YANGON METAL INDUSTRY COMPANY LIMITED

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

LEAD SMELTING AND REFINING PROJECT

Prepared by

OLIVE BRIGHT ENVIRONMENTAL SOLUTIONS LIMITED

November, 2024

ENDORSEMENT LETTER OF THE PROJECT PROPONENT

Director General
Ministry of Natural Resources and Environmental Conservation
Office No. (58), Ottarathiri Township,
Nay Pyi Taw, Myanmar.

Date: 8.11. 2024

We, Yangon Metal Industry Company Limited refer to the captioned EIA report, which was prepared and finalized by the third party, Olive Bright Environmental Solutions Limited (OBES) in accordance with the EIA Procedure (2015) in order to: a) develop an EIA; b) obtain an ECC; and c) take appropriate actions to mitigate adverse impacts in accordance with the law, the rules, and other applicable laws, especially, Myanmar Environmental Impact Assessment Procedure (2015) issued by the Ministry of Natural Resources and Environmental Conservation (MONREC).

We shall at all times comply fully with: (i) any and a commitments and obligations as set forth in the EIA, and (ii) any and all plans and the various components thereof, including without limitation, impact avoidance, mitigation, and remediation measures, but without limited to the following prescriptions for the project proponent according to EIA Procedure (2015);

a) fulfilling the accuracy and completeness of the EIA;
b) preparing EIA report in strict compliance with applicable laws including this Procedure; and
c) ensuring that at all times comply fully with the commitments, mitigation measures, and plans in the EIA.

The issuance of this confirmation and undertaking has been duly authorized by all necessary corporate actions and a copy of the resolution of the Project Management Institution authorizing it and the power of attorney explicitly granting signing authorization to the individual who has signed below are attached as schedules here to.

Sincerely,

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

YANGON METAL INDUSTRY CO., LTD.

CONSULTANT'S DECLARATIONS

Date: 7.11.2024

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

Director

Olive Bright Environmental Solutions Limited

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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

အစီရင်ခံစာအကျဉ်းချုပ်

၁. နိဒါန်း

ဤ သဘာဝပတ်ဝန်းကျင်ထိခိုက်မှုစစ်တမ်း နယ်ပယ်သတ်မှတ်ခြင်း အစီရင်ခံစာကို ရန်ကုန်သတ္တု စက်မှု လုပ်ငန်းကုမ္ပဏီလီမိတက် (YMI) က အကောင်အထည်ဖော်ဆောင်ရွက်လျက်ရှိသော ခဲအရည်ကျိုသန့်စင်ရေး စီမံကိန်းအတွက် Olive Bright Environmental Solutions Limited (OBES) က ရေးသား ပြုစုထားခြင်း ဖြစ်ပါသည်။ ဤအစီအရင်ခံစာတွင် လက်ရှိ သဘာဝပတ်ဝန်းကျင်ဆိုင်ရာ လေ့လာတွေ့ရှိချက်များအတွက် ဝန်ဆောင်မှုများ၊ ပတ်ဝန်းကျင် နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများကို ကောင်းသည်ဖြစ်စေ၊ ဆိုးသည်ဖြစ်စေ ဆန်းစစ်လေ့လာထားခြင်းများအပြင် ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှုများနှင့် စောင့်ကြည့် လေ့လာရေးတို့ အတွက် ကြိုတင်စီမံချက် ရေးဆွဲခြင်းများ၊ လူထု သဘောထား ကြားနာချက်များလည်း ပါဝင်မည် ဖြစ်ပါသည်။

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

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

၁.၁ YMI ၏ ဆက်သွယ်ရန် လိပ်စာအပြည့်အစုံ

ဆက်သွယ်ရမည့်သူ - ဦးကျော်ထူး
ရာထူး - စီမံကိန်းမန်နေဂျာ
ဖုန်း - (ရုံး): +၉၅-၀၉၈၆၀၀၁၅၇
မိုဘိုင်း - + ၉၅-၀၉၂၅၄၀၄၃၆၅၄

အီးမေလ်း - admin@yangonmetal.com
ဝဘ်ဆိုက် - https://www.yangonmetal.com
လိပ်စာ - နံပါတ် ၂၆၁/၂၆၂/၂၆၃ ၊ ပါရမီလမ်း ၊ မြောင်းတကာစက်မှုဇုန် ၊ မှော်ဘီမြို့နယ် ၊ ရန်ကုန်တိုင်းဒေသကြီး

၁.၂ ပတ်ဝန်းကျင်ဆိုင်ရာ အကြံပေး

တတိယအဖွဲ့အစည်းဖြစ်သည့် Olive Bright Environmental Solutions Limited (OBES) သည် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ (၂၀၁၂)၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးနည်းဥပဒေ (၂၀၁၄)၊ ပတ်ဝန်းကျင် ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅) နှင့် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅) အရ ကိုက်ညီမှုရှိစေရန် အခြေခံအချက်အလက်များအား ကွင်းဆင်း လေ့လာ၍ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (Environmental Impact Assessment (EIA)) အစီရင်ခံစာ ရေးဆွဲခြင်းကို ဆောင်ရွက်မည် ဖြစ်ပါသည်။

အဖွဲ့အစည်းအမည်- Olive Bright Environmental Solutions Limited
ကုမ္ပဏီမှတ်ပုံတင်နံပါတ်- ၁၃၁၅၀၂၂၃
EIA လိုင်စင်နံပါတ်- EIA-CO(A)002/2023
ဆက်သွယ်ရမည့် ပုဂ္ဂိုလ်- ဒေါက်တာလဲ့လဲ့ဝင်း (ဒါရိုက်တာ)
လိပ်စာ- အမှတ် (၉)၊ အကွက် (၃၆)၊ နဝဒေးဥယျာဉ် အိမ်ရာ၊ ရန်ကုန်-ပုသိမ် လမ်းမကြီး၊ လှိုင်သာယာမြို့နယ်၊ရန်ကုန်တိုင်းဒေသကြီး။
ဖုန်း- ၀၉- ၇၆၅၆၃၈၈၉၂၊ ၀၉-၇၆၅၄၇၉၆၉၂
အီးမေးလ်- obesservices@obcmm.com
အင်တာနက်စာမျက်နှာ- www.obcmm.com

၂. LEGAL FRAMEWORK

Yangon Metal Industry Company Limited သည် စီမံကိန်းနှင့် ဆက်စပ်သည့် ဥပဒေများအပါဝင် မြန်မာနိုင်ငံမှ ပြဋ္ဌာန်းထားသော ဥပဒေများ၊ နည်းဥပဒေများနှင့် လမ်းညွှန်ချက်များအပြင် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း (၂၀၁၅)၊ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက် (၂၀၁၅) တို့အား လိုက်နာဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ အဆိုပြုစီမံကိန်း နှင့်ပတ်သက်၍ အောက်ဖော်ပြပါ ဥပဒေများနှင့် စည်းမျဉ်းစည်းကမ်းများအား လိုက်နာအကောင်အထည် ဖော်ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်-

၁) Environmental Conservation Law, ၂၀၁၂
၂) Environmental Conservation Rules, ၂၀၁၄
၃) Environmental Impact Assessment Procedure, ၂၀၁၅
၄) National Environmental Quality (Emission) Guidelines, ၂၀၁၅
၅) The Myanmar Investment Law, ၂၀၁၆
၆) Myanmar Investment Rules, ၂၀၁၇
၇) The Conservation of Biodiversity and Protected Areas Law, ၂၀၁၈
၈) The Protection and Preservation of Antique Objects Law, ၂၀၁၅
၉) The Protection and Prevention of Ancient Monuments law, ၂၀၁၅,
၁၀) The Public Health Law, ၁၉၇၂
၁၁) The Prevention and Control of Communicable Diseases Law, ၁၉၉၅
၁၂) The Control of Smoking and Consumption of Tobacco Product Law, ၂၀၀၆
၁၃) The Labor Organization Law, ၂၀၁၁
၁၄) The Settlement of Labor Dispute Law, ၂၀၁၂
၁၅) Employment and Skill Development Law, ၂၀၁၃
၁၆) The Leave and Holiday Act, ၁၉၅၁; Amendment in ၂၀၁၄
၁၇) Workmen's Compensation Act, ၁၉၂၃
၁၈) The Social Security Law, ၂၀၁၂
၁၉) Occupational Safety and Health Law, ၂၀၁၉
၂၀) The Minimum Wage Law, ၂၀၁၃
၂၁) The Payment of Wages Law, ၂၀၁၆
၂၂) The Prevention of Hazard from Chemical and Related Substances Law, ၂၀၁၃
၂၃) The Myanmar Fire Brigade Law, ၂၀၁၅

၂၄)Traffic Safety and Motor Vehicle Management Law, ၂၀၂၀

၂၅)The Conservation of Water Resources and Rivers Law, ၂၀၀၆

၂၆)The Conservation of Water Resources and Rivers Rules, ၂၀၁၃

၃. စီမံကိန်းအကြောင်းအရာဖော်ပြချက်များနှင့် အခြားနည်းလမ်းများ

YMI ကို ၂၀၁၄-၂၀၁၈ ကာလများတွင် တည်ဆောက်ပြီးစီးခဲ့ပြီး ၂၀၁၈ ခုနှစ်မှစတင်ကာ ယခုအချိန်ထိ ခဲသန့်စင်ထုတ်လုပ်ရေး လုပ်ငန်းအား ဆောင်ရွက်ခဲ့ပါသည်။ ခဲအရည်ကျိုသန့်စင်သည့်စက်ရုံအား ပုံ (၃-၁) တွင် တွေ့မြင်နိုင်ပါသည်။

