wastewater which cannot be reused in the industrial process, the water evaporator will be planned to install.
Responsibilities	HSE Department under the guidance of YMI

(vi) Traffic Safety Plan

Objectives	▪ Manage traffic and transport issues to minimize potential impacts on the communities and the operation of the road network
Legal Requirements	NA
Implementation Schedule	Operation Phase of the Project
Management Action	▪ Install traffic signs and warnings at the entrance and exit gates for vehicles and heavy equipment ▪ Provide adequate parking lots at the construction site and to forbid parking vehicles on the roadside ▪ Arrange a schedule of mobilization of equipment to avoid increasing traffic congestion and to avoid busy hours ▪ Coordinate with the traffic police to manage the traffic during traffic congestion period ▪ Reduce speed limit to 10 km per hour within the sensitive receptors zone, e.g. school zones ▪ Use the transporting vehicles including the container for battery wastes
Responsibilities	HSE Department under the guidance of YMI

(vii) Occupational Health & Safety

Objectives	▪ To avoid or mitigate and manage impacts on the OSH issues.
Legal Requirements	Occupational Safety and Health Law (2019) Environmental Impact Assessment Procedure (2015)
Implementation Schedule	Operation Phases of the project
Management Action	▪ Develop an effective and responsive system for receiving, handling and responding to complaints received during the operation of project works. ▪ Ensure complaints are received and responded to around the clock for the duration of the operation phase. ▪ Provide reporting on complaints received, responses provided, timeliness of responses, and corrective actions taken on a monthly basis. ▪ Raise awareness on the complaints systems and procedures through trainings. ▪ Ensure medical facilities at the project site (e.g. First Aid Kits and others) ▪ Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Cases of conflicts between the workers and local people. • Survey and report on actual impacts of the operation process ▪ Conduct Medical Checkup system to workers at least once a year ▪ Provide blood testing and monitor the lead level inside ▪ Provide appropriate meal (at least 3 meals a day) and the additive foods such as banana for operation workers to reduce lead toxic effect. ▪ Manage the appropriate cure/compensation plans to workers whose lead level exceeds the target standard. ▪ Implement Regular Medical checkup and blood test for lead level especially for operation workers ▪ Change/Transfer to other department if any workers showed up the excess guideline value of lead level in blood test.
Responsibilities	YMI

(viii) Grievance Redress Mechanism

Objectives	▪ **To avoid the project impacts on social environment** The social environment includes residential and neighborhood amenity, connectivity, community health, community diversity, social infrastructure provision, and safety.
Legal Requirements	Environmental Impact Assessment Procedure (2015)
Implementation Schedule	Operation Phases of the project

Management Action	▪ Liaise with key stakeholders and the community through a public consultation process to ensure insignificant impacts of the lead production process on community facilities, schools, and public transport stations, ▪ Consult with managers of community facilities in neighborhoods adjacent to worksites to develop effective mitigation strategies and maintain regular communication with these facility managers. ▪ Develop an effective and responsive system for receiving, handling and responding to complaints received during the construction of project works. ▪ Ensure complaints are received and responded to around the clock for the duration of the operation phase.

	▪ Raise community awareness on the complaints systems and procedures through public notifications and website facilities. ▪ Initiate consultation with owners and occupants of directly affected properties and nearest neighbors to factory. ▪ Conduct consultation and community information strategies in conjunction with the public or community consultation process. ▪ Establish a tripartite committee to provide mechanism and channel for the committees to participate in the project environmental management. ▪ Undertake and maintain a comprehensive community information program to inform residents, businesses, community groups and motorists of Project activities and potential impacts. ▪ Monitor traffic volumes and traffic congestion affecting the regional population during construction and if necessary, adopt travel demand and signal stage management strategies. ▪ Evaluate effectiveness of consultation, liaison and mitigation outcomes. • Cases of conflicts between the construction workers and local people. • Survey and report on actual impacts of the production process on community amenities and infrastructure. • Report community consultation's activities and on consultation, liaison and environmental compliance and public transport access in work site neighborhoods.
Methods	▪ Walking into the factory office, Phone call, Email
Responsibilities	YMI (U Kyaw Htoo) Position: General Manager) Phone: +959254043654 Email: kyawhtoo@yangonmetal.com

7.2 Waste Chemical Management

Waste chemicals must be collected in individual, leak proof, sealed containers. The chemicals must be compatible with container material (e.g. acids must not be placed in a metal container). Glass containers may be safely used for virtually anything except hydrofluoric acid, acid fluoride salts, and very strong alkalis.

Waste chemicals must not be placed in an unwashed container, which contains any incompatible residual material, from previous chemical storage.

Any containers holding a hazardous chemical or waste will be kept securely closed, so there is no leak of hazardous waste or escape of vapors during storage, except when it is necessary to add or remove chemicals or waste. Ensure that lids, bungs, or rims are tightly in place.

All containers must be clearly identified and labeled.

Hazardous waste must be stored in the designated area which is far from the operational area and residential area, at or near the point of generation and under the control of the operator generating the waste.

Chemical wastes must be segregated by general waste type (e.g. flammables, poisons, acids, and alkalis) and arranged so that incompatible substances will not mix. Incompatibles are those pairs of substances that, when mixed, either react violently or emit flammable or poisonous gases or vapors. Below are a few general principles that must be followed for safe hazardous waste storage and chemical storage:

- Store acids and bases separately.
- Keep acids apart from cyanides or sulfides
- Acids should never be put into steel containers.
- Water-reactive, strong acids such as organic acid halides, organic acid anhydrides, inorganic acid anhydrides, and strong acidic salts must be kept apart from both alkalis and water.
- Oxidizing agents must be kept apart from reducing agents and organic compounds.
- Water-reactive agents must be stored apart from water, aqueous solutions, and acids.
- Air-reactive materials must be packed in containers that are sealed off from the atmosphere.
- Explosive and shock-sensitive materials present risks that require special handling.
- Hazardous waste must be stored in secondary containment. Incompatible materials must not be stored in the same secondary containment bin.
- Containers must be arranged so that identification is readily visible.

7.3 Incident Management

The following shall constitute key management interventions in response to each respective emergent situation.

7.3.1 Fire

In the event of fire, the person discovering the fire should:

a) Raise the alarm.

b) Call the Central Control Room and or the Fire Brigade on.

c) If safe to do so tackle the fire, if in doubt get out.

d) Evacuate the premises and report to the designated assembly point.

7.3.2 Accidents

In case of an accident in the workplace:

a) The involved, if they are able to do so, should immediately report to their supervisor. Alternatively, the person discovering the accident should report it immediately to the Central Control Room Operator, who should in turn inform the Shift Manager.

b) The Shift Manager shall immediately go to the accident scene to assess its nature.

c) If the accident is a major one, that is, resulting in serious personal injury, and or property damage, the Shift Manager shall mobilize the required emergency services, including first aiders and inform the Safety Manager, Plant Manager, and others, accordingly.

d) If the accident occurs after-hours, the Shift Manager shall inform all the required personnel as per Plant Call Out procedure.

e) Information pertaining to the accident will be released to the public through the Corporate Affairs Department or the project Manager.

f) During any emergency all communication on phones will be restricted to personnel handling the emergency.

7.3.3 Road Traffic Accidents

In case of a Road Traffic Accident:

a) Render assistance to any person injured, if practical.

b) Report the accident to the nearby Hmawby Police Station.

c) Do not accept responsibility for the accident but cooperate with the Police who will investigate the accident.

d) Obtain the particulars of the other involved parties, i.e. vehicle registration number, driver's name, witnesses etc.

e) Inform immediate supervisor and Safety Manager.

7.3.4 Hazardous Material Spills

In case of major hazardous material spills the following procedure will apply in order to minimize the impact on the environment:

a) Contain

- The spilled oil will be contained by constructing a bund around the affected area.
- The trapped oil will be pumped/collected into suitable containers, such as sealed drums and kept in a bounded area while awaiting removal from site.

b) Notify

- The spill incident will be reported to the supervisor who shall assess the situation and notify the relevant senior officials as per Incident Reporting Procedure.
- In all cases where the oil spill is on ore, the senior officials will be consulted to recommend the best remedial action.

c) Dispose

Contaminated soil and absorbent material will be disposed-off in accordance with the waste management procedure.

d) Maintain

- The affected area shall, as soon as is reasonably practicable, be cleaned up and replaced with fresh soil.

7.3.5 Responsibility

All supervisors are responsible for ensuring effective implementation of the Emergency Response Plan and will act as key respondents.

Designated assistants will act in the absence of substantive supervisors and will act as key respondents in that case.

Table 7.3-1 is a summarized Emergency Response Plan aimed at guiding response to emergency situations which may arise as stipulated above. The plan identifies likely emergency situations together with their causative factors followed by an elaboration of the proposed response. The plan finally identifies the respondents in order of priority. It is anticipated that implementation of the plan would safeguard the health and safety of workers and prevent excessive loss of property.

Table 7.3-1: Emergency Response Plan

	Emergent Situation	Cause	Proposed Response	Respondents
1	**Staff Injury**	▪ Unskilled labour ▪ Neglect of safety procedures ▪ Faulty equipment and tools	▪ Apply appropriate First Aid ▪ Document incidence ▪ Take to hospital if necessary ▪ Investigate causative factor and institute appropriate measures to prevent similar occurrences	Key Respondents: Immediate supervisor or person first arriving at accident scene and Safety and Health Manager Other Respondents: First Aid Attendant on Duty Immediate Supervisor, Factory Manager.
2	**Chemical Poisoning (Lead)**	▪ Unskilled labour ▪ Neglect of safety procedures ▪ Faulty equipment and tools	▪ Apply appropriate First Aid ▪ Document incidence ▪ Take to hospital if necessary	Key Respondents: Immediate supervisor or person first arriving at accident scene and Safety and Health Manager Other Respondents: First Aid Attendant on Duty Immediate Supervisor, Factory Manager. Other Monitoring Activities: Transfer to other work places except industrial operation (e.g. Office and Sale works)
3	**Fire Outbreak**	▪ Neglect of safety procedures	▪ Sound alarm and instruct all to assemble at Fire Assembly point ▪ Conduct roll Call ▪ Fight the fire using appropriate tools (fire ▪ extinguisher, sand, water) ▪ Inform Fire Brigade and Police ▪ Document incidence	Key Respondent: Fire Discoverer, immediate supervisor and Safety and Health Manager Other Respondents: Emergency Response Team.
4	**Chemicals and other material Spillage**	▪ Neglect of safety procedures ▪ Poor containment/storage facilities	▪ Contain material by bunding around with sand or any other suitable material to ▪ stop material flow and spread ▪ Clean up affected areas ▪ Document incidence	Key Respondent: Immediate supervisor and Environmental Manager Other Respondents: Emergency Response Team.

7.3.6 Spill Prevention and Precaution

7.3.6.1 General Precaution

- Any minor maintenance facilities will be located away from berth areas and will be on hard standings within a bunded area, and sumps and oil interceptors will be provided.
- Maintenance of vehicles and equipment involving activities with potential for leakage and spillage will only be undertaken with the areas appropriately equipped to control these discharges.
- Any soil contaminated with chemicals/oils will be removed from site and the void created will be filled with suitable materials.
- Storage of oils/chemicals/waste within the works area will be limited to absolute minimum volume and are to be removed from sites at the earliest opportunity.
- Suitable containers will be used to hold the fuels to avoid leakage or spillage during storage, handling and transport.
- Empty containers will be suitably labelled and stored at a designated area.
- Storage area will be selected at location away from berthing area and adequate space will be allocated to the storage area.
- Avoid disorder and storage of unnecessary materials in works area.
- Prevent obstructions and tripping hazards.
- Lock all dangerous goods and chemical stores.

7.3.6.2 Storage Precautions

- Use solid and impermeable enclosure walls or storage shelves.
- Reduce the danger of falling of stacked containers.
- Provide tightly closed lips to avoid leakage of chemical wastes to further reduce the danger of container falling.
- Inspect the storage area to detect if any leaking or defective containers on a regular basis.
- Check the conditions of the storage containers regularly.
- Identify and provide suitable notices in storage area.
- Provide adequate space for handling of the containers.
- Separate incompatible chemicals from each other.

7.3.6.3 Transfer and Transport Precautions

- Consider the size of the container to avoid overfilling.
- Use pumps to transfer fuel instead of simple pouring.
- Provide containment structure to hold the fuel when leakage or spillage.
- Use suitable carriers to transfer the fuel containers from one location to another.
- Waste oil/Used oil generated to be handed over to authorized recyclers wherever possible

7.3.6.4 Responses Action

In case of spillage, workers will be aware of emergency telephone contacts and locations of spill kits. The response actions to an accident would include the following steps:

- Keep untrained personnel away from the spillage area or evacuate all personnel and call the emergency service if the spills is large in volume
- Allow only trained persons who have equipped with protective clothing and equipment to enter the spillage area for clean-up.
- Transfer the spills back into containers using suitable equipment wherever practicable.

- Use suitable absorbing materials to clean up the spills and dispose the absorbing materials as wastes, in accordance with the local rules and regulations.
- Use suitable solvent to clean the spillage area after removing the spills.
- Inform concerned regulatory authorities, where the spillage would cause serious contamination of an area or risk of pollution.
- Prepare necessary protective devices, safety equipment, containers and clean up materials for emergency use.

The equipment includes:

- Fire extinguishers
- Brush, dustpan, mop and bucket
- Dry sand tissue and toweling
- Containers including plaster bags, drums, etc
- Absorbing materials
- Pumps
- Sampling devices

Personal protective equipment:

- Safety helmet and goggles
- Gloves which can resist chemical reaction
- Protective boot and clothing
- Respirators and gas masks
- First-aid kits

7.4 Budget Allocation for ESMP

The Project cost is inclusive of the estimated cost for implementing Environmental Management Plan and installation of pollution abatement and mitigation measures described in this ESIA report. The costs for Environmental Management Plan and responsible institute have been estimated.

Under Environment Management Cost, following activities can be considered:

Sr No.	Activities / Scope for Environment protection and management	Approx. Capital Cost (USD)
1	Fire Fighting & Emergency Services	2,000,000
2	Green Belt	25,000
3	Activities in the area of Environment and Safety during construction activities	100,000
4	Septic Tanks and associated development	100,000
5	Air pollution Preventive Measures	200,000
6	Industrial Wastewater Treatment Facilities	50,000
7	Parking Area	5,000
8	Transporting Vehicles	100,000

9	Environmental Monitoring & EMP (breakup in the below table 7.5-1)	39,000
	Total	**2,619,000**

7.5 Planned Budgetary Provision for ESMP Monitoring Plans

The main cost for Environmental Monitoring during construction and operation phases is cost for field measurements such as air quality, water, and noise and soil quality.

Table 7.5-1: Environmental Monitoring Plans and Estimated Cost (Operation Phase)

Indicator (Survey item)	Location of Data Collection	Method and Frequency	Institution	Annual Cost (USD)
Monitoring EMP implementation Mitigation measures Enhancement measures Contingency Compensation	Project area	Daily monitoring and documenting, and quarterly reporting	Site Manager and Operation Department of YMI	1,000
Air quality (NO_2, SO_2, CO, Ozone, $PM_{2.5}$, PM_{10})	1 location	Twice a year	Third Party	1,000
Noise	2 locations	Twice a year	Third Party	500
Surface Water Quality Analysis (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location	Twice a year	Third Party	500
Effluent Water (Total Suspended Solids, Zinc, Temperature, pH, Lead, Fluoride, Copper, Chemical oxygen demand, Arsenic, Aluminum, Cadmium, Nickel, Mercury etc.)	1 Location (From storage pond)	Twice a year	Third Party	500
Ground Water Quality Analysis (pH, Turbidity, Total Dissolved Solid, Nitrate Chlorine, Iron, Manganese, Hardness, Sulfate, Arsenic, Total Coliform, etc.)	1 Location	Twice a year	Third Party	500

Indicator (Survey item)	Location of Data Collection	Method and Frequency	Institution	Annual Cost (USD)
Soil Quality	1 Location	Twice a year	Third Party	1000
Implementation of Ecosystem Management plan	Within project area	Regular monitoring and quarterly reporting	Operation Department	500
Occupational Health and Safety	YMI Compound (Work site and offices)	Twice a year Record of accidents and infectious diseases, blood testing for lead concentration, Medical checkup	EHS Department	5,000
Community Health and Safety	Resident area nearby the project sites	once a year Record of accidents and infectious diseases related to the community	EHS Department	1000
EMP Monitoring Report Preparation		Twice a year	Third Party	5000
The implementation status for CSR activities such as community support program	community nearby the project site	Once a year	Operation Department	Upto 2 % of annual net profits

7.6 Proposed CSR Activities

YMI endeavors to undertake the successful implementation of education and skill development activities in the Project region. YMI will focus on following key areas where initiatives can be taken through CSR activities.

1) Establishing of skill development centers focusing on infrastructure sector requirements (Upto 0.5% of net profit)
2) Development of a training institutes to boost the local capacity building for the industrial sector covering staff at various skill levels like operation workers, supervisors, QC, security staff, IT staff etc., subject to the approval of the relevant authorities (Upto 1% of net profit)
3) Elementary education initiatives in line with the policy framework and applicable laws in Myanmar (Upto 0.5% of net profit)

YMI will allocate up to 2% of its net profits after tax for spending in CSR activities and areas to be spent are targeted in line with those enlisted above.

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

In consideration of the environmental and social descriptions in and around the Project site, and the characteristic of the development activities of the Lead Smelting and Refining Project, there is a possibility of potential negative impacts on the environmental and social conditions due to the Project implementation during pre-construction, construction, operation, and closure stage together with the development of basic requirements for local and export demands on battery producing raw materials. However, the positive impacts from project outcomes shall also be considered for the fulfilment of local demands on battery products and increase the foreign benefits from the export of these products. About 230 workers are getting the job opportunities only in the factory site and there will be many more opportunities in related fields.

8.1 Conclusions

YMI's lead smelting plant has managed the facility & opportunity to process a much wider range of industrial wastes and by-products than a traditional Lead recycling facility. The smelting Plant is found to be fully integrated with pollution control modules and can be configured for a wide range of Battery Recycling Capacities.

Even though the project can bring the occupational health hazards and chemical hazards who are working at the operation site, there will have the mitigation measures to control and/or avoid the risks which can be provided by the project proponent, who must strictly follow the guidelines and regulations which can control the potential impacts and hazards.

Based on the scoping result, Terms of Reference (ToR) for EIA will be formulated and will be undertaken in a professional manner and in accordance with Myanmar EIA Procedure, 2015 and other Myanmar Legislation and applicable standards/ requirements and any applicable guidelines. Further studies and examinations (i.e. technical studies) required for the EIA Study are highlighted in Appendix-A (ToR).