ဇယား ၃.၁ စီမံကိန်းနေရာရှိ အဆောက်အဦများ

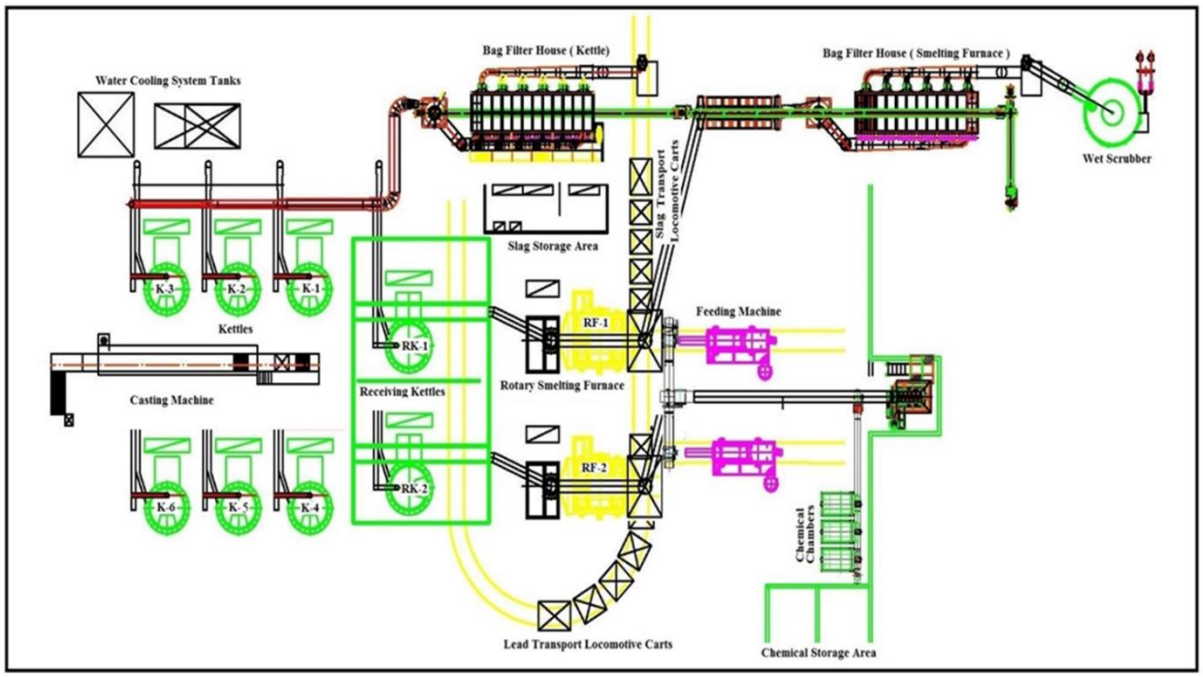
No	Description	Remark
၁.	Storage Building	Completed
၂.	Process Building	Completed
၃.	Packing & Transfer Building	Completed
၄.	Process Building	Completed
၅.	Finished Storage Building	Completed
၆.	Ingot Storage Building	Completed
၇.	Roll Shop	Completed
၈	Canteen	Completed
၉	Packaging Area	Completed

Source: YMI Co., Ltd.

ပုံ ၃-၁ YMI ခဲအရည်ကျိုသန့်စင်စက်ရုံ

၃.၁ စက်ပစ္စည်းအပြင်အဆင်များ

စက်ပစ္စည်းများတွင် ကျိတ်ချေစက် (B ဂ၅ 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 (၃-၂) တွင် မြင်တွေ့နိုင်ပါသည်။



ပုံ ၃-၂ စက်ပစ္စည်းအပြင်အဆင်ပြပုံ

၃.၂ ကုန်ကြမ်းပစ္စည်းများနှင့် ထုတ်လုပ်မှုလုပ်ငန်းစဉ်များ

ကုန်ကြမ်းပစ္စည်းများတွင် အဓိကအားဖြင့် အသုံးပြုပြီးသား ဘက်ထရီပစ္စည်းများနှင့် ဘက်ထရီနှင့် ခဲနှင့် သက်ဆိုင်သော ပစ္စည်းများ ပုံတွင်ပြထားသည့်အတိုင်း ပါဝင်ပါသည်။

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

ကုန်ချောပစ္စည်းအနေဖြင့် ခဲ (အလွိုင်း) နှင့် သန့်စင်ခဲပစ္စည်းများ ပါဝင်ပါသည်။ ထုတ်လုပ်သည့် လုပ်ငန်းစဉ် အား ပုံ (၃-၄) တွင် ပြထားပါသည်။

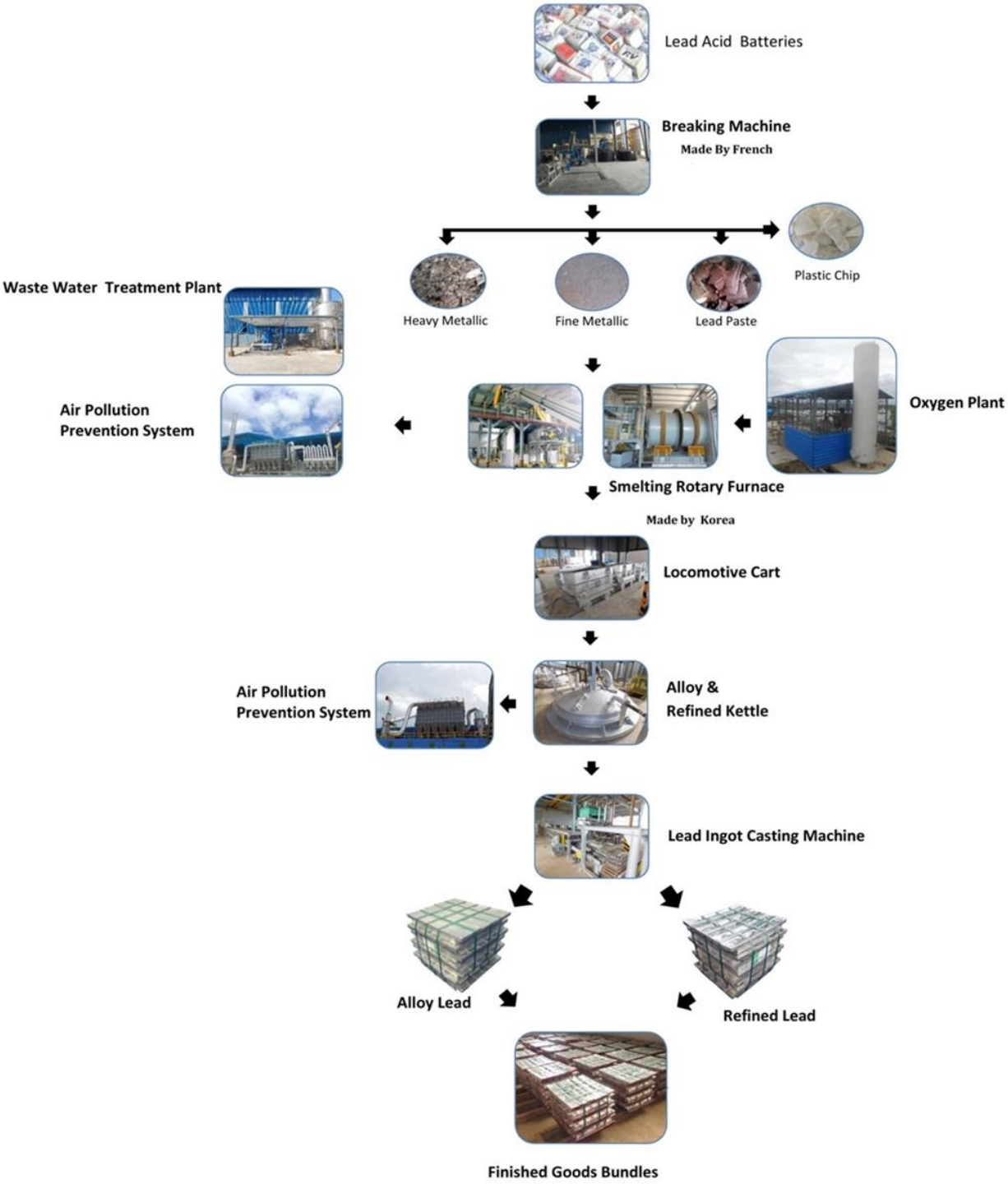


Figure ၃-၄ YMI ၏ ခဲထုတ်လုပ်သည့် လုပ်ငန်းစဉ်

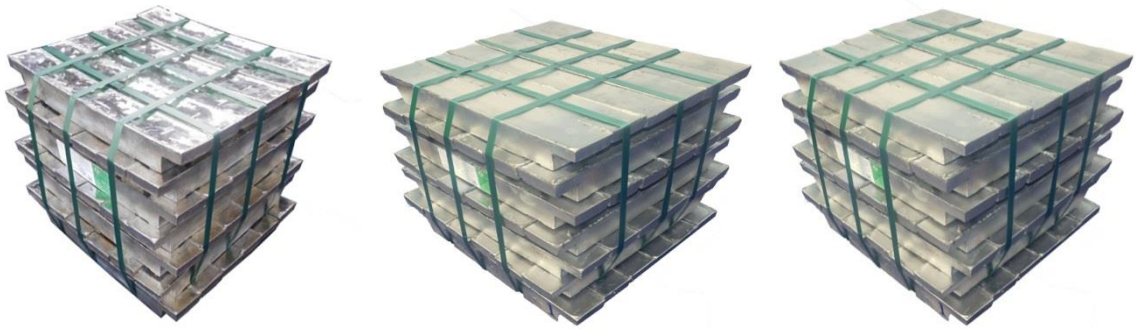


Figure ၃-၅ ထုတ်ကုန်များ (Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot)

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 အသင့်တော်ဆုံးနှင့် အဆင်ပြေဆုံးနေရာအဖြစ် ရွေးချယ်ခဲ့ပြီး စက်ရုံလုပ်ငန်းများအတွက် သီးသန့် သတ်မှတ်လုပ်ကိုင်ခွင့်ပေး ထားသော နေရာတစ်ခုဖြစ်ပါသည်။

YMI Co., Ltd. အနေဖြင့် ယခုလက်ရှိအဆောက်အဦများတွင် ခဲထုတ်လုပ်ခြင်းလုပ်ငန်းကို ဆောင်ရွက်နေ ပြီးလည်း ဖြစ်ပါသည်။ ထို့ကြောင့် ဤတစ်ခုတည်းသောနေရာ (Zero Option) နှင့် သက်ဆိုင်နှင့် အခြေခံ အချက်အလက်များအား အောက်ပါအတိုင်း တင်ပြအပ်ပါသည်။

ဇယား ၃.၂ Zero Option အချက်အလက်များ

လေ့လာသည့် အချက်အလက်များ	စီမံကိန်းမရှိသည့် အခြေအနေများ	စီမံကိန်းအကောင်အထည်ဖော်ထားသည့် အခြေအနေများ
စီးပွားရေးဆိုင်ရာ ထည့်သွင်းစဉ်းစားမှု	• အလုပ်အကိုင်အခွင့်အလမ်းများ ဖန်တီးပေးနိုင်မှု မရှိခြင်း	• ဒေသခံများအတွက် အလုပ်အကိုင်အခွင့် အလမ်းများ ဖန်တီးပေးနိုင်ခြင်း

	• စီးပွားရေးဖွံ့ဖြိုးတိုးတက်မှု အခွင့်အလမ်း မရှိခြင်း	• ဒေသတွင်း စီးပွားဖွံ့ဖြိုးတိုးတက်လာ ခြင်း
ပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထည့်သွင်းစဉ်းစား မှု	• သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများ မရှိခြင်း • သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ကိစ္စရပ်ရှုပ်ထွေးမှုများ အပေါ်တွင် ကြုံသလိုဖြေရှင်းခြင်း	• ဆောက်လုပ်ရေးနှင့် စက်ရုံလည်ပတ်မှု လုပ်ငန်းများကြောင့် သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင်ရာ ထိခိုက်မှုများ ရှိနိုင်ခြင်း • သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးဆိုင် ရာ ကိစ္စရပ်များတွင် ထိရောက်သော ဖြေရှင်းမှုကို အသုံးပြုကာ စနစ်တကျ စီမံခန့်ခွဲခြင်း • ဒေသခံများအနေဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဗဟုသုတ အသိပညာများ တိုးတက်မြင့်မားလာခြင်း

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

ဇယား ၃.၃ စီမံကိန်းနေရာအတွက် အခြားနည်းလမ်းများအား နှိုင်းယှဉ်ဖော်ပြမှု

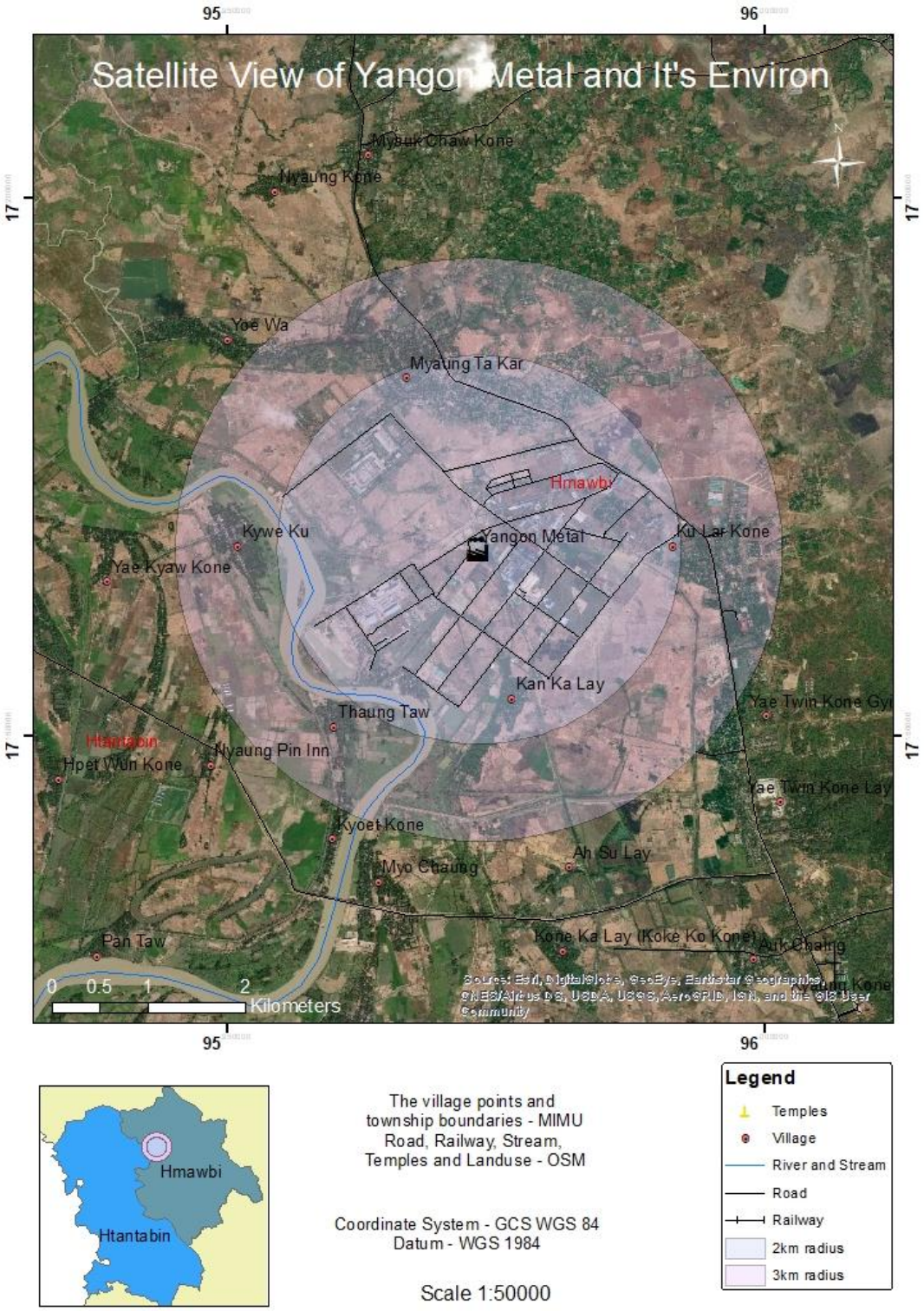
နည်းလမ်းများ	YMI စက်ရုံနေရာ	ရန်ကုန်ရှိ အခြားနေရာများ
ပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ ကိစ္စရပ်များ	• စက်ရုံနေရာသည် စွန့်ပစ်အမှိုက်များ စနစ်တကျစွန့်ပစ်နိုင်မည့် အမှိုက်ပုံနေရာနှင့် လက်လှမ်းမီသောနေရာတွင် ရှိနေခြင်း နှင့် ပတ်ဝန်းကျင်နှင့် သဟဇာတပိုမို ဖြစ်မည့် ထုတ်လုပ်လည်ပတ်ရေးများလုပ်ကိုင်နိုင်ရန် အတွက် သင့်လျော်သောနေရာတွင် တည်ရှိနေခြင်း	• လူနေအိမ်ခြေများနှင့် နီးကပ်လွန်း၍ ထိခိုက်မှု များပြားခြင်း • ယာဉ်ကြောကြပ်တည်းမှု ဆိုင်ရာ ထိခိုက်မှုများ (ဥပမာ- မော်တော်ယာဉ်ဓာတ်ငွေ့ ထုတ်လွှတ်မှုများ ၊ ယာဉ်ကြောကြပ်တည်းမှု နှင့် လောင်စာသုံးစွဲမှု) ကို ကြုံတွေ့ရနိုင်ခြင်း။

	• ယာဉ်သွားလာမှုနှင့်သက်ဆိုင်သည့် ထိခိုက်မှုများ (ဥပမာ- မော်တော်ယာဉ်ဓာတ်ငွေ့ထုတ်လွှတ်မှုများ ၊ ယာဉ်ကြောကြပ်တည်းမှု နှင့် လောင်စာသုံးစွဲမှု) ကို လျှော့ချနိုင်ခြင်း • လူမှုတာဝန်သိလုပ်ငန်းများအား အစီအစဉ်ချ လုပ်ကိုင်ခြင်း • ပုံမှန် နှင့် သီးသန့်ပေးသော အလုပ်ခွင် သင်တန်းများကြောင့် အလုပ်သမားများ စွမ်းရည် ပိုမိုတိုးတက်လာခြင်း နှင့် ကျွမ်းကျင်မှုဆိုင်ရာ အရည်အသွေးအသစ်များ ရရှိလာစေခြင်း။	
စီးပွားရေးဆိုင်ရာ ကိစ္စရပ်များ	• ဒေသတွင်းအလုပ်သမားများကို အသုံးပြုခြင်းကြောင့် အလုပ်သမားခ သက်သာသော်လည်း အလုပ်ခွင်သင်တန်းများကြောင့် အပိုကုန်ကျစရိတ်များ ရှိနိုင်ခြင်း။ • ဒေသတွင်းအလုပ်သမားများ လုပ်ငန်းမကျွမ်းကျင်သေးသောကြောင့် ကုန်ကြမ်းပစ္စည်း ပိုမိုအသုံးပြုရခြင်းနှင့် စွန့်ပစ်ပစ္စည်းများ ပိုမိုထွက်ရှိခြင်း။	• မြေယာအသုံးချမှုတွင် စရိတ်ပိုမိုကုန်ကျခြင်းနှင့် အလုပ်သမားခ ကြီးမြင့်ခြင်း။