The EIA will be considered the views, concerns, and perceptions of project stakeholders, communities and/or individuals that could be affected by the Project or who otherwise have an interest in the Project.

The EIA will include the results of consultations with the public and other stakeholders on the environmental and social issues. The concerns raised during such consultations shall be considered in assessing impacts, designing mitigation measures, and in the development of management and monitoring plans.

The following commitments are recommended and proposed for implementation as shown in Table 8.1-1.

Table 8.1-1: Project Key Commitments

Sections of EIA Report	Key Commitments
Chapter 1. Context of the Project	The EIA report shall be prepared in accordance with the EIA procedure of Myanmar (2015) with the project proponent (DWIR)and highly experienced third-party consultants as per mentioned.
Chapter 2. Overview of Policy, Legal and	The project owner shall earnestly carry out all national and local laws, regulations and requirements on environmental protection, clearly define main duties and responsibilities of environmental protection departments of the project, establish and optimize its rules and regulations.

Institutional Framework	The project shall conform on the followings: - relevant standardizations for ambient air quality (NEQG) - relevant standardizations for wastewater discharges (General application of NEQG) - relevant standardizations for Construction noise and vibration (Industrial noise standard of NEQG) - relevant guidelines for solid wastes by the concerned departments (YCDC, Yangon City) - will separate the domestic wastes, construction wastes such as asbestos and hazardous wastes when disposed. - will follow strictly the local and international relevant laws, guidelines, and procedure while implementing environmental and social management plans as mentioned in the EIA report. - shall monitor the EMP in accordance with the EMoP as designated in the EIA report.
Chapter 3. Project Descriptions and Alternative Analysis	The project commits to utilize and maintain the facilities' designs and modernized equipment and machinery and production procedures as described in Project description for construction period.
Chapter 4. Description of Surrounding Environment	The project commits not to disturb the Existing Environmental and socioeconomic Conditions and will keep forwards maintaining the natural conditions and developing the regional livelihood and living standards as far as possible.
Chapter 5. Impact and Risk Assessment and Mitigation Measures	The project commits to precisely follow the discussed mitigation measures for avoiding or reducing such environmental and socioeconomic impacts generated in temporarily or permanently by the Project activities during both the construction and operation phases.
	Arrangement of personal protective equipment such as gloves, helmet, mask, glasses and other tools, safety boots and uniforms for each worker so that the workers can keep themselves safe from any kinds of accident and the occupational health training will also be provided.
	The labor recruitment policy must be formulated in such a way that local laborers can be prioritized (esp. directly affected persons and families) for employment in the project.
	Healthcare management plan shall be prepared and implemented.
Chapter 6. Public Consultation and Information Disclosure	The project commits to engage the affected community and any project stakeholder in adequate manner and meaningfully consult them for any environmental and/or social issue related with the project activities. The project management units and focal person will also proactive address any project-related grievances raised in accordance with the established grievance redress process and procedure in a timely manner.
Chapter 7. Environmental and Social Management Plan	The project commits to follow up the main tasks for Environmental and Social Consideration of the project implementation team and project management team in accordance with the main parts of CEMP & OEMP and the relevant sub-plans.
	The project will ensure to hire the contractor and subcontractor with highly qualified and licensed organizations and/or personnel with the adequately satisfied environmental management certification bodies for the construction activities.
	The project contractor/subcontractor will ensure to purchase the construction machinery and equipment, and the natural resources from adequate licensed suppliers accordingly.
	The compliance monitoring report along with the checklist will be indexed and annexed with the monthly and annual monitoring report. It may be required to submit the annual

	monitoring report to Department of Environmental Conservation for renewing of the Environmental Clearance Certificate each year.
	The project will develop and implement a monitoring and reporting plan as presented in the said section.
Chapter 8. Conclusions and Recommendations	The project will follow strictly the commitments and further suggestions as illustrated in Table 8-1.

8.2 Recommendations

Although the project can be regarded as the regional socioeconomic development program by growing modernized industrial production, special attention to appropriate environmental and social management must be paid during construction phase and operation phase in order to avoid the environmental depletion due to careless manners and construction activities, and not burden the regional social environment around the project site. A full implementation of the mitigation actions and resettlement actions are required to be carried out for those who would lose their ecological and health benefits especially in the surrounding villages such as Myaung Ta Kar, Ku Lar Kone, Kywe Ku, Kan Ka Lay and Taung Taw. The ESMP for environmental protection, grievance redress process and healthcare support system would need to be further elaborated and updated for adoption in the future, as appropriate.

The mitigation and management actions should be in line with the current existing national laws and regulations of Myanmar and international safeguard standards.

Further suggestions are listed below for effective implementation of the ESMP:

1) The designated personnel within the project proponent (YMI) shall be responsible for environmental protection and social management and shall resolve, in a timely manner, any environmental and social problem which may occur during the construction period.

2) All the environmental management activities shall be carried out against standardization of any pollutant outlet in accordance with the relevant standards.

3) The project proponent (YMI) shall strengthen its maintenance and management of environmental protection facilities and social management activities throughout the operation process, so as to ensure their normal functioning along with the project implementation.

ANNEX_1

BUSINESS LICENSE AND CERTIFICATES OF YMI

ကုမ္ပဏီမှတ်ပုံတင်လက်မှတ်

Certificate of Incorporation

ရန်ကုန် သတ္တုဗေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်

YANGON METAL INDUSTRY COMPANY LIMITED

Company Registration No. 191765923

မြန်မာနိုင်ငံကုမ္ပဏီများအက်ဥပဒေ ၁၉၁၄ ခုနှစ် အရ

ရန်ကုန် သတ္တုဗေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်

အား ၂၀၀၅ ခုနှစ် ဇူလိုင်လ ၄ ရက်နေ့တွင်

အစုရှယ်ယာအားဖြင့် တာဝန်ကန့်သတ်ထား သည့် အများနှင့်မသက်ဆိုင်သောကုမ္ပဏီ

အဖြစ် ဖွဲ့စည်းမှတ်ပုံတင်ခွင့် ပြုလိုက်သည်။

This is to certify that

YANGON METAL INDUSTRY COMPANY LIMITED

was incorporated under the Myanmar Companies Act 1914 on 4 July 2005

as a Private Company Limited by Shares.

ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ

Registrar of Companies

ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန

Directorate of Investment and Company Administration

Former Registration No. 504/2005-2006

COMPANY PROFILE

+ NEW FILING | ORDER DOCUMENTS | PRINT CERTIFICATE

Company Name (English)	Company Name (Myanmar)	Registration Number	Registration Date
YANGON METAL INDUSTRY COMPANY LIMITED	ရန်ကုန် သတ္တုဗေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်	191765923	04/07/2005

Company Type	Status	Foreign Company	Small Company
Private Company Limited by Shares	Registered	No	No

Annual Return Due Date
04/08/2021

Principal Activity
25 - Manufacture of fabricated metal products, except machinery and equipment

FILING HISTORY | ADDRESSES | OFFICERS | SHAREHOLDINGS | MORTGAGES AND CHARGES | COMPANY AUTHORITY | MEMBERS | DOCUMENTS

Document No.	Form/Filing Type	Filing Date	Effective Date	Filing
18006080010	C-3 - Change to share capital or register of members	08/09/2020	09/09/2020	
17621550012	AR - Annual Return	05/08/2020	05/08/2020	
17617270013	I-9A - Notice of intent to suspend for failure to file annual return	05/08/2020	05/08/2020	
13945760014	AR - Annual Return	22/08/2019	22/08/2019	
13945660010	H-1 - Registration of mortgage or charge	22/08/2019	22/08/2019	
13807750016	I-9A - Notice of intent to suspend for failure to file annual return	05/08/2019	05/08/2019	
11097410013	B-1 - Application for re-registration of a private company limited by shares	18/12/2018	21/12/2018	

COMPANY PROFILE

+ NEW FILING | ORDER DOCUMENTS | PRINT CERTIFICATE

Company Name (English)	Company Name (Myanmar)	Registration Number	Registration Date
YANGON METAL INDUSTRY COMPANY LIMITED	ရန်ကုန် သတ္တုဖေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်	191765923	04/07/2005

Company Type	Status	Foreign Company	Small Company
Private Company Limited by Shares	Registered	No	No

Annual Return Due Date
04/08/2021

Principal Activity
25 - Manufacture of fabricated metal products, except machinery and equipment

FILING HISTORY | ADDRESSES | OFFICERS | SHAREHOLDINGS | MORTGAGES AND CHARGES | COMPANY AUTHORITY | MEMBERS | DOCUMENTS

Type	Address	Effective Date
Principal Place Of Business In Union	Parami Street, No.261-262-263, Myaungdakar Industrial Hmawbi Township, Yangon, Myanmar	21/12/2018
Registered Office In Union	Parami Street No.261-262-263, Myaungdakar Industrial Hmawbi Township, Yangon, Myanmar	21/12/2018

COMPANY PROFILE

+ NEW FILING | ORDER DOCUMENTS | PRINT CERTIFICATE

Company Name (English)	Company Name (Myanmar)	Registration Number	Registration Date
YANGON METAL INDUSTRY COMPANY LIMITED	ရန်ကုန် သတ္တုဖေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်	191765923	04/07/2005

Company Type	Status	Foreign Company	Small Company
Private Company Limited by Shares	Registered	No	No

Annual Return Due Date
04/08/2021

Principal Activity
25 - Manufacture of fabricated metal products, except machinery and equipment

FILING HISTORY | ADDRESSES | OFFICERS | SHAREHOLDINGS | MORTGAGES AND CHARGES | COMPANY AUTHORITY | MEMBERS | DOCUMENTS

Name	Type	Nationality	N.R.C. (For Myanmar Citizens)	Effective Date
DAW NYO ME WIN	Director	Myanmar	12/LAMANA(N)122036	21/12/2018
U AUNG AUNG LWIN	Director	Myanmar	12/AHSANA(N)157540	21/12/2018
U AYE KO	Director	Myanmar	12/MAYAKA(N)044427	21/12/2018
U MYINT NAING	Director	Myanmar	9/MAYAMA(N)092208	21/12/2018
U MYO THIT AUNG	Director	Myanmar	12/SAKHANA(N)015163	21/12/2018
U SAN LWIN	Director	Myanmar	6/HTAWANA(N)032151	21/12/2018
U THAN HTAIK LWIN	Director	Myanmar	12/AHSANA(N)157539	21/12/2018
U TINT MYO NAING	Director	Myanmar	12/AHSANA(N)157541	21/12/2018

COMPANY PROFILE

NEW FILING | ORDER DOCUMENTS | PRINT CERTIFICATE

Company Name (English)	Company Name (Myanmar)	Registration Number	Registration Date
YANGON METAL INDUSTRY COMPANY LIMITED	ရန်ကုန် သတ္တုဖေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်	191765923	04/07/2005

Company Type	Status	Foreign Company	Small Company
Private Company Limited by Shares	Registered	No	No

Annual Return Due Date
04/08/2021

Principal Activity
25 - Manufacture of fabricated metal products, except machinery and equipment

FILING HISTORY | ADDRESSES | OFFICERS | SHAREHOLDINGS | MORTGAGES AND CHARGES | COMPANY AUTHORITY | MEMBERS | DOCUMENTS

Total Shares Issued by Company	Currency of Share Capital
20000	MMK

ULTIMATE HOLDING COMPANY

Company Name	Registration Number	Jurisdiction of Incorporation
Proven Technology Industry Company Limited	917/1996-97	MMR

SHARE CAPITAL STRUCTURE

Share Class	Class Title	Total No. Shares	Total Amount Paid	Total Amount Unpaid
ORD	Ordinary	20,000	2,000,000,000	0

COMPANY PROFILE

+ NEW FILING | ORDER DOCUMENTS | PRINT CERTIFICATE

Company Name (English)	Company Name (Myanmar)	Registration Number	Registration Date
YANGON METAL INDUSTRY COMPANY LIMITED	ရန်ကုန် သတ္တုစေး လုပ်ငန်း စက်မှုဆိုင် လီမိတက်	191765923	04/07/2005

Company Type	Status	Foreign Company	Small Company
Private Company Limited by Shares	Registered	No	No

Annual Return Due Date
04/08/2021

Principal Activity
25 - Manufacture of fabricated metal products, except machinery and equipment

FILING HISTORY | ADDRESSES | OFFICERS | SHAREHOLDINGS | MORTGAGES AND CHARGES | COMPANY AUTHORITY | MEMBERS | DOCUMENTS

Individual Members

Name	Nationality	N.R.C / Passport Number
DAW KHIN HTWE	Myanmar	12/AHSANA(N)159665
DAW NANMINALIN	Myanmar	12/KAMATA(N)036977
DAW NYO ME WIN	Myanmar	12/LAMANA(N)122036
DAW SAN SAN WIN	Myanmar	12/AHSANA(N)159663
DAW THIDA AUNG	Myanmar	7/YATAYA(N)068814
DAW YIN YIN HLA	Myanmar	12/AHSANA(N)159662
DAW YIN YIN HLA(1)	Myanmar	12/MAGATA(N)015911
DAWKHINHINNSWE	Myanmar	12/MAGATA(N)013883
U AUNG AUNG TWIN	Myanmar	12/AHSANA(N)157540
U AYE KO	Myanmar	12/MAYAKA(N)044427
U KYAING MYINT	Myanmar	9/MAYAMA(N)000062
U MYINT NAING	Myanmar	9/MAYAMA(N)092708
U MYINT WAI	Myanmar	7/YATAYA(N)073109
U MYO THIT AUNG	Myanmar	12/SAKHANA(N)015163
U SAN TWIN	Myanmar	6/HTAWANA(N)032151
U SOE PAING	Myanmar	12/PABATA(N)005178
U SOE WIN	Myanmar	12/AHSANA(N)164291
U THAN HTAIK TWIN	Myanmar	12/AHSANA(N)157539
U TINT MYO NAING	Myanmar	12/AHSANA(N)157541
U TUN MYINT @ YAN CHIN YU	Myanmar	12/PAZATA(N)006004
U WIN TIN	Myanmar	MME-615525

Corporate Members

Name	Registration Number	Jurisdiction Of Incorporation
PROVEN TECHNOLOGY INDUSTRY COMPANY LIMITED	917/1996-97	Myanmar

မှတ်ပုံတင်လက်မှတ်

Certificate of Registration

ရန်ကုန် သတ္တုဗေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်

YANGON METAL INDUSTRY COMPANY LIMITED

Company Registration No. 191765923

မြန်မာနိုင်ငံကုမ္ပဏီများဥပဒေ ၂၀၁၇ ပုဒ်မ ၂၂၉ အရ

ရန်ကုန် သတ္တုဗေဒ လုပ်ငန်းစု ကုမ္ပဏီ လီမိတက်

၏ ပေါင်နှံခြင်းနှင့် ကြွေးမြီတာဝန်ရှိခြင်း ကို ၂၀၁၉ ခုနှစ် သြဂုတ်လ ၂၂ ရက်နေ့တွင်

မှတ်ပုံတင်ခွင့်ပြုလိုက်သည်။

This is to certify that

YANGON METAL INDUSTRY COMPANY LIMITED

has registered a mortgage / charge pursuant to section 229 of the Myanmar Companies Law 2017 on 22 August 2019.

ကုမ္ပဏီမှတ်ပုံတင်အရာရှိ

Registrar of Companies

ရင်းနှီးမြှုပ်နှံမှုနှင့်ကုမ္ပဏီများညွှန်ကြားမှုဦးစီးဌာန

Directorate of Investment and Company Administration

Amount secured by mortgage or charge MMK: 4,046,601,281.00

Modification of mortgage / charge on (31/07/2019)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

ရန်ကုန်တိုင်းဒေသကြီးအစိုးရအဖွဲ့

ရန်ကုန်တိုင်းဒေသကြီးစည်ပင်သာယာရေးဝန်ကြီးဌာန

(ရန်ကုန်တိုင်းဒေသကြီးစည်ပင်သာယာရေးအဖွဲ့)

မှော်ဘီမြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

၂၀၁၉ – ၂၀၂၀ ခု၊ ဘဏ္ဍာရေးနှစ် စားသောက်ကုန် လုပ်ငန်းလိုင်စင်

၁။ လုပ်ငန်းပိုင်ရှင်အမည် ဦးဘဝ်မျိုးနိုင်

၂။ နိုင်ငံသားမှတ်ပုံတင်အမှတ် ၁၂/ဒဂခ (နိုင်) ၁၅၇၃၅၇

၃။ လုပ်ငန်းတည်ရှိသည့်နေရာ အမှတ် (၂၆၁၊ ၂၆၂၊ ၂၆၃) ပါရမီလမ်း မြောင်းတကာချ

၄။ လုပ်ကိုင်ခွင့်ပြုသည့်လုပ်ငန်းအမျိုးအစား [illegible]

၅။ နှစ်စဉ်လိုင်စင်ကြေးငွေ -၃၀၀၀၀/- (၃ သတ္တဝါ ကျွဲ ချက်သည့် [illegible])

၆။ ငွေပေးသွင်းသည့်ရက်စွဲ ၉-၁၀-၂၀၁၉

၇။ လိုင်စင်သက်တမ်းကုန်ဆုံးသည့်နေ့ ၃၀-၉-၂၀၂၀ (၁-၁၀-၂၀၁၉ မှ ၃၀-၉-၂၀၂၀)

လိုက်နာရန်စည်းကမ်းချက်များ

၁။ လုပ်ငန်းလိုင်စင်အား မြင်သာသောနေရာတွင် မှန်ဘောင်ဖြင့် ချိတ်ဆွဲထားရမည်။ လိုင်စင်အား တဆင့်လွှဲပြောင်းခြင်း၊ ငှားရမ်းခြင်း၊ ပေးကမ်းခြင်း လုံးဝမပြုလုပ်ရ။

၂။ လိုင်စင်ရရှိသူသည် အများပြည်သူအား ဘေးအန္တရာယ်ဖြစ်စေသည့် သို့မဟုတ် စက်ဆုပ်ရွံရှာဖွယ်ဖြစ်စေသည့် အလုပ်အကိုင်နှင့်ကုန်သန်းရောင်းဝယ်ခြင်းလုပ်ငန်းများ၊ စားသောက်ဖွယ်ရာများထုတ်လုပ်ခြင်း၊ တည်ခင်းရောင်းချခြင်းဆိုင်ရာ စည်းကမ်း(Bye-Laws)များနှင့် အခါအားလျော်စွာ ထုတ်ပြန်သည့်အမိန့် ညွှန်ကြားချက်များကို တိကျစွာ လိုက်နာရမည်။

၃။ လိုင်စင်ရရှိသူသည် လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းစေရန်နှင့် မီးဘေးကြိုတင်ကာကွယ်ရေးအတွက် ကြိုတင်တိကျစွာ လိုက်နာရမည်။