အထက်ပါ နှိုင်းယှဉ်ချက်များအရ ဤစီမံကိန်းအနေဖြင့် လူမှုရေး ၊ ပတ်ဝန်းကျင်နှင့် စီးပွားရေးဆိုင်ရာ ကောင်းကျိုး ရလာဒ်များ ဖြစ်ထွန်းစေနိုင်ကြောင်း ထင်ရှားပါသည်။

၄. ရှိရင်းစွဲ အခြေခံ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ အခြေအနေများ

အဆိုပြုစီမံကိန်းဧရိယာမှာ မော်ဘီမြို့နယ် မြောင်းတကာစက်မှုဇုန်အတွင်းတည်ရှိပြီး စီမံကိန်းအနီးတဝိုက်တွင် လည်း အခြား စက်မှုလုပ်ငန်းများတည်ရှိနေပါသည်။



ဇယား ၄-၁ YMI စီမံကိန်းနေရာပြ ကြိုပ်တုပုံရိပ်

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။ လေထုအရည်အသွေး စောင့်ကြည့်မည့် နေရာများအဖြစ် မြောင်းတကာစက်မှုဇုန် အတွင်းနေရာအား ထုတ်လွှတ်နေရာ (source) အဖြစ် သတ်မှတ်ထားပြီး အနီးဆုံးဖြစ်သည့် ဓမ္မရေအေးဘုန်းကြီး ကျောင်းနေရာအား လက်ခံနေရာ (receptor) အဖြစ် သတ်မှတ်ကာ တိုင်းတာကောက်ယူသွားမည် ဖြစ်ပါသည်။

Survey/Sample Type	Sample ID	Location
လေထုအရည်အသွေး	AQ-၁	Lat: ၁၇°၁၀'၁.၁၈"N Long: ၉၅°၅၈'၂၆.၁၁"E
လေထုအရည်အသွေး	AQ-၂	Lat: ၁၇°၀၉'၁၉.၁၃၈"N Long: ၉၅°၅၈'၄၃.၃၈၆"E

ဇယား ၄.၁ လေထုအရည်အသွေးရလာဒ်များ

Parameter	Averaging Period	Unit	AQ-၁	AQ-၂	NEQG Guideline
Carbon Monoxide	၁-hour	ppb	၁.၃၇	၀.၀၀၀၀၇	-
Carbon Dioxide	၈-hour daily maximum	ppm	၂၄၀.၁၄	၁၅၃.၀၅	၅၀၀၀
Particulate Matter PM၁၀[a]	၁-year ၂၄-hour	µg/m³	၂၇.၂၈	၂၃.၆၆	၂၀ ၅၀
Particulate Matter PM၂.၅[b]	၁-year ၂၄-hour	µg/m³	၁၈.၇၀	၁၂.၄၂	၁၀ ၂၅
Sulfur Dioxide	၂၄-hour ၁၀-minute	ppb	၁.၇၃	၂.၉၆	၂၀ ၅၀၀

Nitrox Oxide	၁-year ၁-hour	ppb	 ၂၃.၈၃	 ၄၂.၉၂	၄၀ ၂၀၀
Volatile Organic Compounds	၂၄-hour	ppm	၀.၄၄	၁.၅၇	၂၀
Ozone	၂၄-hour	ppm	၀.၀၀၂၉	၀.၀၀၀၉	၁၀၀
Relative Humidity	၂၄-hour	%	၄၀.၄၂	၄၅.၆၁	-

လေထုအရည်အသွေးတိုင်းတာစစ်ဆေးမှုရလာဒ်များအရ သတ်မှတ်စံချိန်စံညွှန်းကိန်းများထက် ကျော်လွန်မှု မရှိသည်ကိုတွေ့ရပြီး စီမံကိန်းအနေဖြင့် အနီးတဝိုက်ရှိ လေထုအရည်အသွေး၏ သန့်စင်မှုကို ဆက်လက်ရရှိရန် ထိန်းသိမ်းဆောင်ရွက်ရပါမည်။

၄.၁.၂ အသံဆူညံမှုနှင့် တုန်ခါမှု

နေ့အချိန်နှင့်ညအချိန် အသံဆူညံမှုအဆင့်များနှင့် တုန်ခါမှုအဆင့်များကို စက်ရုံလည်ပတ်ရာအနီးတဝိုက် စက်ပစ္စည်းများအနီးနှင့် စက်ရုံဝင်းတံခါးအနီး ဝင်ပေါက်နေရာတွင် dB ယူနစ်ဖြင့် တိုင်းတာခဲ့ပါသည်။ ရရှိလာသော စစ်ဆေးတိုင်းတာမှုရလာဒ်များအား NEQEG (၂၀၁၅) 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-၁ (source)	Lat: ၁၇°၁၀'၂.၀၉"N Long: ၉၅°၅၈'၂၄.၉၂"E
Noise and Vibration	NV-၂ (receptor)	Lat: ၁၇°၀၉'၁၉.၁၃၈"N Long: ၉၅°၅၈'၄၃.၃၈၆"E

ဇယား ၄.၂ A-Weighted Loudness Equivalent Noise Level at Myaung Ta Kar Industrial Zone

Noise Level	Day-time (dBA)	Night-time (dBA)
Q-၁	၆၅.၄၃	၅၉.၅၁

Q-၂	၅၉.၂၆	၅၅.၇၂
NEQG standard (Residential and institutional area)	၅၅	၄၅
WHO for specific environment, Industrial, commercial, shopping and traffic areas, indoors and outdoors	၇၀	

စီမံကိန်းဧရိယာအတွင်းရှိ ဆူညံသံအဆင့်ကို စက်မှုလုပ်ငန်းအဆင့်သတ်မှတ်ထားပါသည်။ အဘယ်ကြောင့်ဆိုသော် စီမံကိန်းမှာ စက်မှုဇုန်အတွင်း တည်ရှိနေသောကြောင့်ဖြစ်ပါသည်။ လူနေအိမ်ခြေ (ဘုန်းကြီးကျောင်းဝင်း) နေရာမှာ မူလကပင် သတ်မှတ်စံချိန်စံညွှန်းထက် ကျော်လွန် နေသည်ကို တွေ့ရှိရပြီး စီမံကိန်းအနေဖြင့် ရှိရင်းစွဲ အသံဆူညံမှုအဆင့်ကို တိုးပွားစေမည့် သက်ရောက်မှုများ မဖြစ်နိုင်ပါ။

ဇယား ၄.၃ Daily Average Vibration Level Results at Myaung Ta Kar Industrial Zone

Survey Result	Daytime (dBA)	Nighttime (dBA)
Q-၁	၄၅	၃၆
Q-၂	၄၂	၃၁
Standard (Standard)[II]	၆၅-၇၀	၆၀-၆၅

[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၍ တုန်ခါမှုအနည်းငယ် မြင့်တက်သည် ကို တွေ့ရသော်လည်း သတ်မှတ်စံချိန်စံညွှန်းထက် ကျော်လွန်မှု မရှိပါ။

၄.၁.၃ မျက်နှာပြင်ရေနှင့် မြေအောက်ရေ အရည်အသွေး

မျက်နှာပြင်ရေနှင့် မြေအောက်ရေ ရေနမူနာကောက်ယူသည့်နေရာများအား အောက်ပါအတိုင်း ဖော်ပြထားပါသည်။

Sample ID	Sample Type	Coordinate
GW-၁	Ground Water	Lat: ၁၇°၁၀'၇.၁၇"N Long: ၉၅°၅၈'၂၃.၆၄"E
SW-၁	Surface Water	Lat: ၁၇°၁၀'၇.၆၈"N

		Long: ၉၅°၅၈'၂၄.၃၀"E
SW-၂	Industrial Effluent	Lat: ၁၇°၁၀'၀.၄၅"N Long: ၉၅°၅၈'၂၆.၈၈"E

ဇယား ၄.၄ မျက်နှာပြင်ရေ အရည်အသွေး ရလာဒ်များ

No	Parameter	Unit	SW-၁	SW-၂	NEQG Guideline*
၁	Total Suspended Solids	mg/l	၁၄၈	၃၀	၅၀
၂	Zinc	mg/l	Nil	Nil	၀.၂
၃	Temperature	°C	၂၅.၀	၂၅.၀	<၃[b]
၄	pH	S.U[a]	၈.၂	၈.၄	၆-၉
၅	Lead	mg/l	Nil	Nil	၀.၁
၆	Fluoride	mg/l	၁.၀	၀.၈	၅
၇	Copper	mg/l	Nil	Nil	၀.၁
၈	Chemical oxygen demand	mg/l	၆၄	၃၂	၅၀
၉	Arsenic	mg/l	Nil	Nil	၀.၀၅
၁၀	Aluminum	mg/l	<၀.၀၁	၀.၀၃	၀.၂
၁၁	Cadmium	mg/l	၀.၀၂	၀.၃	၀.၀၅
၁၂	Nickel	mg/l	၀.၆	၀.၄	၀.၁
၁၃	Mercury	mg/l	< ၀.၁	< ၀.၁	၀.၀၁

**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 ၁၀၀ meters from the point of discharge*

ဒေသတွင်းရှိ မျက်နှာပြင်ရေအရည်အသွေးကို ပါရာမီတာ ၁၃ မျိုးစစ်ဆေးခဲ့ပြီး မူလကတည်းကပင် TSS, BOD, and Nickle ပမာဏများမှာ မြင့်မားနေကြောင်း တွေ့ရှိရပါသည်။ စက်မှုလုပ်ငန်းထွက်ရေမှာလည်း နိကယ်နှင့် မာကျူရီ ပမာဏများနေကြောင်း တွေ့ရှိပါသည်။ သို့သော်ငြားလည်း စီမံကိန်းအနေဖြင့် ဝန်းကျင်ရေထုထဲသို့ ရေဆိုးများ စွန့်ထုတ်မည်မဟုတ်ဘဲ စက်ရုံလည်ပတ်သည့်လုပ်ငန်းတွင်

ပြန်လည်အသုံးပြုခြင်းနှင့် စက်ရုံတွင် အင်ဂျင်ပြန်စက်ကို ဆင်ထားကာ ရေငွေ့ပြန်စေခြင်းနည်းလမ်းကို အသုံးပြုလျှက် ရှိပါသည်။

မြေအောက်ရေအရည်အသွေးပြပါရာဓီတာများကို အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၄.၅ မြေအောက်ရေအရည်အသွေးပြ ပါရာမီတာများကို တိုင်းတာစစ်ဆေးခြင်းရလာဒ်များ

No	Parameter	Unit	Result	WHO Drinking Water Guideline*
၁	pH	S.U [a]	၇.၄	၆.၅ – ၈.၅
၂	Turbidity	NTU	၃၂	၅
၃	Total Dissolved Solid	mg/l	၃၂၅	၁၀၀၀
၄	Nitrate	mg/l	၀.၃	၅၀
၅	Chloride	mg/l	Nil	၂၅၀
၆	Iron	mg/l	၁.၆၀	၀.၃
၇	Manganese	mg/l	၅.၇	၀.၀၅
၈	Hardness ($CaCO_3$)	mg/l	၃၆	၅၀၀
၉	Sulfate	mg/l	၁၂၀	၅၀၀
၁၀	Arsenic	mg/l	Nil	၀.၀၁

*WHO Drinking Water Guideline (Geneva-၁၉၉၃)

[a] Standard unit

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

၄.၁.၄ မြေအရည်အသွေး

မြေနမူနာများကို ဘက်ထရီ ကုန်ကြမ်းပစ္စည်းများစုပုံထားရာအနီး မြေပြင်မှ ကောက်ယူစစ်ဆေးခဲ့ပါသည်။ စစ်ဆေးမှုရလာဒ်များအား အောက်ပါဇယားတွင် ဖော်ပြထားပါသည်။

ဇယား ၄.၆ မြေအရည်အသွေး တိုင်းတာစစ်ဆေးမှုရလာဒ်များ

No.	Parameter	Unit	Result
၁	pH	S.U [a]	၉.၇၆
၂	Moisture	%	၁၅.၇၅
၃	Lead	ppm	၁၆၉၂.၀၀
၄	Zinc	ppm	၄.၄၆
၅	Mercury	ppm	၀.၀၃

၆	Copper	ppm	၈.၅၉
၇	Iron	ppm	၂၄.၂၂
၈	Chromium	ppm	၀.၀၀၄

[a] Standard unit

မြေနမူနာကို ကုန်ကြမ်းပစ္စည်းများ စုပုံထားရာအနီးမှ ကောက်ယူခဲ့ပြီး ခဲဓာတ်များနေကြောင်း တွေ့ရှိရပါသည်။

၄.၁.၅ မော်တော်ယာဉ်သွားလာမှုများကို စစ်တမ်းကောက်ယူခြင်း

YMI စက်ရုံသည် စက်မှုဇုန်၏ အလည်ဗဟိုခန့်တွင် တည်ရှိပါသည်။ ကားလမ်းဖြင့်ရောက်ရှိနိုင်ပြီး အဝေးပြေး လမ်းမကြီးမှ ၁.၆ ကီလိုမီတာခန့်တွင် တည်ရှိပါသည်။ စက်ရုံမှ အနောက်ဘက် ၂ ကီလိုမီတာအကွာတွင် လှိုင်မြစ် နှင့် ရေဆိပ်တစ်ခု ရှိပါသည်။ ယာဉ်သွားလာမှုစစ်တမ်းများအား TS-၁ နှင့် TS-၂ နှစ်နေရာတွင် ကောက်ယူစစ်ဆေးမည်ဖြစ်ပါသည်။ ၁၂ နာရီအတွင်း ဖြတ်သန်းသွားလာသော မော်တော်ယာဉ်များအား မှတ်တမ်းယူကာ တစ်နာရီတွင် ယာဉ်ဖြတ်သန်းသွားလာမှုနှုန်းများအား တွက်ချက်စစ်ဆေးသွားမည် ဖြစ်ပါသည်။

ဇယား ၄.၇ ယာဉ်သွားလာမှုစစ်တမ်းအကျဉ်းချုပ်တင်ပြချက်

No. of Traffic Survey Points	▪ ၂ points (TS-၁ and TS-၂)
Location of TS-၁	▪ YMI စက်ရုံသို့ အဝင်လမ်းဆုံ ▪ Located near the main entrance gate of the YMI, at the Latitude of ၁၇°၁၀'၆.၇၆"N and Longitude of ၉၅°၅၈'၂၂.၆၅"E. ▪ Vehicles passing the TS point in both directions (inbound and outbound) were counted. ▪ Number of Lane: ၂ (၁ lane for each direction)
Location of TS-၂	▪ ရန်ကုန်-ပြေ ကားလမ်းမကြီး ▪ Located on the Yangon – Pyay Highway Road, at the Latitude of ၁၇°၁၀'၂၇.၆၆"N and Longitude of ၉၅°၅၉'၁၂.၃၆"E. ▪ Vehicles travelling in both directions of Yangon – Pyay Highway Road were counted. ▪ Number of Lane: ၄ (၂ 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 ၄ enumerators were used in this study.

ပုံ ၄-၂ ယာဉ်သွားလာမှုစစ်တမ်း တည်နေရာပြပုံ

ဇယား ၄.၈ ယာဉ်အမျိုးအစားများ

No.	Class*	Description
၁	Motorcycle	All type of vehicles with two wheels
၂	၃-Wheeler	All type of vehicles with ၃-wheels (eg. Chinese Made ၃-wheelers used for transport of goods and materials)
၃	Car	Car, Pick-up, Van
၄	Bus	YBS Buses (Such as Line number ၃၇, ၉၀), Highway express and all types of buses
၅	Truck (< ၃ tons)	Truck with loading capacity of less than ၃ tons
၆	Truck (> ၃ tons)	Truck with loading capacity of higher than ၃ tons

၇	Truck (Trailer)	Truck with trailer

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

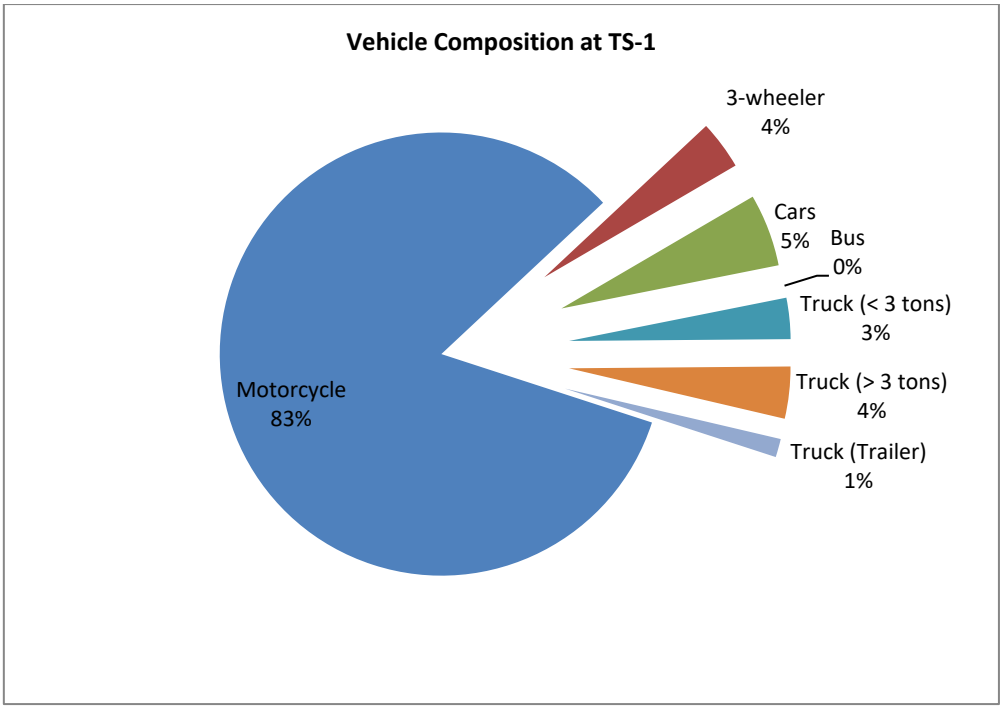
ယာဉ်များသွားလာမှု

TS-၁ တွင် စုစုပေါင်း ၁၂၆၇ ခါဖြတ်သန်းသွားလာပါသည်။ အားလုံးထဲတွင် မော်တော်ဆိုင်ကယ်အသုံးပြုမှု အများဆုံး ဖြစ်ပြီး ၈၃ ရာခိုင်နှုန်းအထိ ရှိပါသည်။ အခြားယာဉ်အမျိုးအစားများမှာ ၁-၅ ရာခိုင်နှုန်းအတွင်းသာရှိပြီး စစ်တမ်းကောက်ယူနေချိန်အတွင်းတွင် ဘတ်စ်ကားကြီးများ ဖြတ်သန်း သွားလာမှု မတွေ့ရှိခဲ့ပါ။ အသေးစိတ်အချက် အလက်များကို ဇယား ၁၂ နှင့် ပုံ ၈ တွင် ဖော်ပြထားပါသည်။