၄။ လိုင်စင်ရရှိသူသည် မိမိလုပ်ငန်းမှထွက်ရှိသည့် အမှိုက်သရိုက်၊ အညစ်အကြေးနှင့်ဓါတုဗေဒပစ္စည်းများအား အမှိုက်ကင်းမဲ့ဝှံ စီမံချက်နှင့်အညီ စနစ်တကျစွန့်ပစ်ရမည်။ လိုအပ်ပါက မြို့နယ်စည်ပင်သာယာရေးအဖွဲ့တွင် စီးပွားရေးအမှိုက်ခွန်ပေးသွင်း၍ အမှိုက်သိမ်းယာဉ်အကူအညီ တောင်းခံရမည်။

၅။ လိုင်စင်တွင် ရောင်းချခွင့်ပြုထားသည့် ကုန်ပစ္စည်းများကိုသာ ရောင်းချခွင့်ပြုသည်။ သက်ဆိုင်ရာအာဏာပိုင်များက တားမြစ်သည့် ကုန်ပစ္စည်းများကို ရောင်းချခြင်းမပြုရ။

၆။ နှစ်စဉ် အဖွဲ့မှသတ်မှတ်သည့်လိုင်စင်ခကို လုပ်ငန်းအမျိုးအစားအလိုက် သတ်မှတ်သည့်နှုန်းထားအတိုင်း ပေးဆောင်ရမည်။

၇။ လုပ်ငန်းရှင်များသည် ရှေ့လာမည့်ဘဏ္ဍာရေးနှစ်တွင် မိမိလုပ်ငန်းအား ဆက်လက်လုပ်ကိုင်လိုပါက အဖွဲ့ရုံးသို့ ကြိုတင်လျှောက်ထားရမည်။

၈။ လုပ်ငန်းရှင်များသည် မိမိလုပ်ငန်းအား ပိတ်သိမ်းသည့်အခါ အဖွဲ့ရုံးသို့ ကြိုတင်အကြောင်းကြားရမည်။

၉။ အထက်ပါစည်းကမ်းတစ်ရပ်ရပ်ကို လိုက်နာခြင်းမရှိပါက လိုင်စင်ကို ပြန်လည်ရုပ်သိမ်း၍ စည်ပင်သာယာရေးအဖွဲ့များဥပဒေအရ ထိရောက်စွာအရေးယူခြင်းခံရမည်။

အမှုဆောင်အရာရှိ

မှော်ဘီမြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

ရက်စွဲ၊ ၂၀၁၉ ခုနှစ်၊ အောက်တိုဘာ လ ၉ ရက်။

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ

စီမံကိန်း၊ဘဏ္ဍာရေးနှင့်စက်မှုဝန်ကြီးဌာန

စက်မှုကြီးကြပ်ရေးနှင့်စစ်ဆေးရေးဦးစီးဌာန

ပုဂ္ဂလိကစက်မှုလုပ်ငန်းမှတ်ပုံတင်လက်မှတ်

စက်မှုမှတ်ပုံတင်အမှတ် ရက/ကြီး/၃၀၃၀ ရက်စွဲ ၂၃. ၁၀. ၂၀၁၁

လုပ်ငန်းအရွယ်အစား အကြီးစား ပြည်ထောင်စုနယ်မြေ/တိုင်းဒေသကြီး/ပြည်နယ် ရန်ကုန်

အောက်ပါလုပ်ငန်းသည် ပုဂ္ဂလိကစက်မှုလုပ်ငန်း ဥပဒေ ပုဒ်မ ၇ ပုဒ်မခွဲ (ဂ)အရ မှတ်ပုံတင်ပြီး ဖြစ်ပါသည်။

Yangon Metal Industry Co., Ltd. ဘက်ထရီအိုးဟောင်းမှ ခဲသတ္တုကိုချက်သန့်စင်

၁။ လုပ်ငန်းအမည် လုပ်ငန်း

၂။ လုပ်ငန်းအမျိုးအမည် ကုန်ကြမ်းပစ္စည်းလုပ်ငန်း

၃။ အဓိကကုန်ချောပစ္စည်းအမျိုးအမည် Lead(99.97 %, 99.99 %), Alloy Lead

၄။ တည်နေရာလိပ်စာ အမှတ်(၂၆၁၊ ၂၆၂၊ ၂၆၃)၊ မြောင်းတကာစက်မှုဇုန်၊ မော်ဘီမြို့နယ်၊ မြောက်ပိုင်းခရိုင်

၅။ ပိုင်ဆိုင်မှုအမျိုးအစား ကုမ္ပဏီပိုင်

၆။ လုပ်ငန်းရှင်အမည် ဦးတင့်မျိုးနိုင်(M.D)

၇။ ကိုင်ဆောင်သည့်မှတ်ပုံတင်အမှတ် ၁၂/အစန(နိုင်)၁၅၇၅၄၁

၈။ ရင်းနှီးမြှုပ်နှံမှုတန်ဖိုး(ကျပ်) ၁၇၃၁. ၆၅၃ သန်း တည်ထောင်သည့်ခုနှစ် ၂၀၁၁

၉။ အသုံးပြုသည့်အားအမျိုးအစား ထရန်စဖော်မာ/လျှပ်ထုတ်စက် မြင်းကောင်ရေ ၂၅၀၀ KVA/ ၁၆၅၀ KVA

၁၀။ အလုပ်သမားဦးရေ ၈၆ ဦး

၁၁။ မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးသည့်နေ့ရက် ၃၁. ၁၀. ၂၀၁၂

အေးအေးဝင်း

ညွှန်ကြားရေးမှူးချုပ်

လုပ်ငန်းရှင်များလိုက်နာရန်စည်းကမ်းချက်များ

၁။ ဤမှတ်ပုံတင်လက်မှတ်ကို အများမြင်သာသည့်နေရာတွင် ချိတ်ဆွဲထားရမည်။

၂။ ဤမှတ်ပုံတင်လက်မှတ်ကို မသက်ဆိုင်သူအား လွှဲအပ်ခြင်း သို့မဟုတ် လွှဲပြောင်းပေးခြင်းမပြုရ။

၃။ ဤမှတ်ပုံတင်လက်မှတ်ပါ အချက်အလက်များကို ပြင်ဆင်ခြင်း သို့မဟုတ် ဖြည့်စွက်ခြင်းမပြုရ။

၄။ ဤမှတ်ပုံတင်လက်မှတ် ပျောက်ဆုံးလျှင် မှတ်ပုံတင်လက်မှတ်မိတ္တူကို ထုတ်ပေးရန် ပြည်ထောင်စုနယ်မြေ သို့မဟုတ် တိုင်းဒေသကြီး သို့မဟုတ် ပြည်နယ်ဦးစီးဌာနမှူးထံ ခိုင်လုံသော အထောက်အထားနှင့်အတူ လျှောက်ထားရမည်။

၅။ မှတ်ပုံတင်လက်မှတ်ပျက်စီးလျှင် သို့မဟုတ် မထင်မရှားဖြစ်လျှင် သို့မဟုတ် မှတ်ပုံတင်လက်မှတ် ပါ အချက်အလက်များ ပြောင်းလဲရန်လိုအပ်လျှင် ပြည်ထောင်စုနယ်မြေ သို့မဟုတ် တိုင်းဒေသကြီး သို့မဟုတ် ပြည်နယ်ဦးစီးဌာနမှူးထံ မှတ်ပုံတင်လက်မှတ်နှင့် ပူးတွဲတင်ပြလျှောက်ထားရမည်။

၆။ ဤမှတ်ပုံတင်လက်မှတ်ကို စက်မှုလုပ်ငန်းနှင့်စပ်လျဉ်းသည့်ကိစ္စမှအပ မည်သည့်ကိစ္စတွင်မျှ အသုံးမပြုရ။

၇။ မှတ်ပုံတင်သက်တမ်းမကုန်ဆုံးမီ သက်တမ်းတိုးမြှင့်ပေးရန် လျှောက်ထားရာတွင် ဤမှတ်ပုံတင်လက်မှတ်ကို ပူးတွဲတင်ပြရမည်။

၈။ သက်တမ်းကုန်ဆုံးပြီး ရက်ပေါင်း (၆၀)အတွင်း သက်တမ်းတိုးမြှင့်လျှောက်ထားပါက သတ်မှတ်သည့် ဒဏ်ကြေးကို ပေးဆောင်ရမည်။

၉။ သက်တမ်းတိုးမြှင့်ရန် လျှောက်ထားခြင်းမရှိပါက မှတ်ပုံတင်ပျက်ပြယ်ပြီးဖြစ်သည်။

မှတ်ပုံတင်သက်တမ်းတိုးမြှင့်ခြင်း

စဉ်	ချုပ်ငန်းအမှတ်/ရက်စွဲ	မှတ်ပုံတင်သက်တမ်းကုန်ဆုံးမည့်နေ့ရက်	ခွင့်ပြုသူလက်မှတ်
၈။	၃၈/၁၀. ၁၀. ၂၀၁၉	၃၁. ၁၀. ၂၀၂၀	တိုင်းဦးစီးဌာနမှူး
၉။	၃၉/၁၆. ၁၀. ၂၀	၃၁-၁၀-၂၀၂၁	တိုင်းဒေသကြီးဦးစီးဌာနမှူး

စက်မှုဇုန်အဆင့်မြှင့်တင်ရေးကြီးကြပ်မှုကော်မတီ

မြောင်းတကာသံမဏိသံရည်ကျိုစက်မှုမြို့

မှော်ဘီမြို့နယ်။

စာအမှတ်၊ မတက / ၂၇ / ၅၄ / ၂၀၂၀ (၀၁၈၆)

ရက်စွဲ ၊ ၂၀၂၀ ခုနှစ်၊ ဒီဇင်ဘာလ (၁၆) ရက်

သို့

သက်ဆိုင်ရာသို့

အကြောင်းအရာ။ **ထောက်ခံချက် ပေးပို့ခြင်း။**

ရန်ကုန်တိုင်းဒေသကြီး၊ မြောက်ပိုင်းခရိုင်၊ မှော်ဘီမြို့နယ်၊ မြောင်းတကာသံမဏိသံရည်ကျို စက်မှုဇုန်ရှိ မြေကွက်အမှတ်(၂၆၁ မှ ၂၆၃)၊ ဧရိယာ(၈.၃၃၇)ဧကပေါ်တွင် Yangon Metal Industry Co.,Ltdမှ ခဲသတ္တုသန့်စင်သံရည်ကျိုလုပ်ငန်းကို လုပ်ကိုင်လျက်ရှိပြီး ၎င်းစက်ရုံမှ ထုတ်လုပ်သော Refined Lead, Refined Lead Ingot, Lead Ingot, Alloy များကို (၁၄–၁၂–၂၀၂၀)ရက်မှ (၁၃–၁၂–၂၀၂၁)ရက်အတွင်း နိုင်ငံခြားသို့ တင်ပို့ရောင်းချရန်အတွက် (Export Licence)လျှောက်ထားလာခြင်းအား သက်ဆိုင်ရာ ဌာနဆိုင်ရာများ၏ ဥပဒေလုပ်ထုံးလုပ်နည်းနှင့်အညီ လိုက်နာဆောင်ရွက်သွားမည်ဆိုပါက ကန့်ကွက်ရန် မရှိကြောင်း ပေးပို့ အကြောင်းကြား အပ်ပါသည်။

(မြွှေထူး)

ဥက္ကဋ္ဌ

စက်မှုဇုန်အဆင့်မြှင့်တင်ရေးကြီးကြပ်မှုကော်မတီ

မြောင်းတကာသံမဏိသံရည်ကျိုစက်မှုဇုန်

မိတ္တူကို

– ရုံးလက်ခံ။

Certificate TH13/6947

The management system of

Yangon Metal Industry Co., Ltd.

Office and Factory:
No.261-263, Parami Street, Myaung Da Kar Special Foundry Industrial Zone,
Hmawbi Township, Yangon, Myanmar

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

**Manufacture of Lead from Lead Acid Battery Waste & Scrap:
Antimony Lead, Pure Lead and Lead Alloy**

This certificate is valid from 14 March 2019 until 14 March 2022 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.
Issue 4. Certified since 14 March 2013

Authorised by

SGS United Kingdom Ltd
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

HC SGS 9001 2015 0818

	ဓာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများအန္တရာယ်မှ တားဆီးကာကွယ်ရေး ဗဟိုကြီးကြပ်ရေးအဖွဲ့	ပုံစံ	၂
		လုပ်ငန်း အရေအတွက်	၆ (မျိုး)
		သက်တမ်း	၂ နှစ်

ဓာတုပစ္စည်းနှင့်ဆက်စပ်ပစ္စည်းများဆိုင်ရာ လုပ်ငန်းလိုင်စင်

လိုင်စင်အမှတ် ၀၀၀၃၇၈

(နည်းဥပဒေ ၁၈)

ရက်စွဲ၊ ၂၀၂၀ ပြည့်နှစ်၊ ဇန်နဝါရီ လ ၂၁ ရက်

၁။ ၂၇-၁၁-၂၀၁၈ ရက်စွဲပါ လျှောက်လွှာအမှတ် ၃၆၂ ဖြင့် လုပ်ငန်းလိုင်စင် လျှောက်ထားသော Yangon Metal Industry Co.,Ltd. ကုမ္ပဏီ/လုပ်ငန်းမှ ဦး/ဒေါ် ဦးတင့်မျိုးနိုင် (ဘ) ဦးအုန်းလွင် နိုင်ငံသားစိစစ်ရေးကတ်ပြားအမှတ်/ နိုင်ငံခြားသားမှတ်ပုံတင်အမှတ် ၁၂/အစန(နိုင်)၁၅၇၅၄၃ အား ဤလုပ်ငန်းလိုင်စင်ကို ထုတ်ပေးလိုက်သည်။

၂။ ခွင့်ပြုသည့်လုပ်ငန်းအမျိုးအစား

သိုလှောင်ခြင်း၊၊ သုံးစွဲခြင်း၊ တင်သွင်းခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ လက်ဝယ်ထားရှိခြင်း၊ ဝယ်ယူခြင်း။

၃။ လုပ်ငန်းလုပ်ကိုင်ခွင့်ပြုသည့် ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ၏ အမျိုးအမည်များ ထားရှိမည့်နေရာ (ပြည့်စုံစွာဖော်ပြရန်) — အမှတ် (၂၆၁၊ ၂၆၂၊ ၂၆၃)၊ ပါရမီလမ်း၊ မြောင်းတကာစက်မှုဇုန်၊ ရန်ကုန်တိုင်းဒေသကြီး။

၄။ လုပ်ငန်းလိုင်စင်သက်တမ်းကုန်ဆုံးမည့်နေ့ရက် — ၂၁-၁-၂၀၂၂

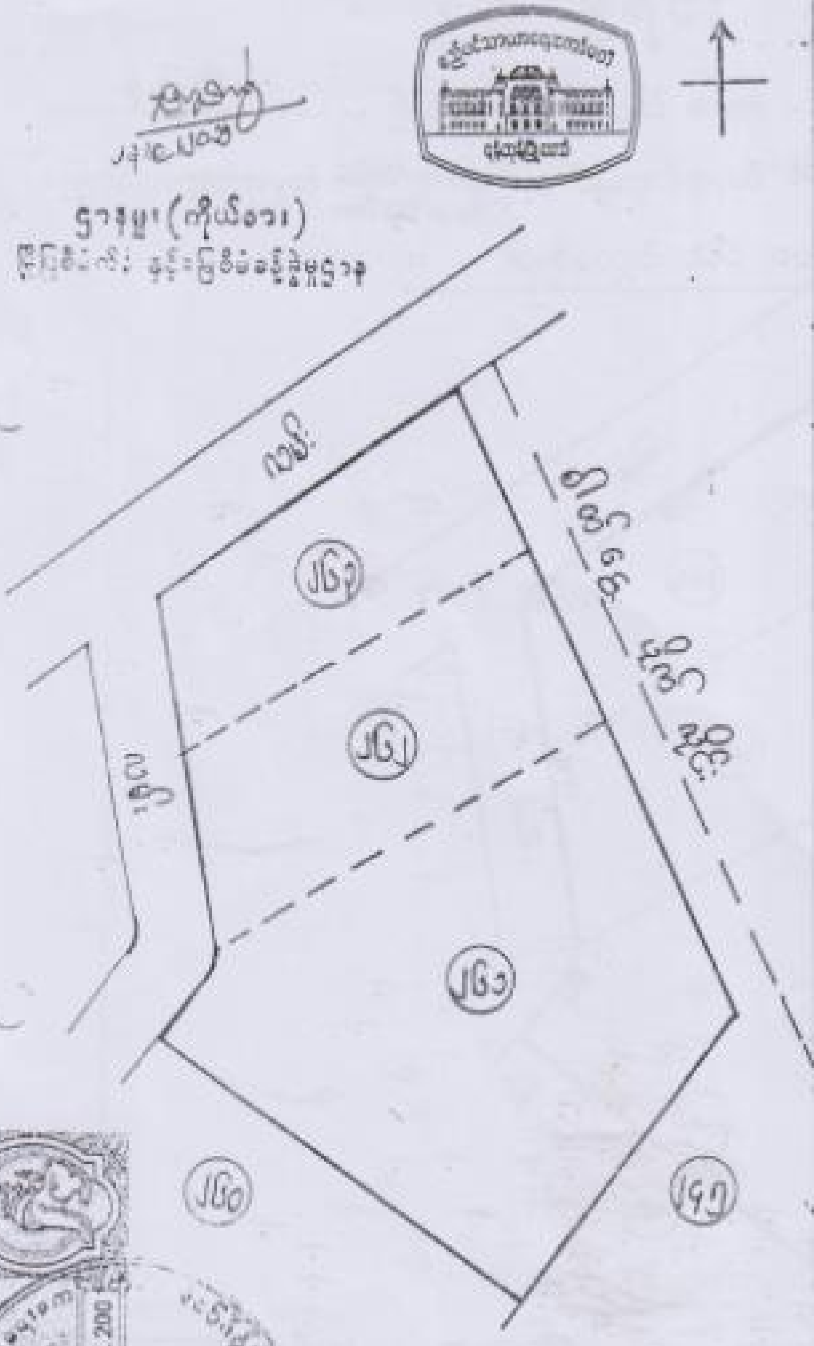
21.1.20

ဥက္ကဋ္ဌ

ဗဟိုကြီးကြပ်ရေးအဖွဲ့

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ



၂၀၁၅-၁၆/ ခုနှစ်သုံးမြေပုံမှရေးကူး ပေးသည့် မှန်ကန်ကြောင်း သက်သေခံသည့် မိတ္တူမြေပုံ	
အမည်ပေါက်	Yangon Metal Industry Co.Ltd
မြေတိုင်းရပ်ကွက်အမှတ်	မြောင်းတကာ သံမဏိစက်မှုဇုန်
လူနေရပ်ကွက်အမှတ်	-
မြေကွက်အမှတ်	၂၆၁+၂၆၂+၂၆၃
မြေအမျိုးအစား	၂၀(၆၀)ဂရန်
ဧရိယာ	၈.၁၈၉ ဧက (အထိုင်းအစ ဇေမောင်)
မြို့နယ်	မှော်ဘီ
စကေး	၁" = ၂၀၀'
ဝက်ဘ်စာဥ္စာရေးလျှောက်ထားသည့်အကြောင်းအရာ	
မြို့တိုင်း(၂) မြို့ပြစီမံကိန်း နှင့်မြေစီမံခန့်ခွဲမှုဌာန	
မြို့တိုင်း(၁) မြို့ပြစီမံကိန်း နှင့်မြေစီမံခန့်ခွဲမှုဌာန	
ဌာနမှူး မြို့ပြစီမံကိန်း နှင့်မြေစီမံခန့်ခွဲမှုဌာန	

၂၀၁၅/၁၆ ခုနှစ်တိုင်း မြေပုံ/မြို့မြေစာရင်းမှ ရေးကူး သော ကော်ပီမှတ်ချက် မိတ္တူ မြေပုံ/မြေစာရင်း ဖြစ်၍ မိတ္တူမှန်ကန်ကြောင်း ထောက်ခံပါသည်။

(မြို့ပြ/မြေယာဌာန)

K 200

ANNEX_2

A-3 SIZE OF RAW STORAGE AND OTHER LAYOUT PLANS

YANGON METAL INDUSTRY CO.,LTD.

Raw Materials Storage Layout Plan

Car Parking

Main Office

Anthracite
(Maximum - 300 Ton)

Soda Ash Dense
(Maximum - 450 Ton)

Pyritemax FeS2
(Maximum- 45Ton)

Caustic Soda
(Maximum- 50Ton)

Fire Brick & Castable

Sodium Nitrate
(Maximum - 45 Ton)

WEIGHT MACHINE AREA

Anthracite
(Maximum - 150 Ton)

Other

Sulphur
(Maximum - 10 Ton)

Iron Chip

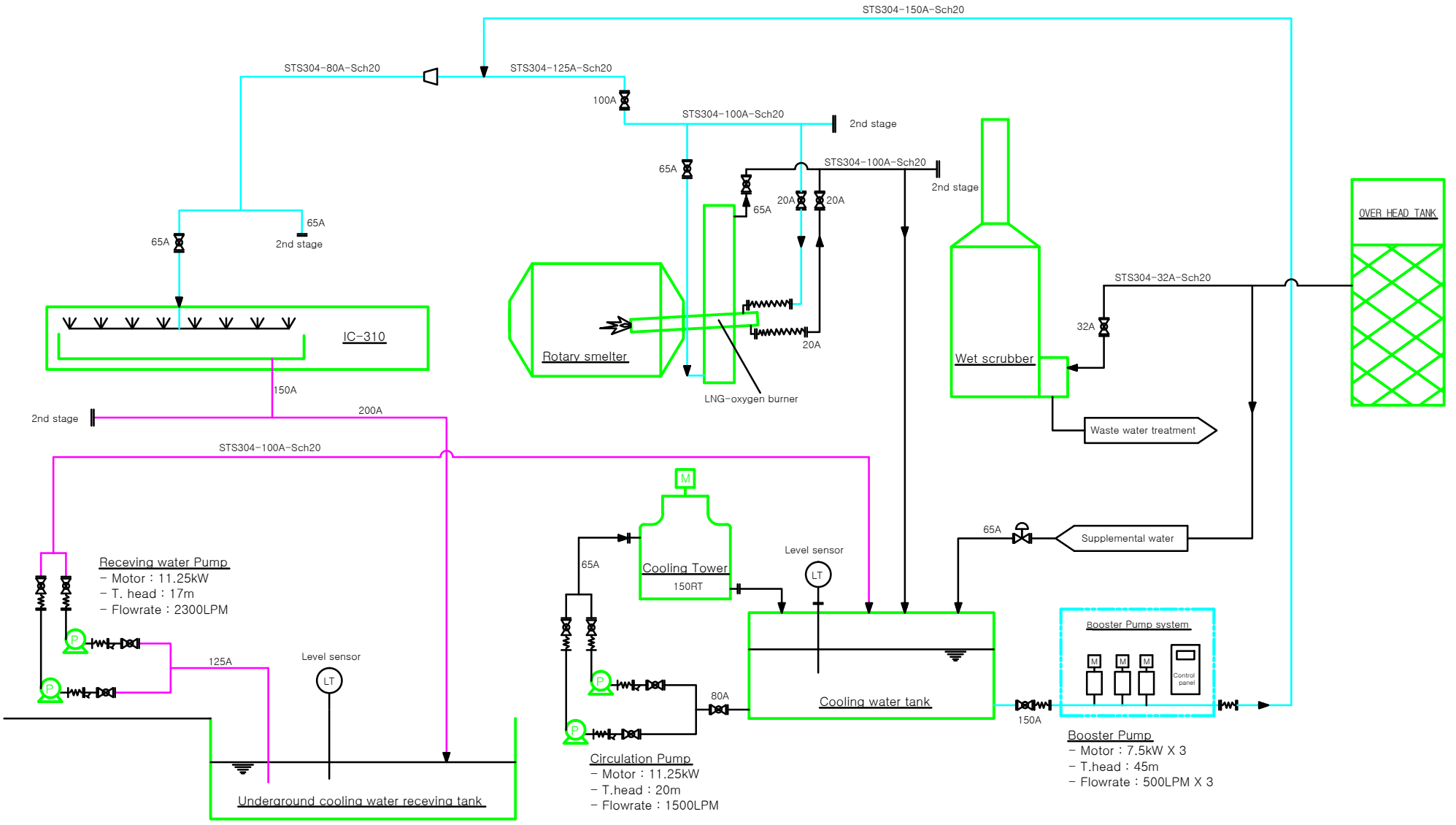
Soda Ash Dense(Maximum - 250 Ton)

Other

Work Shop Area

Spare Part & Tool
Storage Area

Office



--- Legend ---

- Ball valve
- Strainer
- Flexible pipe
- Auto valve
- Reducer
- Blind Flange
- Flange

REV.	DATE	DESCRIPTION	DRAWING	CHECKED	APPROVED

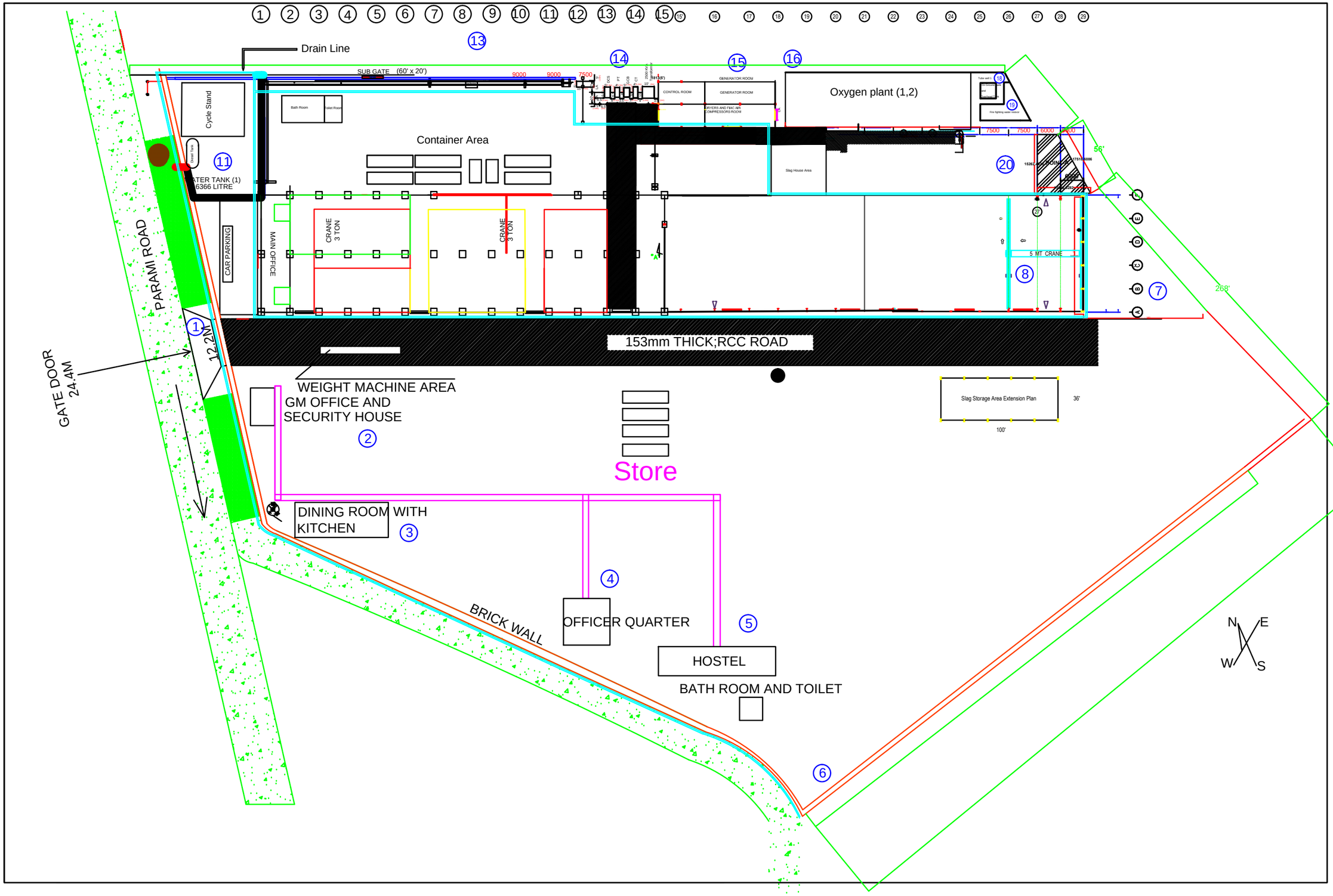
Yangon Metal Industry co.,ltd.

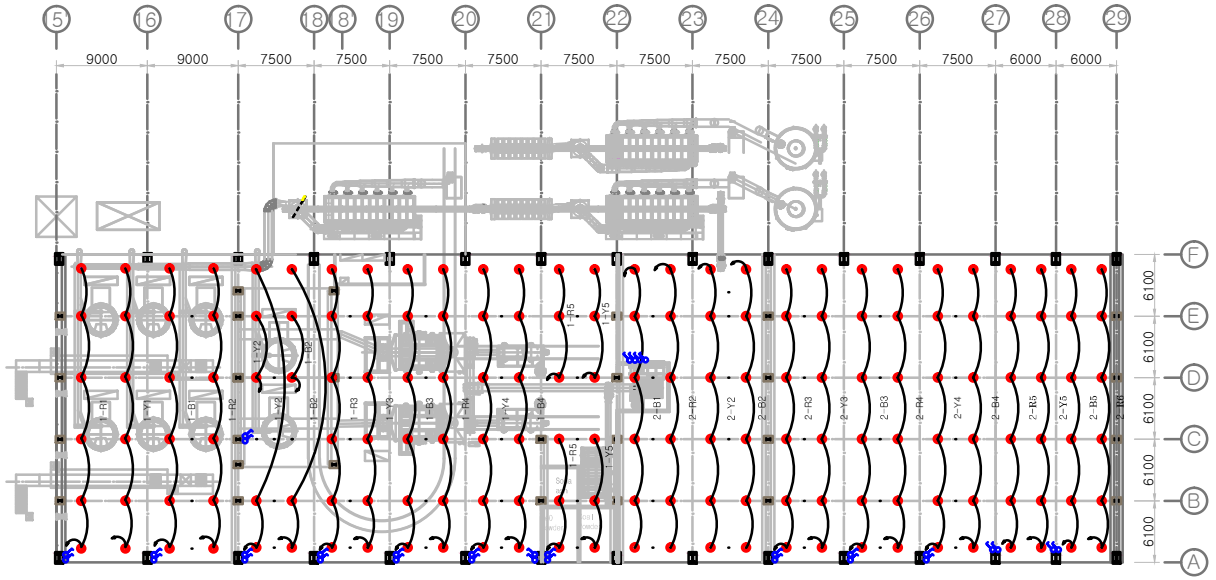
TITLE P&ID for Cooling Water

DRAWING	DESIGNED	CHECKED	APPROVED	DATE	SCALE
				June 5, 2017	None

DWG.NO	MAT'L	REV.	SHEET
YM-PI-5		A	/

Yangon Metal Industry Co., ltd. (Factory Layout Plan)





LIGHTING LAYOUT PLAN

150W LED Hi-bay

1Gang, 1Way Switch

OWNER

YANGON METAL CO;LTD

PROJECT:

Y M I

M&E CONSULTANT

U WIN MYINT

DRAWING NO:

YGN-MT-EL-02

DRAWING TITLE

LIGHTING LAYOUT PLAN

DRAW BY

AUNG PYAE PHYO

DATE : 6. AUGUST. 2015

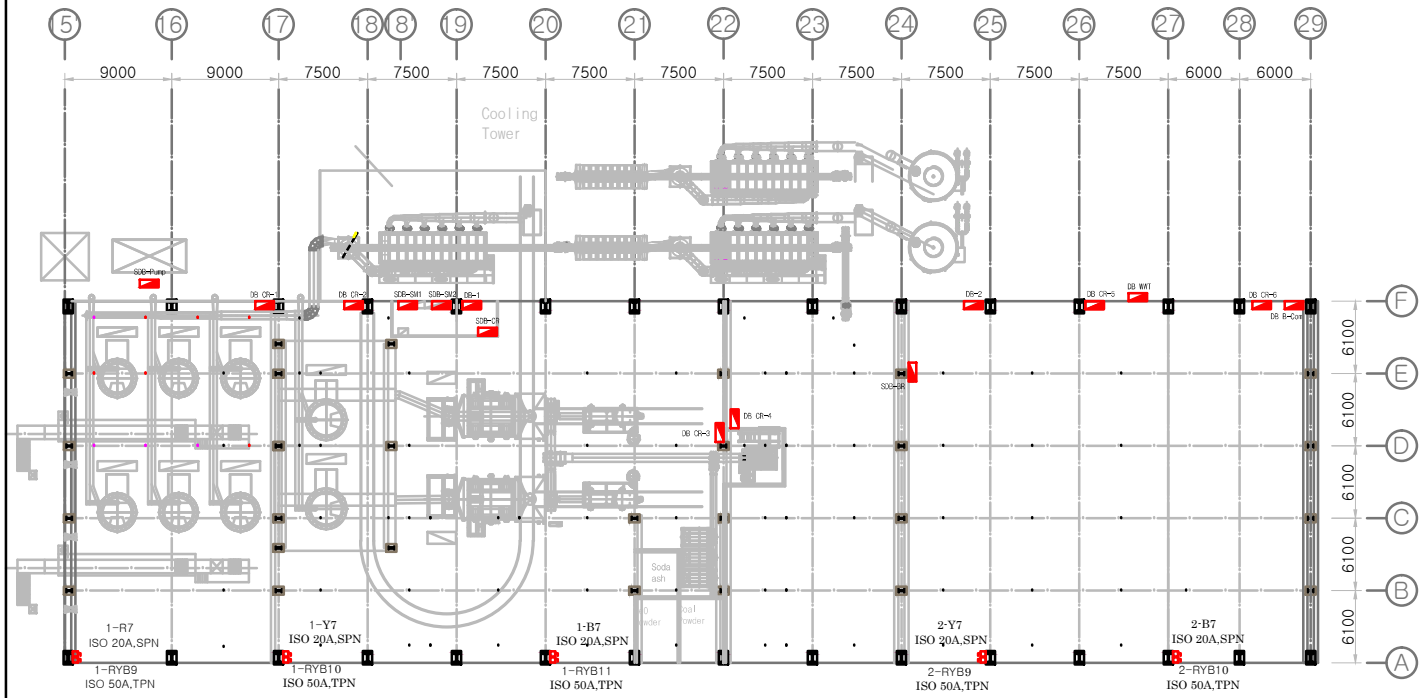
SCALE : N.T.S

REV : 0

M&E CONTRACTOR

innotech

Bldg:-(B),Room No.007-A,007-B,007-C,FIRST FLOOR,High-Way Complex,
Corner of Hnin Si Street &2nd Street,Ward(G),Kamayut Township,Yangon.
Email : innotech.main@gmail.com
Phone : 01-2304189,01-2304190



POWER LAYOUT PLAN

M&E CONTRACTOR

innotech

Bldg:-(B),Room No.007-A,007-B,007-C,FIRST FLOOR,High-Way Complex,
Corner of Hnin Si Street &2nd Street,Ward(6),Kamayut Township,Yangon.
Email : innotech.main@gmail.com
Phone : 01-2304189,01-2304190

LEGEND

Distribution Box

Isolator

OWNER

YANGON METAL CO;LTD

PROJECT;

Y M I

M&E CONSULTANT

U WIN MYINT

DRAWING NO;

YGN-MT-EL-03

DRAWING TITLE

POWER LAYOUT PLAN

DRAW BY

AUNG PYAE PHYO

DATE : 6. AUGUST. 2015

SCALE : N.T.S

REV : 0

ANNEX_3

PCM MEETING INVITATION LETTER AND PRESENTATION FILE

ဖိတ်ကြားလွှာ

Yangon Metal Industry

Lead Smelting and Refining Process စီမံကိန်း

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပထမအဆင့် နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်းအစီရင်ခံစာအတွက်

အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းနှင့် စီမံကိန်းအချက်အလက်များထုတ်ဖော်တင်ပြခြင်း အခမ်းအနား

Yangon Metal Industry သည် မော်ဘီမြို့နယ်အတွင်း မြောင်းတကာစက်မှုဇုန်၌ Lead Smelting and Refining Process စီမံကိန်းအား အကောင်အထည်ဖော်တည်ဆောက်လျက်ရှိပြီး၊ အဆိုပါစီမံကိန်းနှင့် ပတ်သက်သော ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းအစီရင်ခံစာကို Enviro-Klear Techno-Associates Co., Ltd. (EKTA) နှင့် တွဲဖက်လုပ်ဆောင်လျက်ရှိပါသည်။ သို့ဖြစ်ပါ၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းပထမအဆင့် နယ်ပယ်တိုင်းတာသတ်မှတ်ခြင်း အစီရင်ခံစာ (Scoping Report) အတွက်လိုအပ်သော အများပြည်သူနှင့်တိုင်ပင်ဆွေးနွေးခြင်းနှင့် စီမံကိန်းအချက်အလက်များ ထုတ်ဖော်တင်ပြခြင်း အခမ်းအနားကို အောက်ဖော်ပြပါအစီအစဉ်အတိုင်း ကျင်းပပြုလုပ်မည်ဖြစ်ပါသဖြင့် တက်ရောက်ဆွေးနွေး ပေးပါရန် လေးစားစွာ ဖိတ်ကြားအပ်ပါသည်။

ရက်စွဲ။ ။၂၀၂၀ ခုနှစ် ဇွန်လ(၁၈)ရက်၊ ကြာသပတေးနေ့

အချိန်။ ။ နံနက် (၁၀း၀၀)နာရီ မှ (၁၁း၃၀) နာရီထိ

နေရာ။ ။ Yangon Metal Industry အစည်းအဝေးခန်းမ၊ မြောင်းတကာစက်မှုဇုန် ၊ မော်ဘီမြို့နယ်။

ခဲသတ္ထုကျိုချက်ရေး နှင့် သန့်စင်ရေး စီမံကိန်း (Yangon Metal Industry)

Yangon Metal Industry Co., Ltd.