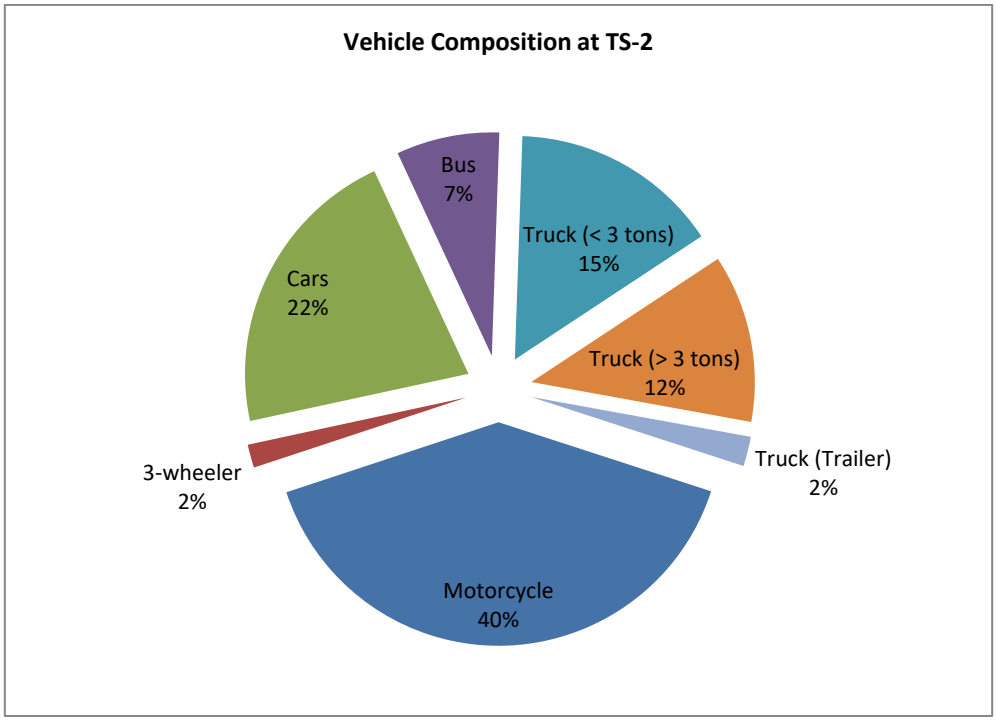
TS-၂ တွင် TS-၁ ထက်ယာဉ်သွားလာမှု ပိုမိုမြင့်မားပြီး စစ်တမ်းကောက်ယူချိန်အတွင်းတွင် ၆၈၂၅ ကြိမ် ဖြတ်သန်းသွားလာခဲ့ပါသည်။ မော်တော်ဆိုင်ကယ်သွားလာမှု အများဆုံးဖြစ်ပြီး ၄၀ ရာခိုင်နှုန်း၊ သုံးဘီးယာဉ်နှင့် ထော်လာဂျီများမှာ ၂ ရာခိုင်နှုန်းစီ အသီးသီး ရှိပါသည်။ အခြားယာဉ်အမျိုးအစားများ ဖြစ်ကြသည့် အိမ်စီးကား၊ ဘတ်စ်ကား နှင့် ကုန်တင်ကား (၃ တန်အောက်နှင့် ၃ တန်အထက်) မှာ ၁၂ မှ ၂၁ ရာခိုင်နှုန်းအထိ ရှိပါသည်။ TS-၂ အသေးစိတ်အချက်အလက်များအား ဇယား ၁၂ နှင့် ပုံ ၉ တွင် ဖော်ပြာထားပါသည်။

ဇယား ၄.၉ စစ်တမ်းကောက်ယူသည့်နေရာများတွင် ယာဉ်သွားလာမှုများ

TS-၁					TS-၂				
Class	In	Out	Total	Total (%)	Class	Pyay-Ygn	Ygn-Pyay	Total	Total (%)
Motorcycle	၅၃၅	၅၁၇	၁၀၅၂	၈၃	Motorcycle	၁၃၄၉	၁၃၇၆	၂၇၂၅	၄၀
၃-wheeler	၂၀	၂၅	၄၅	၄	၃-wheeler	၅၄	၆၁	၁၁၅	၂
Cars	၃၇	၃၀	၆၇	၅	Cars	၆၆၉	၇၉၆	၁၄၆၅	၂၁
Bus	၀	၀	၀	၀	Bus	၂၄၆	၂၆၃	၅၀၉	၇
Truck (< ၃ tons)	၂၄	၁၄	၃၈	၃	Truck (< ၃ tons)	၄၈၈	၅၄၈	၁၀၃၆	၁၅
Truck (> ၃ tons)	၂၂	၂၆	၄၈	၄	Truck (> ၃ tons)	၄၁၅	၄၁၄	၈၂၉	၁၂
Truck (Trailer)	၁၁	၆	၁၇	၁	Truck (Trailer)	၇၅	၇၁	၁၄၆	၂
Total	၆၄၉	၆၁၈	၁၂၆၇	၁၀၀		၃၂၉၆	၃၅၂၉	၆၈၂၅	၁၀၀



ပုံ ၄-၃ *Vehicle Composition at TS-၁*



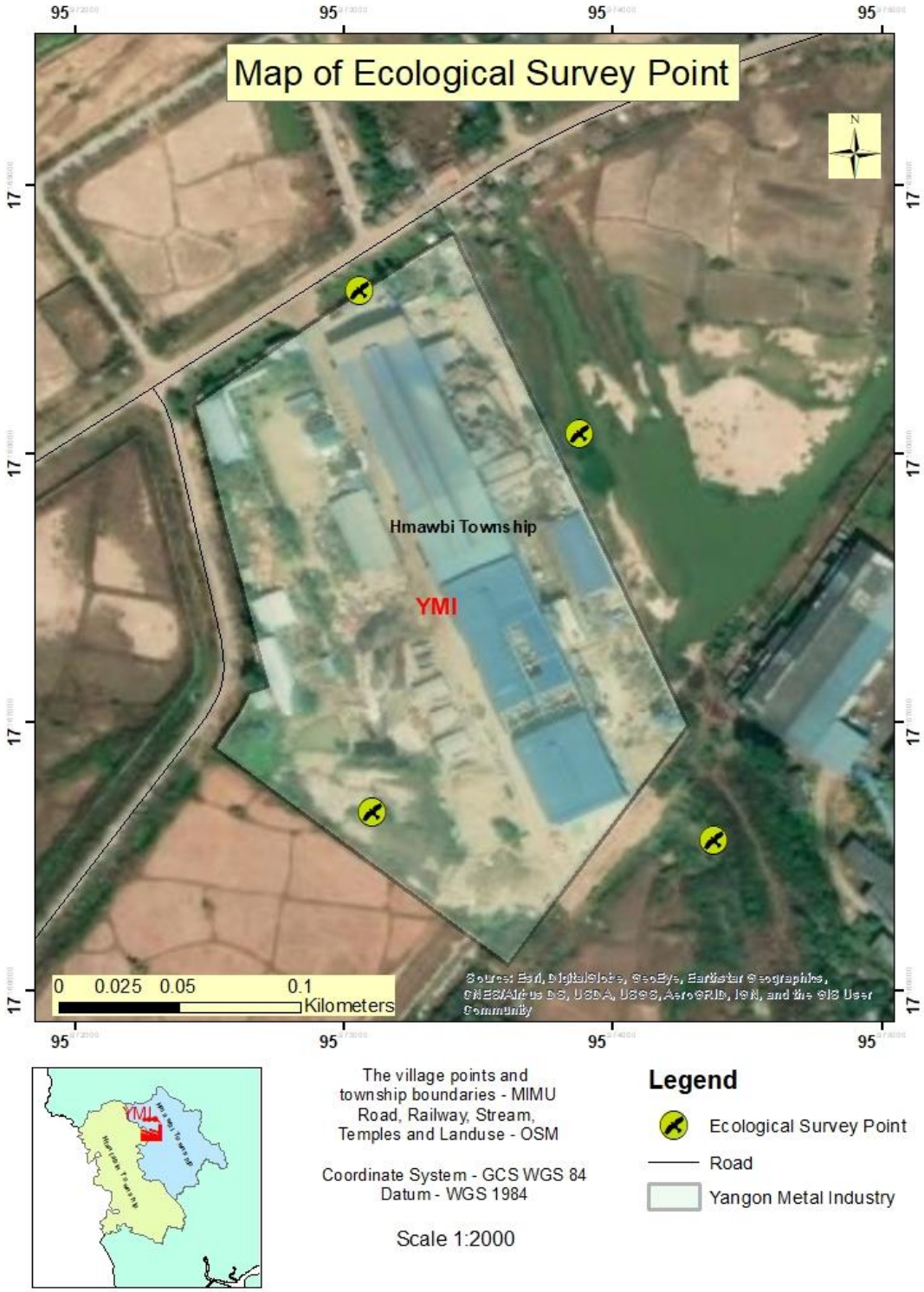
ပုံ ၄-၄ *Vehicle composition at TS-၂*

၄.၂ သက်ရှိ ဂေဟပတ်ဝန်းကျင်

စစ်တမ်းဧရိယာအား စက်ရုံပတ်ပတ်လည် ၁ ကီလိုမီတာအတွင်း သတ်မှတ်ခါ လေ့လာခဲ့ပါသည်။

ဇယား ၄.၁၀ လေ့လာမည့်နေရာများ၏ တည်နေရာအမှတ်များ

No.	Latitude	Longitude
၁	၁၇°၁၀'၀၇.၀"N	၉၅°၅၈'၂၃.၀"E
၂	၁၇°၁၀'၀၀.၀"N	၉၅°၅၈'၂၃.၁၇"E
၃	၁၇°၀၉' ၅၉.၆၂"N	၉၅°၅၈'၂၇.၇၄"E
၄	၁၇°၁၀' ၀၅.၀၈"N	၉၅°၅၈'၂၅.၉၅"E