အများပြည်သူသို့ သတင်းအချက်အလက်ထုတ်ဖော်တင်ပြခြင်း နှင့် တိုင်ပင်ဆွေးနွေးခြင်း
(ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ နယ်ပယ်သတ်မှတ်လေ့လာခြင်း အဆင့်)

၂၀၂၀ ခုနှစ် ဇွန်လ ၁၈ ရက်

Enviro-Klean Techno-Associates

1

အများပြည်သူတိုင်ပင်ဆွေးနွေးခြင်းအစည်းအဝေး ပြုလုပ်ရသည့် ရည်ရွယ်ချက်

- -ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) အရ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ ထိခိုက်မှုဆန်းစစ်ခြင်း နှင့် သဘာဝပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ကို အစီရင်ခံစာတင်ပြရန်

- ဆွေးနွေးညှိနှိုင်းသွားမည့်အကြောင်းအရာများ:
  - စီမံကိန်းနှင့်ပတ်သက်သောအခြေခံအချက်အလက်များ
  - စီမံကိန်းအပေါ် လူထု၏သဘောထားအမြင်
  - ဖြစ်နိုင်ချေရှိသောသက်ရောက်မှုများ
  - သက်ရောက်မှုများအားလျော့ပါးစေရေးနည်းလမ်းများ

2

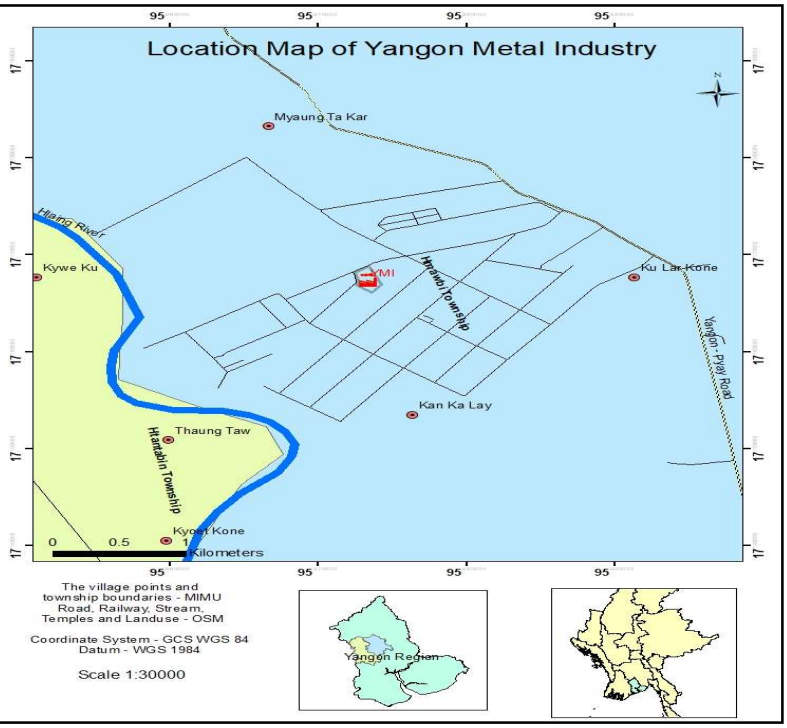
စီမံကိန်းနောက်ခံအကြောင်းအရာ

လက်ရှိတည်ဆောက်ပြီးစီးမှု နှင့် လည်ပတ်နေသည့် အခြေအနေ

- မြောင်းတကာစက်မှုဇုန်
- လုပ်သားအင်အား တစ်နေ့လျှင် ၃ ဆိုင်း ထားရှိပြီး တစ်ဆိုင်းလျှင် လုပ်သား အယောက် ၃၀ ခန့် ဖြင့် စက်ရုံလည်ပတ်
- ပင်မရုံးခန်း ၊ ကုန်ကြမ်းရုံ၊ စက်လည်ပတ်ရုံ ၊ မော်တာများ ထားရှိရာရုံ ၊ အရည်အသွေး ဓာတ်ခွဲခန်းများ ၊ အစည်းအဝေးခန်းမ
- စားသောက်ခန်း ၊
- အဝတ်လဲခန်းများ ၊ ရေချိုးခန်းများ ၊ သန့်စင်ခန်းများ ၊
- စက်ဘီးပါကင် ၊ ကားပါကင် ဧရိယာများ

3

စက်ရုံတည်နေရာပြမြေပုံ



4

EKTA နှင့် YMI တို့ ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာ ဆန်းစစ်ခြင်း လုပ်ငန်းစဉ် အတွက် သဘောတူစာချုပ် ချုပ်ဆိုခြင်း

5

EKTA ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေး ပညာရှင်များ စက်ရုံလေ့လာရေး ခရီးစဉ်

6

ကုန်ကြမ်းမှ ကုန်ချောအထိ ထုတ်လုပ်သည့် လုပ်ငန်းစဉ်အဆင့်ဆင့်

7

ကုန်ကြမ်းသယ်ပို့ယာဉ်နှင့် ကြိတ်ခွဲစက်

8

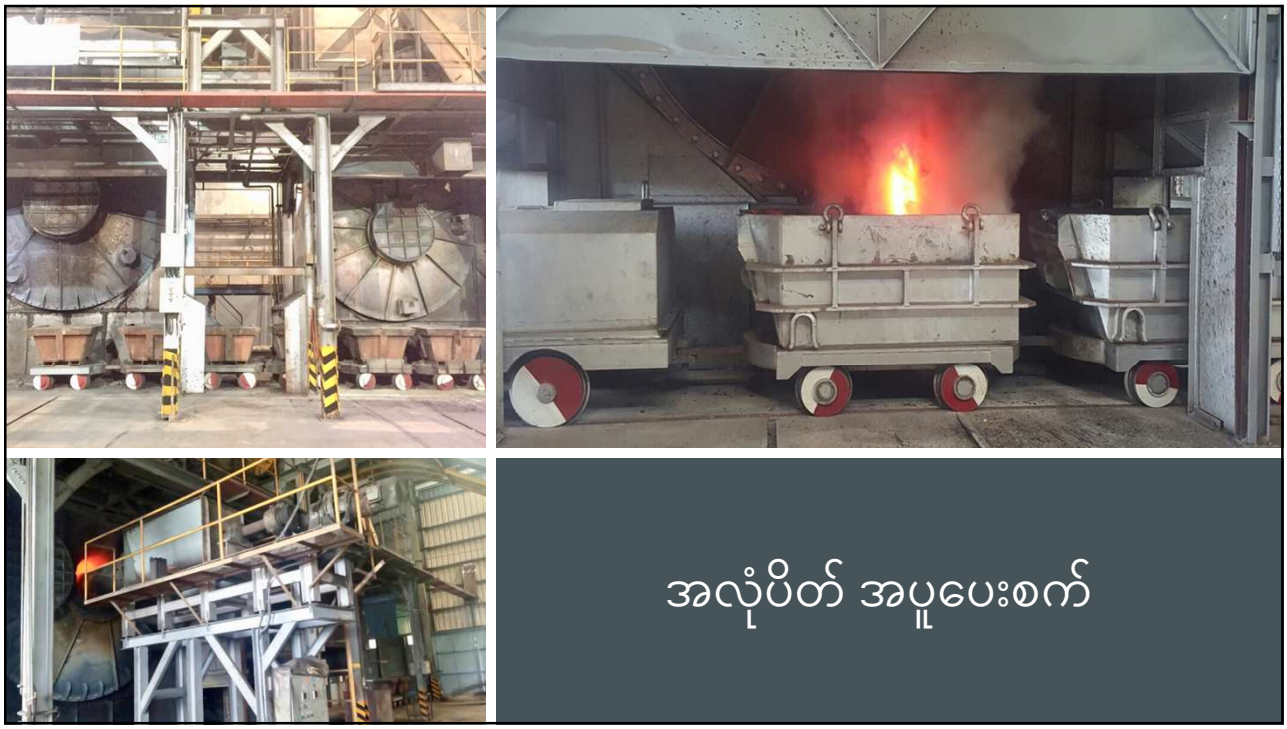


ကြိတ်ခွဲစက်မှ ထွက်လာသော ပစ္စည်းများ

9


ခဲကျိုချက်ခြင်းနှင့် စက်တစ်ခုမှတစ်ခုဆီသို့သယ်ယူပို့ဆောင်ခြင်း

10



11

12

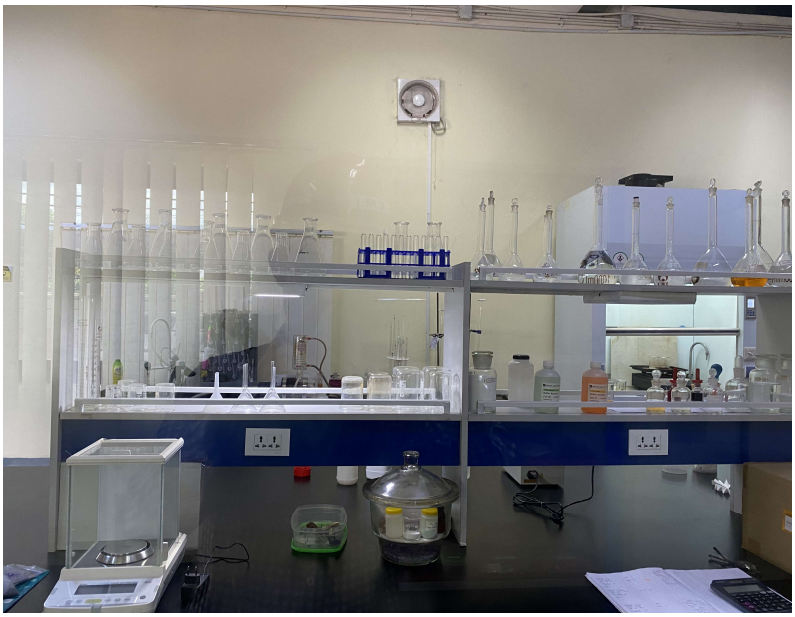
ထုတ်လုပ်သည့် ကုန်ချောပစ္စည်းများ

13

အလုပ်သမားများ လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းစေရေး သတိပေး လမ်းညွှန်ချက်များ

14

- YMI အရည်အသွေးစစ်ဆေးခြင်း



15

- မျက်စိဆေး ၊ ခြေလက်သုတ်သင်ဆေးကြောခန်း ၊ ရေချိုးခန်း ၊ အဝတ်လဲခန်း ၊

16

စားသောက်ခန်းမ

- အမိုးအကာ လုံခြုံစွာဖြင့် စီစဉ်ပေးထားခြင်း
- စားသောက်ခန်းမဝင်ခင် လေမှုတ်ကိရိယာဖြင့် သန့်စင်ခြင်း
- လက်အသုံးပြုရန် မလိုသော လက်ဆေးစင်များ ထားရှိပေးခြင်း
- စားသောက်ခန်းမတွင် စားပွဲ၊ ကုလားထိုင်များ ခင်းကျင်းထားခြင်း
- အမှိုက်ပုံးများအား ထားရှိပေးခြင်း

17

အလုပ်သမားများအတွက် ယာဉ်ရပ်နားထားရှိရန်နေရာ စီစဉ်ထားရှိမှု

18

စီမံကိန်းပိုင်ရှင်များနှင့် တွေ့ဆုံဆွေးနွေးခြင်း

- စက်ရုံကို အကောင်အထည်ဖော် ထားရှိမှု အခြေအနေများ ရှင်းလင်း တင်ပြခြင်း
- သင်တန်းများ ၊ ကျန်းမာရေးစောင့် ရှောက်မှု အနေအထားများ
- သဘာဝဘေးအန္တရာယ် ကာကွယ် ထားရှိမှု အစီအစဉ်များ (မီးဘေး)
- Covid-19 ကာလ ရောဂါ ကူးစက် ပြန့်ပွားမှု မရှိရအောင် လိုက်နာဆောင်ရွက်ချက်များ
- ဝန်ထမ်းစီမံခန့်ခွဲရေး အစီအစဉ်များ
- ပတ်ဝန်းကျင်ထိခိုက်မှု လျော့ပါးစေရေး အစီအစဉ်များ
- လေ့လာရေးခရီးစဉ်မှ တွေ့ရှိချက်များအား ဆွေးနွေးတင်ပြခြင်း

19

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်လေ့လာခြင်း အားရှင်းလင်းတင်ပြခြင်း

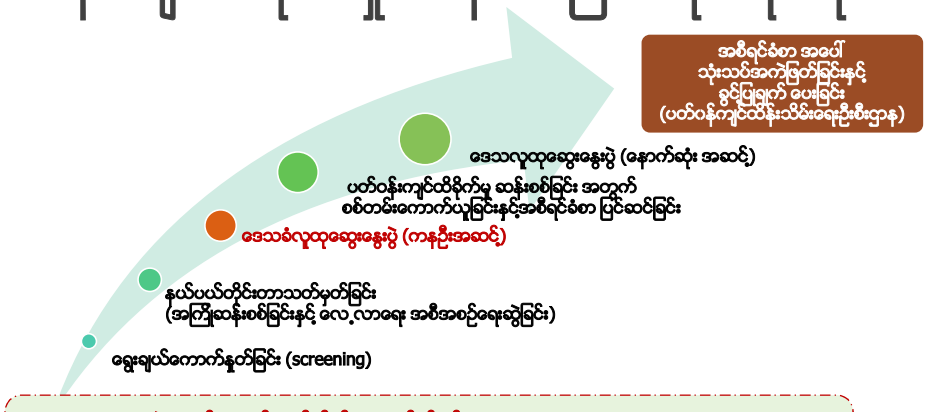
20

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာရည်ရွယ်ချက်

- စီမံကိန်းဆောင်ရွက်မှုကြောင့် သဘာဝပတ်ဝန်းကျင်၊ လူမှုပတ်ဝန်းကျင်နှင့် အဓိက သက်ရောက်သည့် ပြဿနာများကို ဖော်ထုတ်ခြင်းနှင့် သက်ရောက်နိုင်မှု အဆင့်သတ်မှတ်ခြင်း။
- လုပ်ငန်းခွင်နှင့်ဆက်စပ်ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများကို လျော့ချပေးနိုင်သည့် ထိရောက်သော စီမံခန့်ခွဲမှုများ၊ အစီအစဉ်များ၊ နည်းလမ်းများကိုအကြံပြုပေးခြင်း။
- စီမံကိန်းဖ၊ သက်ရောက်နိုင်မှုများလျော့ပါးစေရန် နှင့် ကင်းဝေးစေရန် စောင့်ကြပ်ကြည့်ရှုရသည့် အစီအစဉ်များကို ကြိုတင်ပြင်ဆင်ပြီး အကောင်အထည်ဖော်ဆောင်ရွက်ခြင်း။

21

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ငန်း အဆင့်



ဒေသလူထုတွေ့ဆွေးနွေးပွဲ (ကနဦး အဆင့်) တွင် ပါဝင်သောလုပ်ငန်းစဉ်များ

၁။ စီမံကိန်းဆိုင်ရာ အချက်အလက်များ ထုတ်ဖော်ခြင်း။

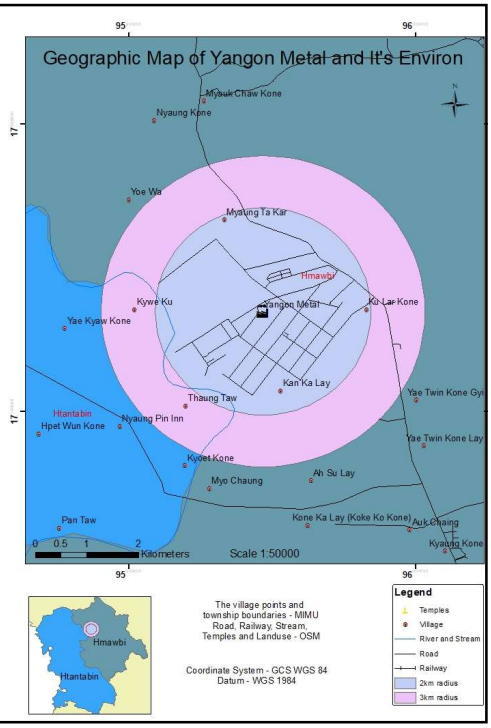
၂။ ပတ်ဝန်းကျင်ဆိုင်ရာ နှင့် လူမှုရေးဆိုင်ရာ ဆန်းစစ်လေ့လာမှုများ၊ စုံစမ်းစစ်ဆေးမှုများ ဆောင်ရွက်ခြင်း။

၃။ စီမံကိန်းကြောင့်ထိခိုက်နိုင်သူများ ၊ ရပ်ရွာ အခြေပြု လူမှု အဖွဲ့အစည်းများ၊ ဒေသဆိုင်ရာလူထုနှင့်အုပ်ချုပ်ရေးအဖွဲ့များ ၊ သက်ဆိုင်ရာဌာနများနှင့် တွေ့ဆုံညှိနှိုင်းမှုများဆောင်ရွက်ခြင်း။

22

ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်လေ့လာမည့် နယ်ပယ်သတ်မှတ်ခြင်း

- စီမံကိန်းဧရိယာအတွင်း လက်ရှိတည်ရှိနေသည့် အခြေခံ အဆောက်အဦးများ ၊ လမ်းများ ၊ ရွာများ ၊ ဘုရားများကို အဓိကဖော်ပြထားပါသည်။
- မြောင်းတကာစက်မှုဇုန်ဧရိယာ
- ၂ ကီလိုမီတာအတွင်းရှိ ကျေးရွာများ - မြောင်းတကာ ၊ ကုလားကုန်း ၊ ကန်ကလေး
- ၃ ကီလိုမီတာအတွင်းရှိ ကျေးရွာများ - ကျွဲကူး ၊ သောင်တော



23

လူမှုပတ်ဝန်းကျင်ထိခိုက်မှုကို ဆန်းစစ်လေ့လာမည့် အချက်အလက်များ

အမျိုးအစား	လေ့လာရမည့် ကိစ္စရပ်များ	လေ့လာဆန်းစစ်ခြင်းနည်းလမ်းများ
လူမှုပတ်ဝန်းကျင်	ဆင်းရဲနွမ်းပါးသူများအပေါ် အကျိုးသက်ရောက်မှုများ၊ ဒေသခံများ၏သဘောထားအမြင်များနှင့်ပတ်သက်သည့် ကိစ္စရပ်များ။ လူနေမှုဘဝနှင့်အသက်မွေးဝမ်းကျောင်း ကိစ္စရပ်များ။ မြေအသုံးချမှု နှင့် ဒေသတွင်းအရင်းအဖြစ်များသုံးစွဲမှု။ ရေရရှိနိုင်မှုနှင့်သုံးစွဲမှု ။ လက်ရှိ လူနေမှုအဆောက်အအုံနှင့် ဝန်ဆောင်မှုများ။ ကျန်းမာရေးနှင့် ဘေးကင်းလုံခြုံရေးဆိုင်ရာကိစ္စရပ်များ။ ယဉ်ကျေးမှု အမွေအနှစ်များ။ ဥယျာဉ်/ပန်းမာန်များ၊ အမြင်အာရုံပသာဒ ကျန်းမာရေးဆိုင်ရာအခြေခံအချက်အလက်	ဒေသဆိုင်အချက်အလက်များအားကိုးကား သုံးသပ်ခြင်း။ လူမှု စစ်တမ်းများနှင့် လူမှုစီးပွား ဆိုင်ရာ အချက်အလက်များအား ပြန်လည် သုံးသပ်ခြင်း။ အလုပ်သမားဥပဒေများအား ပြန်လည်သုံးသပ်ခြင်းနှင့် လက်ရှိကျင့်သုံးလျက်ရှိသော အလုပ်အကိုင်ခန့်ထားမှု နည်းလမ်းများ။ ဒေသခံပြည်သူများနှင့် တွေ့ဆုံ ဆွေးနွေးခြင်း။ သဘာဝအရင်းအမြစ် အသုံးချမှု အခြေအနေများကို ကွင်းဆင်းလေ့လာ သုံးသပ်ခြင်း။ ကျွမ်းကျင်ပညာရှင်များနှင့် တွေ့ဆုံမေးမြန်းခြင်း။ သက်ဆိုင်ရာ အစိုးရဌာနများမှအချက်အလက် အကူညီရယူခြင်း နမူနာကောက်ယူလေ့လာခြင်း

24

ရူပပတ်ဝန်းကျင်ဆန်းစစ်လေ့လာမည့် နေရာများပြ မြေပုံ

- လေအရည်အသွေး
- မြေအောက်ရေအရည်အသွေး
- မျက်နှာပြင်ရေ အရည်အသွေး
- အသံဆူညံမှုနှင့် တုန်ခါမှု အရည်အသွေး
- မြေအရည်အသွေး
- မော်တော်ယာဉ်များ လမ်းအသုံးပြုမှု အခြေအနေ

25

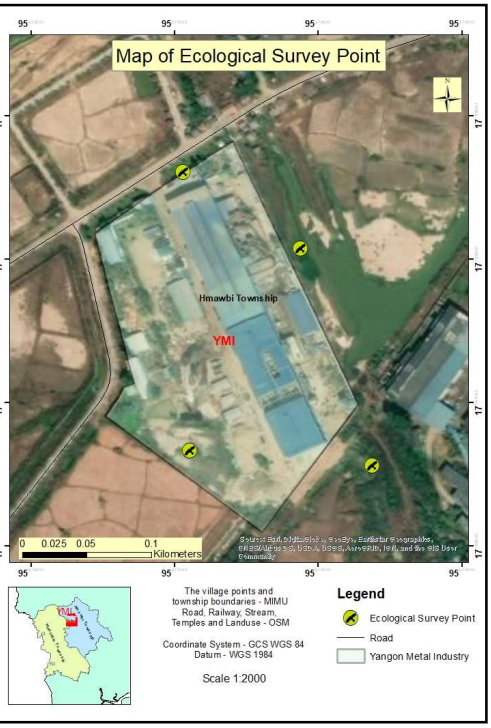
ပတ်ဝန်းကျင်ထိခိုက်မှုကို ဆန်းစစ်လေ့လာမည့် အချက်အလက်များ

အမျိုးအစား	လေ့လာရမည့် ကိစ္စရပ်များ	လေ့လာဆန်းစစ်ခြင်းနည်းလမ်းများ
ပတ်ဂန်းကျင်ညစ်ညမ်းမှု ထိန်းချုပ်ခြင်း	◆ လေအရည်အသွေး။ ◆ ရေအရည်အသွေး။ ◆ စွန့်ပစ်ပစ္စည်း။ ◆ မြေထုညစ်ညမ်းမှု။ ◆ ဆူညံသံ နှင့် တုန်ခါမှု။ ◆ မြေတိုက်စားကျဆုံးမှု။ ◆ဆိုးရွားသောအန္တရာယ်ရှိသော သက်ရှိများထွက်ရှိမှု	◆ လေထုအရည်အသွေးတိုင်းတာမှုများ (ဖုန်ပါဂင်မှု ၊ ဓာတ်ငွေ့ပါဂင်မှု) ◆ မြေပေါ် ရေ ၊ မြေအောက်ရေ နမူနာကောက်ယူခြင်း။ ◆ မြေနမူနာကောက်ယူခြင်း နှင့် စစ်ဆေးခြင်း။ ◆ သက်ဆိုင်ရာ တာဝန်ရှိသူများ နှင့် မေးမြန်းဆွေးနွေးခြင်း၊ ◆ သက်ဆိုင်သူများနှင့် တွေ့ဆုံပွဲများ ပြုလုပ်ခြင်း။ ◆ ယာဉ်သွားလာမှုများ နှင့်ဆူညံသံများအား လေ့လာဆန်းစစ်ခြင်း။ ◆ပြဌာန်းထားသောဥပဒေ၊ နည်းဥပဒေများနှင့် ညီညွတ်ခြင်း ရှိ/မရှိ ပြန်လည် သုံးသပ်ခြင်း။

26

အပင်နှင့်သတ္တဝါများအား လေ့လာဆန်းစစ်ခြင်း

အမျိုးအစား	လေ့လာရမည့် ကိစ္စရပ်များ	လေ့လာဆန်းစစ်ခြင်းနည်းလမ်းများ
အပင်နှင့်ဇီဝမျိုးစိတ်မျိုးကွဲများ	ကာကွယ်ထိန်းသိမ်းထားသည့် မျိုးစိတ်မျိုးကွဲများ တည်ရှိမှု။ ဂေဟစနစ်ပုံစံ။	အပင်နှင့် သတ္တဝါများအားကွင်းဆင်းစစ်တမ်း ကောက်ယူ လေ့လာခြင်း။ သက်ဆိုင်ရာ ဥပဒေ ပြဋ္ဌာန်းချက်များ နှင့် သက်ဆိုင်ရာမြေပုံများအား ကိုးကားခြင်း။ သက်ဆိုင်ရာအစိုးရဌာနများမှအချက်အလက်များရယူခြင်း။



27

သက်ရောက်မှုများကိုအကဲဖြတ်ခြင်း

သက်ရောက်မှုအဆင့်ကိုပြင်းထန်စွာ အမြင့်ဆုံးသက်ရောက်မှု ၁၅၀ နှင့် လျှစ်လျူရှုနိုင်သောအနိမ့်ဆုံး ×<၁၀ အဖြစ်သိသာထင်ရှားစွာခွဲခြားထားပါသည်။

- **အနိမ့်ဆုံး** (၁၀ ≤ x ≤ ၁၅)
- **အနည်းငယ်** (၁၅ ≤ x ≤ ၂၅)
- **အလယ်အလတ်** (၂၅ ≤ x ≤ ၄၅)
- **အမြင့်ဆုံး** (> ၄၅)
- **ကောင်းကျိုး (+)**

ထိခိုက်သက်ရောက်မှု အဆင့်သတ်မှတ်ချက်များ	ဖော်ပြချက်များ
ကောင်းကျိုးသက်ရောက်မှု (+)	အပြုသဘောဆောင်သော ကောင်းကျိုး သက်ရောက်မှုများ ရရှိနိုင်ပါမည်။
သိသာထင်ရှားသော သက်ရောက်မှု အမြင့်ဆုံး (A-)	သက်ရောက်မှုကြောင့် ပတ်ဝန်းကျင်တွင် ထူးခြားစွာပြောင်းလဲမှု ဖြစ်နိုင်ပါမည်။
သိသာထင်ရှားသော သက်ရောက်မှု အလယ်အလတ်အဆင့် (B-)	သက်ရောက်မှုကြောင့် ပတ်ဝန်းကျင်တွင် အနည်းငယ် ပြောင်းလဲမှု ဖြစ်နိုင်ပါသည်။
ထူးခြားစွာ ပြောင်းလဲမှု မရှိနိုင်သော သက်ရောက်မှု အနည်းငယ် (C-)	သက်ရောက်မှုနည်းပါးသောကြောင့် ပတ်ဝန်းကျင်တွင် ထူးခြားစွာ ပြောင်းလဲမှု မဖြစ်နိုင်ပါ။
သက်ရောက်မှု အနိမ့်ဆုံး (D)	လျှစ်လျူရှုနိုင်ပါသည်။

28

ပတ်ဝန်းကျင်ထိခိုက်နိုင်ခြေဆန်းစစ်မှုများ

လုပ်ငန်းစဉ်	အနည်းငယ်	အလယ်အလတ်	အမြင့်စား	ပြောင်းလဲခြင်း မရှိ	ဆန်းစစ်ရန်လိုအပ်
လည်ပတ်သည့်ကာလ					
သတ္တဂါများထိခိုက်မှု				√	
အပင်များထိခိုက်မှု				√	
အခြားအသုံးပြုမှုများအတွက် ရေအရင်းမြစ်ထိခိုက်မှု	√				
မြေအောက်ရေထိခိုက်မှု		√			
စီးဆင်းရေထိခိုက်မှု	√				
အလုပ်အကိုင်အခွင့်အလမ်း		√			
ယဉ်ကျေးမှုအမွေအနှစ်များဆုံးရှုံးမှု				√	
ကျန်းမာရေးထိခိုက်နိုင်မှု		√			
ဆူညံသံ	√				
အစိုင်အခဲစွန့်ပစ်ပစ္စည်း		√			
ဓါတုပစ္စည်းအန္တရာယ်			√		
လူမှုစီးပွား					√
လေထုအရည်အသွေး		√			

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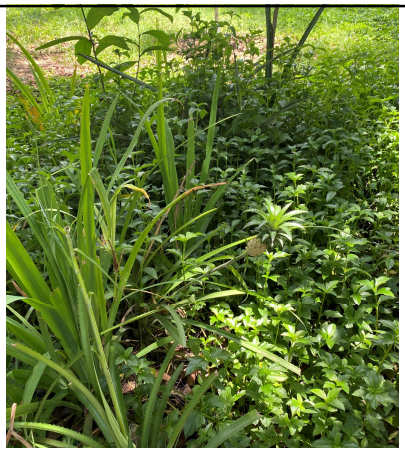
ပတ်ဝန်းကျင်ကာကွယ်ထိန်းသိမ်းမှု အစီအမံများ

30

စက်ရုံအတွင်းအပြင် စိမ်းလန်းစိုပြေ ထားရှိမှု အခြေအနေများ

31

လေထုညစ်ညမ်းမှု လျှော့ချရေး စနစ်များ

- Rotary Furnace
- Bag House
- Wet Scrubber


32

လေထုညစ်ညမ်းမှု လျှော့ချရေး စနစ်များ

- Cyclone
- Dust Collection Line
- Blowing Motor and Fan

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34

35

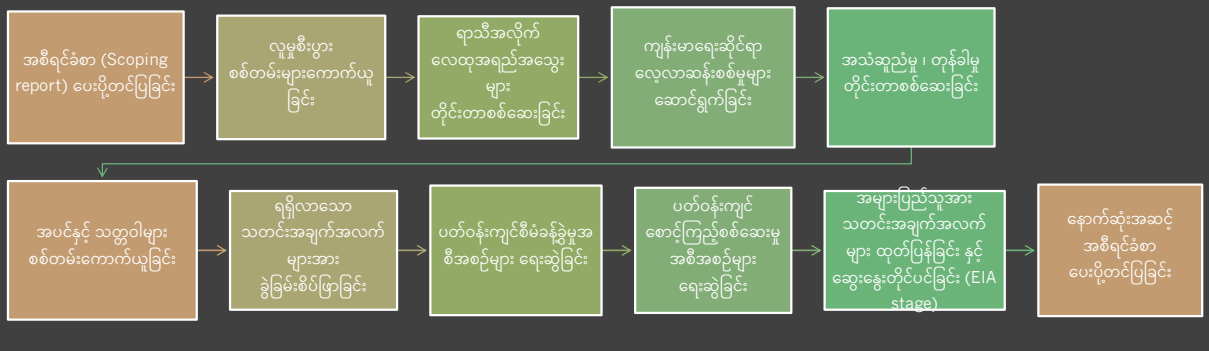
ရေအငွေ့ပြန်စက်

36

စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှု

37

အနာဂတ်လုပ်ငန်းစဉ်များ



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ကျေးဇူးတင်ပါသည် ။

အကြံပြုဆွေးနွေးချက်များအား ဖိတ်ခေါ်အပ်ပါသည်။

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ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အစည်းအဝေးခန်းမ ၊ YMI စက်ရုံအတွင်း ၊ မြောင်းတကာစက်မှုဇုန် ၊ မှော်ဘီမြို့နယ် ။

စဉ်	အမည်	ရာထူး	ဌာန	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁။	ဦး[illegible]	[illegible]	[illegible]	09795515827	
၂	ဦး[illegible]	[illegible]	ရဲစခန်း	၀၉၄၅၁၉၉၃၆၆၃	
၃။	ဦး[illegible]	[illegible]	[illegible]	09-423669902	
၄။	ဦး[illegible]	[illegible]	[illegible]	0950597 98	
၅။	ဦး[illegible]	အက်ဉ်ရုံမှူး	Yangon Metal Industry	09-254043654	
၆	ဦး[illegible]	Safety Manager	"	09-959560810	
၇	ဦး[illegible]	Asst. Mgr. (QC)	"	09-450063177	

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ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အစည်းအဝေးခန်းမ ၊ YMI စက်ရုံအတွင်း ၊ မြောင်းတကာစက်မှုဇုန် ၊ မော်ဘီမြို့နယ် ။

စဉ်	အမည်	ရာထူး	ဌာန	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
1	U Myi Myi Thu	Admin Manager	YMI	09420124349	
2	U Myo Nyunt Aung	Deputy Factory Manager.	KMN Galvanizing	09979765226	
3	Dr. Kyaw Nyein Aye	EKTA Lead Consultant	EKTA	09 503 8658	
4	U TINT MYO NAING	MD	YMI	09510377 9	
5.	Dr. Lai Lai Win	Environmental Consult	EKTA	09797241421	
6.	Nan Thazin Oo	Social	〃	09 777 00 6389	
7.	Ei Ei Win Myat	〃	〃	09 . 777 00 6391	

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EKTA

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၂၀၂၀ ခုနှစ်၊ ဇွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးအောင်မြင်	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နှိပ်ပါသည်။ (...........)
ဆက်သွယ်ရန်ဖုန်း	09795515827	
နေရပ်လိပ်စာ	E.I	

<u>အကြံပြုချက်</u>

၁။ လေအရည်အသွေး၊ ~~ရေ~~ စွန့်ပစ်ရေ အရည်အသွေး၊ မြေဆီလွှာ အရည်အသွေးများကို အမြဲတမ်း စစ်ဆေးသင့်ပါသည်။

၂။ အန္တရာယ်ရှိသော စွန့်ပစ်ပစ္စည်းပုံးများတွင် label များအား အရောင်ခွဲခြား သတ်မှတ်သင့်ပါသည်။

၃။ ကြိတ်ခွဲစက်များတွင် Battery ခဲအရောင်းများမှ အက်ဆစ်ရည် ထွက်ရှိ အလုပ်သမားများကို ထိခိုက်မှုမရှိစေရန် PPE ဝတ်စုံ ဝတ်ဆင်သင့်ပါသည်။

၄။ ဝန်ထမ်းများအား ကျန်းမာရေးစစ်ဆေးမှုများကို ပုံမှန် ကျန်းမာရေး စစ်ဆေးပေးသင့်ပါသည်။

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Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လံစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးကျော်ငြိမ်း	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နှိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	09 50547 98	
နေရပ်လိပ်စာ	[illegible]	

အကြံပြုချက်

(၁) [illegible]

[illegible]

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YANGON METAL INDUSTRY CO., LTD.

Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	[illegible]	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	၀၉-4၂၃၆၆၉၉၀၂	
နေရပ်လိပ်စာ	[illegible]	

အကြံပြုချက်

[illegible]

Enviro-Klean Techno-Associates

YANGON METAL INDUSTRY CO., LTD.

Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဇွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးမျိုးသန့်အောင်.	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	09979765226.	
နေရပ်လိပ်စာ	KMN Galvanizing Co., Ltd.	

အကြံပြုချက်

မီးခဲဆောင်ရွက်ထားသည်များ (သတ္တုပေါက်ရင်းကျင်း) ထိခိုက်မှုအနည်းဆုံးဖြစ်စေရန် ဆောင်ရွက်ထားသည်မှာ ပြည့်စုံကောင်းမွန်ပါသည်၊ ရေရှည်ထိန်းသိမ်းဆောင်ရွက်သွားရန် အကြံပြုအပ်ပါသည်၊

(signature)
18/6/2020.

Enviro-Klean Techno-Associates

EKTA Be Green

YANGON METAL INDUSTRY CO., LTD.