ပုံ ၄-၅ ဂေဟစနစ်လေ့လာမှုတည်နေရာပြပုံ

၄.၂.၁ အပင်မျိုးစိတ်များ

မြက်ပင်များ၊ ချုံပုတ်ပင်များ နှင့် အခြားအပင်မျိုးစိတ်များအားလုံးကို စစ်တမ်းကောက်ယူကာ IUCN အညွှန်း ကိုးကားပြီး တိုက်ဆိုင်စစ်ဆေး၍ စီမံကိန်းလုပ်ငန်းများ၏ သက်ရောက်နိုင်မှုအား ဆန်းစစ်ခဲ့ပါသည်။

စီမံကိန်းမှာ လည်ပတ်လျက်ရှိနေပြီဖြစ်ပြီး စီမံကိန်းလုပ်ငန်းများကြောင့် အပင်များအပေါ် သက်ရောက်နိုင်မှု မရှိနိုင်တော့ပါဟု လေ့လာသုံးသပ်မိပါသည်။

အပင်မျိုးစိတ်များအပေါ် လေ့လာဆန်းစစ်မှုရလာဒ်များ

စီမံကိန်းဇရိယာတွင် အဓိကတွေ့ရသော အပင်မျိုးစိတ် ၂ ခုမှာ စိုက်ပျိုးထားသောအပင်များနှင့် ချုံပုတ်ပင်များဖြစ်ပါသည်။ စုစုပေါင်း အပင်မျိုးစိတ် ၄၀ အားတွေ့ရှိထားပါသည်။ IUCN Globally Threatened Red List (၂၀၁၉-၂) အရ မျိုးသုဉ်းအန္တရာယ်ရှိသည့် အပင်မျိုးစိတ်များ မပါဝင်ပါ။ စိုက်ပျိုးအပင်များမှာ သရက် (Mangifera indica), နှင့် ငှက်ပျောပင် (Terminalia catappa) ကဲ့သို့သော သီးပင်စားပင်များ ဖြစ်ပါသည်။ အခြားအပင်မျိုးစိတ်များအနေဖြင့် လက်ပံ (Bombax ceiba), မှိုပင် (Scaphium scaphigerum), ကုက္ကိုပင် (Albizia lebbek) ကဲ့သို့သော အရိပ်ရအပင်များဖြစ်ပါသည်။ အတွေ့ရများဆုံးအပင်မျိုးစိတ်များမှာ ခရားပင် (Manikara hexandra), နှင့် ကန့်ကော် (Albizia lebbek) ပင်များဖြစ်ပါသည်။

၄.၂.၂ သတ္တဝါမျိုးစိတ်များ

စီမံကိန်းနေရာအနီးတွင် သတ္တဝါမျိုးစိတ်များမှာ ငှက်နှင့် အခြားအင်းဆက်ပိုးများ တွေ့ရပြီး ၎င်းတို့အပေါ်တွင် သက်ရောက်မှု မရှိနိုင်ဟု မျှော်မှန်းထားပါသည်။ သတ္တဝါမျိုးစိတ်များအား အုပ်စုကြီး ၅ ခုခွဲကာ နို့တိုက်သတ္တဝါ၊ တွားသွားသတ္တဝါ၊ အင်းဆက်၊ ငှက် နှင့် ငါးမျိုးစိတ်များပါဝင်ပါသည်။ မျိုးသုဉ်းအန္တရာယ်ကျလုနီးရှိသည့် မျိုးစိတ်များအားလည်း ရှိနိုင်ပါသည်။ သို့သော်ငြားလည်း စက်မှုလုပ်ငန်းလည်ပတ်သည့်နေရာသည် စက်မှုဇုံအတွင်းတွင် ဖြစ်သဖြင့် 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(၂၀၁၉-၂) အရ မျိုးသုဉ်းအန္တရာယ်ခြိမ်းခြောက်ခံရသည့် မျိုးစိတ်များမပါဝင်ပါ။

၄.၃ 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 ဇယားတွင် ဖော်ပြထားပါသည်။

စစ်တမ်းကောက်ယူမည့် ရွာများစာရင်း

No.	Name	Latitude	Longitude	Distance from YMI
၁	ကုလားကုန်း (အုပ်စုရွာ)	၁၇.၁၆၇၆၉	၉၅.၉၉၁၄၀	၁.၉ km
၂	ကျွဲကူး	၁၇.၁၆၇၆၉	၉၅.၉၅၀၉၇	၂.၄ km
၃	တောင်တော	၁၇.၁၅၀၈၇	၉၅.၉၅၉၈၉	၂.၃ km
၄	မြောင်းတကာ (အုပ်စုရွာ)	၁၇.၁၈၃၃၀	၉၅.၉၆၆၆၉	၁.၉ km
၅	ကန်ကလေး	၁၇.၁၅၃၄၉	၉၅.၉၇၆၄၂	၁.၆ 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

၄.၃.၁ Survey Results

စစ်တမ်းကောက်ယူသည့်အဖွဲ့သည် ဖော်ပြပါကျေးရွာများတွင် လူမှုစီးပွားအခြေအနေများကို ဆန်းစစ်လေ့လာခဲ့သည့် အပြင် ကျန်းမာရေးစစ်တမ်းများကိုပါ ၂၀၂၀ ခုနှစ် ဩဂုတ်လ ၂၄ ရက်မှ ၂၇ ရက်အထိ ကောက်ယူခဲ့ပါသည်။ စစ်တမ်းကောက်ယူသည့်အဖွဲ့တွင် စီမံကိန်းစီမံကွပ်ကဲသူများ၊ စစ်တမ်းအဖွဲ့၏ ခေါင်းဆောင်နှင့် အားဖြည့်ကူညီသူ ၂ ဦးပါဝင်ပါသည်။ ကျန်းမာရေး စစ်တမ်းကောက်ယူမှုအတွက်လည်း ဆေးပညာဒေါက်တာတဦး ပါဝင်ကာ သက်ရောက်ခံကျေးရွာများတွင် စစ်တမ်းကောက်ယူခဲ့ပါသည်။

No.	Survey Area	Duration	Surveyor/Interviewer	Remarks
၁	Myaung Ta Kar	၂၅.၈.၂၀၂၀	Social survey team + a medical doctor	❖ Two responsible persons from the YMI factory also joined the team
၂	Kular Kone	၂၆.၈.၂၀၂၀	Social survey team + a medical doctor	

၃	Kan Ka Lay	၂၄.၈.၂၀၂၀	Social survey team + a medical doctor	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.
၄	Kywe Ku	၂၄.၈.၂၀၂၀	Social survey team + a medical doctor	
၅	Industrial Zone	၂၇.၈.၂၀၂၀	Social survey team + a medical doctor	
၆	Other Places	၂၄.၈.၂၀၂၀	Social survey team + a medical doctor	

ပုံ ၄-၆ စက်ရုံနှင့် ကျေးရွာများတွင် လူမှုစီးပွားစစ်တမ်းကောက်ယူသည့် ပုံရိပ်များ

(၁) စစ်တမ်းကောက်ယူသူ အရေအတွက်

လူမှုစီးပွားကောက်ယူချိန်တွင် စက်မှုဇုန်နှင့် အနီးအနားကျေးရွာများမှ စုစုပေါင်း ၁၁၄ ယောက်ပူးပေါင်းပါဝင်ခဲ့ကြပါသည်။ အောက်ပါရလဒ်များတွင်ပြထားသည့်အတိုင်း မြောင်းတကာကျေးရွာမှာပူးပေါင်းပါဝင်မှု အများဆုံး ဖြစ်ခဲ့ပါသည်။

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**

၄.၃.၂ လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူခြင်း

လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူခြင်းအတွက် ဆေးဘက်ဆိုင်ရာဆရာဝန်တဦးဖြစ်သူ (ဒေါက်တာချမ်းမြေသူ၊ ဆမနံပါတ် ၄၈၅၁၇) ပါဝင်ဆောင်ရွက်ခဲ့ပြီး လူမှုစီးပွားစစ်တမ်းကောက်ယူသည့် ရက်များမှာပင် တပြိုင်နက်တည်း ဆောင်ရွက်ခဲ့ပါသည်။

ပုံ ၄-၇ YMI စက်ရုံတွင်းရှိဆေးပေးခန်းတွင် လုပ်သားကျန်းမာရေးစစ်တမ်းကောက်ယူမှု မှတ်တမ်းပုံရိုပ်များ

ပုံ ၄-၈ စီမံကိန်း သက်ရောက်ခံကျေးရွာများတွင် လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူမှု မှတ်တမ်းပုံရိုပ်များ

၄.၃.၃ ဝန်ထမ်းများနှင့် လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူစစ်ဆေးမှု ရလာဒ်များ

ကျန်းမာရေးအကြံပေးမှ ခဲဆိပ်သင့်ခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော ကျန်းမာရေးချို့တဲ့မှုများနှင့် ဆက်နွယ် သည်များကို ဖြေဆိုသူများအား မေးမြန်းဆန်းစစ်ခဲ့ပါသည်။ လက်ရှိအခြေအနေတွင် YMI စက်ရုံဝန်ထမ်းများ အပါအဝင် ဖြေဆိုသူ ၉၀ ရာခိုင်နှုန်းကျော်ကျော်က ကျန်းမာရေးဆိုးရွားစွာထိခိုက်မှု မရှိပါကြောင်း ဆန်းစစ်တွေ့ရှိ ခဲ့ရပါသည်။ ဖြေဆိုသူ ၂၀ ရာခိုင်နှုန်းကျော်ကျော်က စီမံကိန်းလည်ပတ်စဉ်တွင် ကျန်းမာရေးထိခိုက်မှုဆိုးရွားစွာ ဖြစ်ပေါ်နိုင်ပါသည်ဟု ဖြေဆိုထားသော်လည်း