(5)

Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	[illegible]	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နှိပ်ပါသည်။ (...........)
ဆက်သွယ်ရန်ဖုန်း	[illegible]	
နေရပ်လိပ်စာ		

အကြံပြုချက်

[illegible]

Annex – 5

Slag Disposal Process

Slag Disposal Process

Smelting Rotary

Slag

Matt

Re Smelt for recovery

Upper Layer

Future Plan

Make Soda-ion and Silica Slag For Land Filling

Make Brick for Road

Black Colour (Solid)

Before Aging

Aging 3-4 months

Change to Red Colour

After Aging

Red Colour (Powder)
pH (5-9)

Annex – 6

Myaung Ta Kar Industrial Zone (factory list)

Annex - 6

List of Factories in Myaung Ta Gar Industrial Zone

စဉ်	ပိုင်ရှင်အမည်	စက်ရုံအမည်	မြေကွက်အမည်	ဆက်သွယ်ရန်ဖုန်း	မှတ်ချက်
၁။	ဒေါ်လွေ့လွေ့	ရန်ကုန်ကရောင်း	၂၀၁မှ ၂၁၆ ၁၇၅မှ ၁၇၉	စက်ရုံမှူး 09 – 5400988 မန်နေဂျာ 09 - 49570008	ဦးသိန်းဇော်မင်း ဦးမျိုးမြင့်
၂။	ဦးတင်မျိုးနိုင်	Yangon metal	၂၆၁/၂၆၂/၆၂၃	မန်နေဂျာ 09 -893171313	ဦးမောင်မောင်လွင်
၃။	ဒေါ်ခိုင်ခိုင်ဝင်း	စိုးမိုးခိုင်	၆၁/၆၂/၆၃	GM. 09 -448455427	ဦးဉာဏ်ထွန်းသိန်း
၄။	ဦးကျော်ဝင်း	ရာရှင်း	၂၀၁/ ၂၃၇	မန်နေဂျာ 09 -453008181	ဦးထွန်းအောင်
၅။	ဦးသန်းရွှေ	ထွန်းသံရည်ကျိုး	၂၁၇/ ၂၁၈	ပိုင်ရှင် 09 - 5016735	
၆။	ဦးကျော်စိန်	ဟန်းစတီးပါဝါ	၂၃၉မှ ၂၄၄	မန်နေဂျာ 09 -797792175	ဦးမြသောင်း
၇။	ဦးမြင့်ဦး	ရွှေစင်ထွန်းယပ်တောင်	၃၆၄	ပိုင်ရှင် 09 - 5192369	09 799944501 ကိုဝင်းဇော်နိုင်
၈။	ဒေါ်နုနုဝေ	Tiger Asia	၁၃၂	ပိုင်ရှင် 09 – 5400501	
၉။	ဦးဇော်လွင်	Z-Men	၄၆၁/ ၄၆၂	ပိုင်ရှင် 09 -773399600	
၁၀။	ဦးသိန်းကျော်	TK-ဘတ္ထရီ	၄၇၃	ပိုင်ရှင် 09 -979456389	
၁၁။	ဦးရဲနိုင်ဝင်း	ဂျက်ဖာ (အစာ)	၁၈၅မှ ၁၈၈ ၂၀၁မှ ၂၀၄	စက်ရုံမှူး 09 – 73179120 မန်နေဂျာ 09 -254032868	ဦးလှဘုန်း ဦးဝင်းအောင်ထွန်း
၁၂။	ဦးရဲအောင်	Deheus (အစာ)	၃၀၇မှ ၃၀၈	မန်နေဂျာ 09 -777770031 09 - 795602239	ဒေါ်မေသွန်းဇော်
၁၃။	ဒေါ်နီလာမြင့်	Dahua (ကော်)	၂၀၉/ ၂၃၈	စကားပြန် 09 424365958 မန်နေဂျာ 09 -786715578	
၁၄။	ဒေါ်ခင်မိုးဆွေ	အထည်ချုပ် Ton Gying Hk	၃၅၉မှ ၃၆၀	ပိုင်ရှင် 09 – 786845837 မန်နေဂျာ 09 -769489833	မမာလာဆွေ
၁၅။	ဒေါ်အက်စသာ	A&C အထည်ချုပ်	၃၆၇မှ ၃၆၉	မန်နေဂျာ 09 -951952834	မခိုင်ဝေဝေလွင်
၁၆။	ဦးအောင်မင်း	Follow me ယပ်တောင်	၁၆၅	ပိုင်ရှင် 09 – 442215511	

၁၇။	ဦးသိန်းဖေဝင်း	Textile Place အထည်ချုပ်	၃၂၇မှ ၃၂၉	မန်နေဂျာ 09 -262177772 09 - 450020545	ဦးညီညီအောင် ဒေါ်မိုးဇင်ခိုင်
၁၈။	ဦးခင်ထွေး	V-Top အရုပ်	၁၅၃	မန်နေဂျာ 09 -771404919	ဦးမောင်မောင်ခင်
၁၉။	ဦးအောင်ကိုဦး	အထပ်သား	၁၅၆/၁၈၁	ပိုင်ရှင် 09 – 785103320	
၂၀။	ဦးထွန်းဝင်း	Sun Shine	၈၂	ပိုင်ရှင် 09 – 49570384	
၂၁။	ဦးအောင်လင်း	Myanmar Smelting ခဲ	၂၁၀	စက်ရုံမှူး 09 -450005140	ဦးလှရွှေ
၂၂။	ဒေါ်မိမိခိုင်	ဖျင်းရှင်း	၁၄၉	ပိုင်ရှင် 09 - 793585630	
၂၃။	ဦးကျင်ဦး	ပေါ်ပျူလာ	၈၃/၈၅	စက်ရုံမှူး 09 -977248197	ဦးကျော်ကျော်ဖြူ
၂၄။	ဦးစိုးမိုး	IK	၃၁/အေ	ပိုင်ရှင် 09 – 5123786	
၂၅။	ဦးလှရွှေ	Ba An	၅၉	မန်နေဂျာ 09 -697341391	နှင်းရီဦး
၂၆။	ဦးတင်ဝင်း	ရတနာ စတီး	၂၅၄/၂၅၅	GM 09 -692217720	ဦးကျော်ထူး
၂၇။	ဦးဝင်းအောင်	San Hee တစ်ရှူး	၃၆၁	ပိုင်ရှင် 09 - 455050634	
၂၈။	ဦးသန်းနိုင်	ရေသန့်	၄၆၈	ပိုင်ရှင် 09 - 773161504	
၂၉။	ဒေါ်သဥ္ဇာဆွေ	Myanmar Sumbell	၁၈	ဒါရိုက်တာ 09 - 5067544	ဦးထူးအောင်ချွန်
၃၀။	ဦးသိန်းလွင်	C.J Feed	၁၉၂မှ ၁၉၇	မန်နေဂျာ 09 -799952092	မချောစုလင်း
၃၁။	ဦးအောင်အောင်လွင်	ဂိုထောင်	၁၆၉/၁၇၀	ပိုင်ရှင် 09 – 5002373	
၃၂။	ဦးအောင်နိုင်	အောင် သံရည်ကျို	၄၉၁	ပိုင်ရှင် 09 – 5044033	
၃၃။	ဦးခင်သန်း	သံရည်ကျို	၄၆၃	ပိုင်ရှင် 09 – 421002272	
၃၄။	ဦးဒေါင်ဇေ	Myanmar Typical	၅၀/၅၁/၆၀	စက်ရုံမှူး 09 -5159558 မန်နေဂျာ 09 -976878558 HR 09 - 960296201	ဦးဘော်ထယ် ဦးဝင်းဇော် ဒေါ်ရီရီနွယ်
၃၅။	ဦးတင်မောင်ညွန့်	ခင်မောင်ညွန့်	၂၄၇မှ ၂၅၀	မန်နေဂျာ 09 -254003891	ဦးဝင်းတင်

၃၆။	ဦးထွန်းအောင်ကျော်	သိုးမွေး	၁၁၈/၁၁၉	ပိုင်ရှင် 09 – 791033597	
၃၇။	ဒေါ်နန်းလင်းလင်းထွန်း	အစာစက်	၃၆၉မှ ၃၇၄	တာဝန်ခံ 09 - 976523715	
၃၈။	ဦးကျော်ဆွေ	မြန်မာ့ကြေးအိုးကြီး	၆၈	တာဝန်ခံ 09 - 5104362	
၃၉။	ကိုသူရစိုး	ကျုံးလင်းဖုန်း	၁၀၉/၁၁၂	တာဝန်ခံ 09 - 696116612	ကိုသူရစိုး
၄၀။	ဒေါ်ထောမ်နူး	အထည်ချုပ်	၄၄/၄၅/၄၆	ကိုယ်စားလှယ် 09 - 772756754	
၄၁။	ဒေါ်တင်တင်ခိုင်	သံရည်ကျို	၄၅၁	ပိုင်ရှင် 09 – 962927000	
၄၂။	ဦးစစ်ငြိမ်းစိုး	ယပ်တောင်	၄၃၀	ပိုင်ရှင် 09 – 774313477	
၄၃။	ဒေါ်ရီမွန်ကိုကို	Nuri Chemical	၄၇၅	ပိုင်ရှင် 09 – 420287553	
၄၄။	ဦးကျော်သူ	သံရည်ကျို	၄၉၀	ပိုင်ရှင် 09 – 798372542	
၄၅။	ဦးခင်စိုး	ရေပိုက်	၄၆၆/၄၆၇	ပိုင်ရှင် 09 – 450377814	
၄၆။	ဦးစိုးလင်း	သံရည်ကျို	၅၀၂	ပိုင်ရှင် 09 – 5197602	
၄၇။	ဦးစိန်ဝင်း	ဂိုထောင်	၁၁၁	ပိုင်ရှင် 09 – 265136688	
၄၈။	ဦးဆာသီဝေ	သံရည်ကျို	၃၄၃မှ ၃၄၅ ၃၃၈မှ ၃၄၀	ပိုင်ရှင် 09 – 49263098 09 - 781047433	ဦးဆန်းကြည်
၄၉။	ဦးမျိုးမင်းထွဋ်	စတီး	၂၈မှ ၃၁	ပိုင်ရှင် 09 – 420288889	
၅၀။	ဦးကိုလတ်	ကြေးရည်ကျို	၁၅၃	မန်နေဂျာ 09 -250170186	ဦးတိုးအောင်
၅၁။	ဦးမွတ်တယာ	ဂိုထောင်	၉၅/၉၆		
၅၂။	ဒေါ်စိန်ရီ	၉၉၉	၂၀/၂၁	မန်နေဂျာ 09 -421071123	
၅၃။	ဦးအောင်မြင့်	၆၆၆	၅၆/၅၇	မန်နေဂျာ	ဦးတင့်လွင်
၅၄။	ဦးဝင်းမြင့်	ဝင်း သံဇကာ	၁၇	မန်နေဂျာ	ဦးသန်းထိုက်
၅၅။	ဒေါ်ရီလင်ရင့်	ပစိဖိတ်စတီ	၁၅၉/၁၆၀	မန်နေဂျာ 09 -258717600	ဦးသိန်းဇော်

ANNEX_7

EIA STAGE PCM ATTENDANCE AND SUGGESTIONS

Enviro-Klean Techno-Associates

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ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၃ခုနှစ်၊ဇန်နဝါရီလ (၂၀) ရက်

အစည်းအဝေးခန်းမ - Yangon Metal Industry.

စဉ်	အမည်	ရာထူး	လိပ်စာ	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
1	Than Zaw Lwin	Production Manager	A.G.I [illegible]	09-454174558	
2	Min Zaw Oo	GM	No.253.254 AGI Yandanar Street Myaundagar Industry	09-979112985	
3.	Daw Thein Thein Swe.	Assistant. Manager	Khin Maung Nyunt Steel, Product.	09-795518226	
4.	Kyaw Htoo	FM	YMI	09-254043654	
5.	U Saw Hamar	[illegible]	[illegible]	09796159435	
6	U Zaw Lwin	[illegible]	[illegible]	09773399600	
7.	[illegible]	[illegible]	[illegible]	095059798	
8	[illegible]	[illegible]	"	09-686752937	
9.	[illegible]	Asst Mgr QC	YMI	09450063177	
10.	ဝင်းကိုကိုဦး	HSE Officer	YMI	09420310332	
11.	Kyi Kyi Aye	Asst. Mgr (CHR)	YMI	09444460051	
12	Phyo Wai Aung		YMI	09696872492	

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ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ဇန်နဝါရီလ (၂၀) ရက်

အစည်းအဝေးခန်းမ - Yangon Metal Industry.

စဉ်	အမည်	ရာထူး	လိပ်စာ	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
13	ခင်ဥက္ကာ	YMI	မြောက်ဥက္ကလာ	09,798877	(signature)
14	သော်ဇော်	YMI	မြောက်ဥက္ကလာ,	09.697659031	ဇော်,
15	Ngi Ngi Tun	YMI-AM	မြောက်ဥက္ကလာ	09420124349	(signature) 20/1
16	TINT MYO NAING	YMI M.D	မြောက်ဥက္ကလာ	095103779	(signature) 20/1/2023
17.	ဦးဝင်းထွဋ်အောင်	ဦးစီးအရာရှိ	ရွှေပြည်သာ - စက်ဇုန်	09-254373312	(signature)
18.	ဒေါ်ရင်ရင်ကြူ	[illegible]	〃	09.770468178	(signature)

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် ဦးအောင်ဆန်းမိုးဝင်း		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (…x…) နှိုင်ပါသည်။ (………..)**
ဆက်သွယ်ရန်ဖုန်း	09-686752937.	
နေရပ်လိပ်စာ	[illegible]	

<u>**အကြံပြုချက်**</u>

- စက်ရုံ၏ တင်ပြချက်များ အားလုံးကောင်းပါသည်။
- စက်ရုံ၏ ကားပတ်လမ်းကျဉ်း၍ ပြည်သူများ၏ ကျေးရွာလမ်း၊ မီးအန္တရာယ်များ ကို အထူးဂရုစိုက်စေချင်ပါသည်။
- အကြံပြုလွှာ ပုံးထား၍ အကြောင်းအရာ လက်ခံမည့်အစီအစဉ်များလည်း ကျေးဇူး ကျေးဇူးပြု၍ ပြုလုပ်စေချင်ပါသည်။ (မြို့နယ်မှ တာဝန်ရှိသူများ ဂရုစိုက်)

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သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု
အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဧန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လဲစွာ ကြိုဆိုပါသည်။		
အမည်		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။ (.....)**
ဆက်သွယ်ရန်ဖုန်း		
နေရပ်လိပ်စာ		

အကြံပြုချက်

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

<table>
<tr><td colspan="3">အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန်
လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။</td></tr>
<tr><td>အမည်
[illegible]</td><td></td><td>အစီရင်ခံစာတွင်
အမည်မဖော်ပြလိုပါက
ကွက်လပ်တွင် (…x…) နှိပ်ပါသည်။
(………..)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">095059798</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">[illegible]</td></tr>
<tr><td colspan="3"><u>အကြံပြုချက်</u>

အကြံမပေးလိုပါ</td></tr>
</table>

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သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု
အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် U Zaw Lwin		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	၀၉၇၇၃၃၉၉၆၀၀	
နေရပ်လိပ်စာ	အမှတ်-၄၀၆-လှိုင်ယော်ကျော်ကျောင်းလမ်း၊ [illegible]	

<u>**အကြံပြုချက်**</u>

Yangon Metal Industry မှ ယနေ့ပြသပေးတဲ့ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု ဆိုင်ရာတွေကို မြင်ကြရပါသည်။ စီမံမှုအားလုံး ကောင်းမွန်စွာတွေ့ရှိပါသည်။

[signature]

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦး သင်းထွန်းအောင် ဦး [illegible] [illegible]	**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (...........)**
ဆက်သွယ်ရန်ဖုန်း	၀၉ - 254373312.	
နေရပ်လိပ်စာ	[illegible]	

<u>အကြံပြုချက်</u>

အဆိုပါ စက်ရုံအနေဖြင့် ဆောင်ရွက်ထားရှိသည့် အချက်အလက်များ ကောင်းမွန်ပြည့်စုံပြီး ဆောင်ရွက်ထားရှိသည့် အချက်များကို [illegible] ဆောင်ရွက်သွားရန်နှင့် ၎င်း စက်ရုံဖြစ်သည့်အတွက် [illegible] များနှင့် ပတ်ဝန်းကျင် ကျန်းမာရေး [illegible] အထူးဂရုပြု ဆောင်ရွက်ပေးနိုင်ပါရန် အကြံပြုတင်ပြအပ်ပါသည်။ အထက်[illegible] ချက်များကို [illegible] ဆောင်ရွက်ရန် [illegible] ပါသည်။

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လံစွာ ကြိုဆိုပါသည်။		
အမည် ဒေါ်ရင်ရင်ကြူ		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (…x…) နိုင်ပါသည်။ (………..)**
ဆက်သွယ်ရန်ဖုန်း	09-770468178	
နေရပ်လိပ်စာ	မြောက်ဘီ - ရပ်ဝင်	

<u>အကြံပြုချက်</u>

Yangon Metal ၏ သံထည် ကျိုချက်ခြင်းနှင့် ပတ်သက်၍ ကော့ဟာသုံးသပ်ချက်အရ စနစ်တကျ ဆောင်ရွက်ထားခြင်းကို သိရှိပါသည်။

စက်ရုံအနေနှင့် ၎င်းစက်ရုံဖြစ်သည့်အတွက် ဝန်ထမ်းများအား စနစ်တကျလုပ်ဆောင်ပေးခြင်း၊ PPE ဝတ်စုံများဝတ်ဆင်ပေးရန် လိုအပ်ပါသည်။

ကျန်းမာရေးနှင့်ပတ်သက်၍ အထူးဂရုစိုက်ပေးရန်၊ အထူးသဖြင့် Covid-၁၉ ကာကွယ်ဆေးများ အကြိမ်ရေ ~~အညီ~~ ပြည့်မီအောင် ထိုးထားပေးရန် လိုအပ်ပါသည်။ ၎င်းစက်ရုံဖြစ်သည့်အတွက် ရေဆိုးစွန့်ပစ်မှု မရှိသော်လည်း၊ Water Treament လုပ်ဆောင်ထားပုံ အဆင့်ဆင့်ကို စနစ်တကျ လုပ်ဆောင်ထားမှုအား၊ အခါအားလျော်စွာ၊ သက်ဆိုင်သည့် ဌာနများမှ လာရောက်စစ်ဆေးမှုရှိနိုင်ပါသဖြင့်၊ စနစ်တကျ လုပ်ဆောင်ထားမှုအား တင်ပြနိုင်ရန် အကြံပြုချက်ပေးခြင်းပါသည်။

ရပ်ဝန်းသဘာဝတရားအဖွဲ့အစုဖြင့်၊ ထွက်ရှိသည့်၊ အနံ့နှင့် အညစ်အကြေးများကို အဖွဲ့နှင့် ပူးပေါင်းဆောင်ရွက်သွားရန်။

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် Than Zaw Aelin		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း		
နေရပ်လိပ်စာ		

<u>အကြံပြုချက်</u>

YMI စက်ရုံ လုပ်ငန်းများသည် တာဝန်ယူမှု၊ တာဝန်ခံမှု [illegible] ပါတယ်

အများ [illegible] လုပ်ငန်းများ ဆောင်ရွက်ရာတွင် [illegible] ပါတယ်.

စက်ရုံရဲ့ စက်ရုံ များ [illegible] လေးစားရလောက်တဲ့ စက်ရုံ [illegible] ဖြစ်ပါတယ်

ဒီထက်မက [illegible] Quality [illegible]

နိုင်မည်ဟု ယုံကြည်ပါတယ်။

[signature]

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အမည် MIN [illegible]		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိုင်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	၀၉. ၉၇၉၁၁၃၉၈၅	
နေရပ်လိပ်စာ		

<u>**အကြံပြုချက်**</u>

YMI စက်ရုံ [illegible] ဖြစ်ခြင်းကြောင့် ပတ်ဝန်းကျင် [illegible] စက်ရုံဖြစ်ပါသည်။ [illegible] ပတ်ဝန်းကျင် [illegible] ဖြစ်ပါသည်။

[signature]

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

<table>
<tr><td colspan="3">အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန်
လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။</td></tr>
<tr><td>အမည်
ဒေါ်သိန်း သိန်းဆွေ</td><td></td><td>အစီရင်ခံစာတွင်
အမည်မဖော်ပြလိုပါက
ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။
(..........)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">09-795518226.</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">~~Khin Maung~~ မြောင်းတကာ ကျေးရွာ.</td></tr>
<tr><td colspan="3"><u>အကြံပြုချက်</u>
- ၁၁၁၁၀ ပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်မှု အား
ဖိုညီး ဖိနှိပ် ကောင်းမွန်စွာ ဖြင့် မားတား မှု ကြောင့်
တေး အခန်ကျ ဂရုပေါ် ကောင်းခွင့် မှု မရှိ ခြောင်း
ကာကွယ်ပေး ပြီး၊ စနစ်တကျ လုပ်ဆောင်ပေးသော
ကြောင့် ကောင်းမွန် ပါသည်။ ထို့ဖြင့် ပတ်ဝန်းကျင်
စက်ရုံ ဧရိယာ အခိုး ဦး စနစ်တကျ နှင့် ကျေးရွာ မူဝါ
အား CSR လုပ်ငန်း များ ကူညီ လုပ်ဆောင်ပေး
စေ ချင်ပါ ကြောင်း အကြံပြု တင်ပြ အပ်ပါသည်။
ကျူးကျော် ပါဝင်တက် ကြီးမား ကျေး တက်ပါဝင် ကြောင်း
အကြံပြု အပ်ပါသည်။</td></tr>
</table>

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အမည်	ဦးကျော်ထူး	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	09-254043654	
နေရပ်လိပ်စာ	ရန်ကုန် မြောက်ဒဂုံ	

<u>အကြံပြုချက်</u>

ပတ်ဝန်းကျင် ထိခိုက်မှု မရှိစေရေး စဉ်ဆက်မပြတ်
လေ့လာ စောင့်ကြည့်မှုများ ပြုလုပ်သွားစေချင်ပါသည်။

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အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	WIN 10 10 00	**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။ (...........)**
ဆက်သွယ်ရန်ဖုန်း	09420310537	
နေရပ်လိပ်စာ	YMI	

<u>အကြံပြုချက်</u>

[illegible] အတွက်

water treatment system အတွက် ပိုမိုကောင်းမွန်သော [illegible]

[illegible] Dust

Control အား Bag House [illegible] Plant Wind

② [illegible]

Enviro-Klean Techno-Associates

EKTA Be Green!

YANGON METAL INDUSTRY CO., LTD.

Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့် သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	[illegible]	**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	၀၉၄၄၄၄၄၆၀၆၅၁	
နေရပ်လိပ်စာ	[illegible]	

<u>အကြံပြုချက်</u>

ယခုကဲ့သို့ [illegible] ဆောင်ရွက်ရှိသော သဘာဝပတ်ဝန်း
ကျင် [illegible]
[illegible]
ဆိုပါက သဘာဝပတ်ဝန်းကျင် [illegible]
[illegible]
[illegible] ပါကြောင်း အကြံပြုတင်ပြအပ်
ပါသည်ရှင့်။

ANNEX_8

HEALTH COMMITMENT

Yangon Metal Industry Co;L td.
Evaluation of Compliance for Legal and Other Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
၁။	လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေး နှင့်ကျန်းမာရေးဆိုင်ရာဥပဒေ (၂၀၁၉ ခုနှစ်)	ဝန်ထမ်းများလုပ်ငန်းခွင်အတွင်းဘေးအန္တရယ်ကင်းရှင်းရေးအတွက် သတ်မှတ်ထားသော Safety ဝတ်စုံများ PPE တို့အားဝတ်ဆင်ရန် အခမဲ့ထုတ်ပေးထားရှိပါသည်။	Admin and Related Dept	Always	Comply
		လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့်ကျန်းမာရေးဆိုင်ရာဥပဒေ ကြားချက်များကို တိကျစွာဆောင်ရွက်ထားရှိပါသည်။	Admin and Related Dept	Always	
		အရေးပေါ်အခြေအနေဖြစ်ပေါ်လာပါကဆောင်ရွက်ရမည့်အစီအမံများအား ၊အသက်ကယ်ဆယ်ရေးအစီအမံများထားရှိပါသည်။	Admin	Always	
		မီးဘေးလုံခြုံရေးစီမံချက်များရေးဆွဲထားရှိပြီး မြို့နယ်မီးသတ်ဦးစီးဌာနမှ တာဝန်ရှိသူများကိုယ်တိုင် လက်တွေ့လေ့ကျင့်ဆောင်ရွက်ထားရှိပါသည်။	Admin & Hr	Always	
		ဝန်ထမ်းများအား လုပ်ငန်းခွင်နှင့်ပတ်သက်သော ရောဂါများ ဖြစ်ပွားမှု ရှိ/မရှိ သတ်မှတ်ချက်များနှင့်အညီ ခွင့်ပြုထားသော ကျန်းမာရေးမှူး ၊ဆရာဝန်များဖြင့် စစ်ဆေးပေးလျှက်ရှိပါသည်။	Admin & Hr	Annually	
၂။	**ထိန်းချုပ်ဓာတုပစ္စည်း**				
	ထိန်းချုပ်ဓာတုပစ္စည်းသိုလှောင်ထားရှိမှု	လိုင်စင်တွင်ပါရှိသော သတ်မှတ်ချက်များအတိုင်း လိုက်နာဆောင်ရွက်ပါသည်။	QC	Annually	Comply
	ထိန်းချုပ်ဓာတုပစ္စည်းလက်ဝယ်ထားရှိအသုံးပြုခြင်း	လိုင်စင်တွင်ပါရှိသော သတ်မှတ်ချက်များအတိုင်း လိုက်နာဆောင်ရွက်ပါသည်။	QC	Annually	Comply

Yangon Metal Industry Co;Ltd.

Evalua n of Compliance for Legal and C er Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
	ထိန်းချုပ်ဓာတုပစ္စည်းများလက်လီ/ လက်ကားရောင်းချခြင်း	လိုင်စင်တွင်ပါရှိသော သတ်မှတ်ချက်များအတိုင်းလိုက်နာဆောင် ရွက်ထားရှိပါသည်။	QC	Annually	Comply
	ထိန်းချုပ်ဓာတုပစ္စည်းသိုလှောင်ထိန်း သိမ်းခြင်း လုပ်ငန်းလုပ်ကိုင်ရန် ခွင့်ပြုချက်(နည်းဥပဒေ ၂၀၁၇ခုနှစ်)	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင် ရွက်ထားရှိပါသည်။	QC	Annually	Comply
၃။	မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ဥပဒေ (၂၀၁၅ ခုနှစ် ၊မတ်လ ၊(၁၇) ရက်)	မီးသတ်ဦးစီးဌာနကျွမ်းကျင်ဝန်ထမ်းများမှ စနစ်တကျလေ့ကျင့်သင် ကြားပေးထားသောစက်ရုံမီးသတ်တပ်ဖွဲ့နှင့်အရေးပေါ်မီးငြိမ်းသတ် ရေးပစ္စည်းများအဆင့်သင့်ထားရှိပြီး မီးဘေး အန္တရာယ်ကြုံတင်ကာ ကွယ်ရေး အတွက် စီမံချက်များထားရှိကာ လက်တွေ့သရုပ်ပြလေ့ ကျင့် သင်ကြားမှုများအား အခါအားလျော်စွာပြုလုပ်ဆောင်ရွက်ပါ သည်။	Admin Dept:& Safety Commi-tte	Twice a Year	Comply
၄။	**အလုပ်သမားဆိုင်ရာဥပဒေများ** (၁၉၅၁) ခုနှစ်အလုပ်ရုံများအက်ဥ ပဒေနှင့် အဆိုပါဥပဒေကိုပြင်ဆင် သည့်ဥပဒေ (၂၀၁၆)	သန့်ရှင်းရေးဝန်ထမ်းအင်အား လုံလောက်စွာထားရှိပြီးပင်မအလုပ် ရုံ သန့်ရှင်းရေး၊ပင်မရုံးအဆောက်အဦ သန့်ရှင်းရေးနှင့် စက်ရုံပတ် လမ်း ၊ရေချိုးခန်း ၊အိမ်သာအစရှိသည်တို့အား နေ့စဉ်သန့်ရှင်းရေး လုပ်ငန်းများ ပြုလုပ်ဆောင်ရွက်ပါသည်။	Admin	Everyday	
		စွန့်ပစ်ပစ္စည်းများနှင့် အမှိုက်များအား သတ်မှတ်ထားသောနေရာ တွင် အမှိုက်သိမ်းယာဉ်များဖြင့် ပုံမှန်စွန့်ပစ်လျက်ရှိပါသည်။	Admin	Weekly	
		လုပ်ငန်းခွင်အတွင်း အမှုန်နှင့် အခိုးအငွေ့များ ကင်းစင်စေရန် Generator Chimney (အခိုးအငွေ့ထွက်ပေါက်) တပ်ဆင်ထား ရှိပါသည်။	Engineering	Always	

Yangon Metal Industry C[illegible]Ltd.
Evaluation of Compliance for Legal and Other Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
	(၁၉၅၁) ခုနှစ်အလုပ်ရုံများအက်ဥပဒေနှင့် အဆိုပါဥပဒေကိုပြင်ဆင်သည့်ဥပဒေ (၂၀၁၆)	လုပ်ငန်းခွင်အတွင်း အလင်းရောင်လုံလောက်စွာရရှိစေရန်နှင့်လေဝင်လေထွက် ကောင်းမွန်စေရန် ပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Always	Comply
		အလုပ်ရုံ အတွင်းသန့်ရှင်းသော သောက်သုံးရေရရှိရေးအတွက်ရေသန့်စက်များတပ်ဆင်ထားရှိပြီးအဆိုပါရေသန့်စက်များအား (၆)လတစ်ကြိမ် သန့်ရှင်းရေးလုပ်ငန်းများပြုလုပ်ဆောင်ရွက်ပါသည်။	Admin	Half-Yearly	
		ဝန်ထမ်းများအား ကျန်းမာရေးနှင့်ညီညွတ်စေရန် ရေချိုးခန်းအိမ်သာများအားသန့်ရှင်းစွာပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Daily	
	(၂၀၁၂) ခုနှစ်၊ လူမှုဖူလုံရေးဥပဒေ (၂၀၁၂) ခုနှစ်၊ဩဂုတ်လ ၊၃၁ ရက်	ရန်ကုန်တိုင်းဒေသကြီးမော်ဘီမြို့နယ်၊လူမှုဖူလုံရေးရုံးတွင်ဝန်ထမ်းအင်အားနှင့်ရာထူးအဆင့်အလိုက်မှတ်ပုံတင်ထားရှိပြီးလူမှုဖူလုံရေးထည့်ဝင်ကြေးများလည်း လစဉ်ပေးသွင်းလျက်ရှိပါသည်။	Admin & Hr	Monthly	Comply
		ဝန်ထမ်းများ အခမဲ့ဆေးကုသမှုခံယူခွင့် ၊ကျန်းမာရေးမကောင်းခြင်းမီးဖွားခြင်း ၊ ဖခင်ဘဝအကျိုးခံစားခွင့်နှင့် သေဆုံးမှုအတွက်အကျိုးခံစားခွင့်တို့အား ဥပဒေတွင်ပြဋ္ဌာန်းထားသောသတ်မှတ်ချက်များနှင့်အညီ ရရှိနိုင်ရေးဆောင်ရွက်ပေးလျက်ရှိပါသည်။			
	(၂၀၁၃) ခုနှစ်၊အနည်းဆုံးအခကြေးငွေဥပဒေနှင့် အနည်းဆုံးအခကြေးငွေ နည်းဥပဒေ	ဝန်ထမ်းများ အားဥပဒေနှင့်အညီ သတ်မှတ်ထားသောအနည်းဆုံးအခကြေးငွေအောက်လျော့နည်းခြင်းမရှိစေရန် ဝန်ထမ်းများအား လုပ်ခလစာ(အခကြေးငွေ) များပေးအပ်လျက်ရှိပါသည်။	Admin & Hr	Monthly	Comply
		ဝန်ထမ်းတစ်ဦးချင်း၏ အနည်းဆုံးအခကြေးငွေသတ်မှတ်နှုန်းထားများအား ဝန်ထမ်းများပွင့်လင်းမြင်သာစွာသိရှိနိုင်ရန် ပုံမှန်အသိပေးဆောင်ရွက်ပါသည်။			

Yangon Metal Industry Co., Ltd.
Evaluation of Compliance for Legal and Other Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
	(၂၀၁၂) ခုနှစ်၊ အလုပ်သမားရေးရာ အငြင်းပွားမှု ဖြေရှင်းရေး ဥပဒေနှင့် အလုပ်သမားရေးရာအငြင်းပွားမှုဖြေရှင်းရေးနည်းဥပဒေများ (၂၀၁၂ ခုနှစ် ၊မတ်လ ၊(၂၈) ရက်)	အလုပ်သမားရေးရာ လုပ်ငန်းညှိနှိုင်းရေးကော်မတီဖွဲ့စည်းထားရှိပြီး အလုပ်ရှင်နှင့်အလုပ်သမားကြားဆက်ဆံမှုကောင်းမွန်စေရေး ၊လုပ်ငန်းခွင်ဘေးအန္တရာယ် ကင်းရှင်းရေး၊ဝန်ထမ်းများ ကျန်းမာရေးနှင့် သက်သာချောင်ချိရေး နှင့် ကုန်ထုတ်လုပ်မှုတိုးတက်မြင့်မားလာစေရေး တို့ကို ဆောင်ရွက်လျှက်ရှိပါသည်။	Admin & Hr	Always	Comply
၅။	**ပုဂ္ဂလိက စက်မှုလုပ်ငန်းလိုင်စင်**	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Annually	Comply
၆။	**လျှပ်စစ်မော်တော်အားထုတ်လုပ်ခြင်းနှင့် အသုံးပြုခြင်းဆိုင်ရာအန္တရာယ်ကင်းရှင်းကြောင်းလက်မှတ်**	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Engineering	4 years	Comply
၇။	**ကုမ္ပဏီလိုင်စင်**	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	5 years	Comply
၈။	**စည်ပင်လုပ်ငန်း** စည်ပင်လုပ်ငန်းလိုင်စင်	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Annually	Comply
	စည်ပင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းကြောင်းထောက်ခံချက်	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Annually	Comply
	စည်ပင်ကျန်းမာရေးနှင့်ဘေးအန္တရာယ်ကင်းရှင်းကြောင်းထောက်ခံချက် (၂၀၁၈ ခုနှစ်)	သတ်မှတ်ထားသောလိုင်စင်ပါစည်းကမ်းချက်များနှင့်အညီပြုလုပ်ဆောင်ရွက်ထားရှိပါသည်။	Admin	Annually	Comply

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	ရန်ကုန်မြို့စည်ပင်သာယာရေး ကော်မတီ ဥပဒေ (၂၀၁၈ ခုနှစ်၊ဇွန်လ ၂၈ ရက်)	စက်ရုံမှစွန့်ပစ်သော စွန့်ပစ်ရေဆိုးများအား သတ်မှတ်စံချိန်စံညွှန်းများနှင့်အညီ Waste Water Treatment Machine များဖြင့်သန့်စင်ပြီးမှသာ ပြင်ပသို့စွန့်ပစ်ပါသည်။	QC	Daily Inspection	Comply
		စက်ရုံမှထွက်ရှိလာသော အခိုးအငွေ့များမှ လေထုညစ်ညမ်းမှုမဖြစ်ပေါ်စေရေးအတွက် Lead Fume ,Acid Fumeများဖြင့်သန့်စင်ပြီးမှသာ ပြင်ပသို့စွန့်ထုတ်ပါသည်။	Production	Always	Comply
		မိလ္လာနှင့်ရေဆိုးများအား စည်ပင်ရေပုတ်စုပ်ယာဉ်များဖြင့်စွန့်ပစ်လျှက်ရှိပါသည်။	Admin	Weekly	Comply
		စည်ပင်လုပ်ငန်းလိုင်စင်လျှောက်ထားရယူပြီး ဘက်ထရီအိုးဟောင်းများမှ ခဲပြန်လည်သန့်ခြင်းနှင့်ထုတ်လုပ်ရောင်းချခြင်း လုပ်ငန်းအားလိုင်စင်ပါ စည်းကမ်းချက်များနှင့်အညီ ပြုလုပ်ဆောင်ရွက်လျှက်ရှိပါသည်။	Admin	Always	Comply
၉။	**ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ** (၂၀၁၄ ခုနှစ်၊ဇွန်လ ၂၅ ရက်) အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လုပ်မှု)လမ်းညွှန်ချက်များ (၂၀၁၅ ခုနှစ် ၊ဒီဇင်ဘာလ ၂၉ ရက်) ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂-ခုနှစ်)	စက်ရုံမှထွက်ရှိလာသော အခိုးငွေ့များအား Fume System Machines များအသုံးပြု သန့်စင်ပြီးမှသာ ပြင်ပ လေထုအတွင်းသို့ထုတ်လွှတ်ပါသည်။	Production	Always	Comply
		စက်ရုံမှထွက်ရှိလာသောစွန့်ပစ်ရေများကို Waste Water Treatment System Machine များအသုံးပြုသန့်စင်ပြီးမှသာပြင်ပ သို့စွန့်ပစ်ပါသည်။	QC	Always	
		လုပ်ငန်းမှထွက်ရှိလာသောအန္တရာယ်ဆိုးများအားလျော့ချပေးခြင်း ၊ဝန်ထမ်းများအတွက် PPE များစီစဉ်ထားရှိပေးပါသည်။	Admin & Related Department	Always	

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၁၀။	သဘာဝဓါတ်ငွေ့အသုံးပြုမှု	သဘာဝဓါတ်ငွေ့ရောင်းချမှုစာချုပ်ပါ သဘောတူညီချက်များ၊စည်းကမ်းချက်များနှင့်အညီလိုက်နာဆောင်ရွက်ထားရှိပါသည်။	Admin	Instruction	Comply

Prepared by LL Nyi Nyi Tun
(AM)

Approved by : LL Kyaw Htoo
(AFM)