ခဲစိမ့်ယိုခြင်း နှင့် ခဲဆိပ်သင့်ခြင်းအတွက် ဆိုးရွားသော အကြံပြု ချက်များ ၊ ဖြေဆိုချက်များ မပါဝင်ခဲ့ပါ။ လူထုကျန်းမာရေးစစ်တမ်းကောက်ယူချိန်တွင် ဖြေဆိုသူအနည်းငယ်က ခဲဆိပ်သင့်ခြင်းနှင့်သက်ဆိုင်သော အကြောင်းခြင်းရာများကို တွေ့ရှိခဲ့ဖူးသည်ဟု ဖြေဆိုသော်လည်း ၎င်းမှာ ဤစီမံကိန်းမလည်ပတ်ခင်က အကြောင်းအရာများ ဖြစ်ပါသည်။

စစ်တမ်းကောက်ယူမှုရလာဒ်များအရ စီမံကိန်းတည်ရှိရာဒေသသည် သာမာန်ဖျားနာခြင်း တုပ်ကွေးဖျားခြင်းများမှလွဲ၍ အခြားသော ကူးစက်ရောဂါများ မရှိသည်ကို တွေ့ရပါသည်။ စီမံကိန်းနေရာတွင်လည်း ရောဂါကူးစက်ပြန့် ပွားခဲ့သည့် ဖြစ်ရပ်များ မရှိခဲ့ပါ။

၅. သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာထိခိုက်မှုများနှင့် လျော့ချရေးနည်းလမ်းများ

၅.၁ ထိခိုက်မှုဆန်းစစ်ခြင်းနည်းလမ်းများ

သက်ရောက်မှုကို ၎င်း၏ အမျိုးမျိုးသော သက်ဆိုင်ရာလက္ခဏာများ (ဥပမာ၊ အမျိုးအစား၊ အတိုင်းအတာ၊ ကြာချိန်၊ ကြိမ်နှုန်း၊ အတိုင်းအတာ) ဖြင့် ဖော်ပြထားပါသည်။

Characteristics	Definition	Designations
Type	A descriptor indicating the relationship of the potential impact to the Project (in terms of cause and effect).	• Direct • Indirect • Induced
Extent	The “reach” of the potential impact (e.g., confined to a small area around the Project Footprint, projected for several kilometres, etc.).	• Local • Regional • International
Duration	The time period over which a resource / receptor is potentially affected.	• Temporary • Short Term • Long Term
Scale	The size of the potential impact (e.g., the size of the area with the	No fixed designations; intended to be a numerical

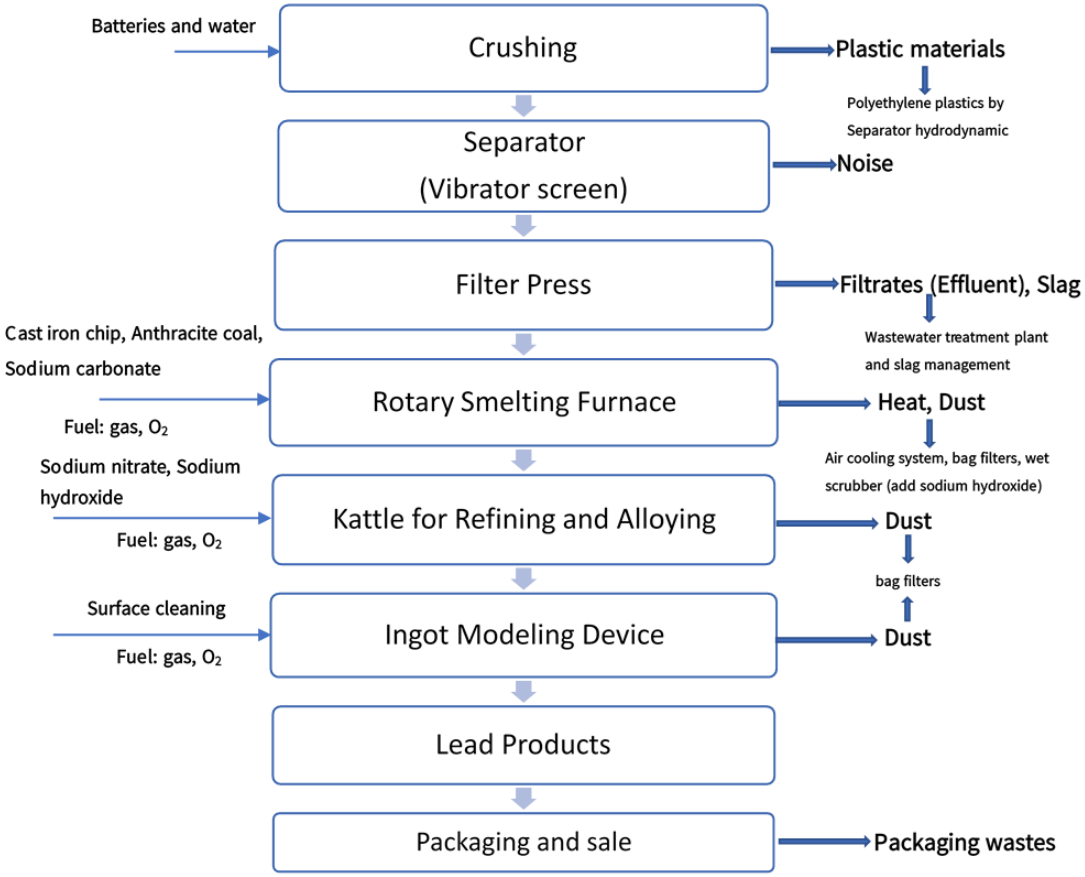
	potential to be damaged or impacted, the fraction of a resource that could potentially be lost or affected, etc.).	value or a qualitative description of “intensity”.
Frequency	A measure of the constancy or periodicity of the potential impact.	No fixed designations; intended to be a numerical value or a qualitative description.

ဇယားတွင်ပြသထားသည့် matrix ကို အသုံးပြု၍ သက်ရောက်မှု၏ သိသာထင်ရှားမှုကို သတ်မှတ်ပါသည်။

		Sensitivity/Vulnerability/Importance		
		Low	**Medium**	**High**
Magnitude of Impact	**Negligible**	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

၅.၂ အဓိကထိခိုက်မှုများနှင့် လျော့ချမည့်နည်းလမ်းများ

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



ဝန်ထမ်းများမှ ထွက်ရှိသော စွန့်ပစ်ပစ္စည်းများနှင့် မီးဖိုချောင်စွန့်ပစ်ပစ္စည်းများလည်း ရှိနိုင်ပြီး စည်ပင်သာယာမှ သတ်မှတ်ပြဋ္ဌါန်းပေးထားသည့်အတိုင်း လိုက်နာဆောင်ရွက်မည် ဖြစ်ပါသည်။

ဇယား ၅.၁ ပတ်ဝန်းကျင် ထိခိုက်မှုနှင့် လျော့ပါးရေးအစီအမံများ

အစိတ်အပိုင်းများ	သက်ရောက်မှု	လျော့ပါးရေးအစီအမံများ	ကြွင်းကျန် သက်ရောက်မှုများ
လေအရည်အသွေး	sulfur oxides, nitrogen oxides, နှင့် particulates ထုတ်လွှတ်မှုကြောင့် ပတ်ဝန်းကျင် လေထုအရည်အသွေးအပေါ် သက်ရောက်မှုများ။	• Bag House၊ Wet Scrubber၊ Cyclone၊ Dust Collection Line နှင့် Blowing Motor နှင့် Blowing Fan ကဲ့သို့သော လေထုတ် လွှတ်မှု ကြိုတင်ကာကွယ်မှု အစီအမံများ တပ်ဆင်ခြင်း။ • ပတ်ဝန်းကျင်လေထုထဲတွင် ခဲပါဝင်မှုကို လျှော့ချရန် ခဲကျိုခြင်း၊ သတ္တုထုတ်ခြင်း နှင့် ဆက်စပ်လုပ်ငန်းစဉ်များကို အလုံပိတ်နည်းစဉ် ဖြင့်ဆောင်ရွက်ခြင်း • အလုပ်သမားများအား အမှုန်အမွှားများ မထိတွေ့စေရန် ထုတ်လုပ်မှု တစ်လျှောက်လုံး တွင် Conveyors များ ကိုအသုံးပြုခြင်း • လေထုတ်လွှတ်မှု ထိန်းချုပ်ရေး ကိရိယာများ အတွက် ပြုပြင်ထိန်းသိမ်းမှု အစီအစဉ် ထားရှိ ခြင်း • လေအရည်အသွေး ထိန်းချုပ်မှု စနစ်အတွင်းရှိ filter များနှင့် မီးခိုးခေါင်းတိုင်များကို အချိန်အခါ အလိုက် စမ်းသပ်ပြီး ပုံမှန် လဲလှယ် စစ်ဆေးခြင်း	Negligible

		• မီးခိုးခေါင်းတိုင်မှ ထွက်ရှိသော လေအရည်အသွေးသည် သတ်မှတ် စံနှုန်းများနှင့် ကိုက်ညီမှုရှိမရှိ စောင့်ကြည့်ခြင်း • အမျိုးသားပတ်ဝန်းကျင် အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များပါ အပိုဒ် ၂.၃.၇.၁ Base Metal Smelting and Refining ရှိ ထုတ်လွှတ်မှုဆိုင်ရာ သတ်မှတ်ချက်များအား စောင့်ကြည့် မှတ်တမ်းတင်ခြင်း	
ရေအရည်အသွေး	ရေအရည် အသွေးအပေါ် သက်ရောက်မှုများ	• ခဲပြန်လည် သန့်စင်သည့် လုပ်ငန်းစဉ်မှ ထွက်ရှိလာသော ရေများအား သန့်စင်၍ ထုတ်လုပ်မှု လုပ်ငန်းတွင် ပြန်လည် အသုံးပြုခြင်း • လုပ်ငန်းလည်ပတ်မှုတွင် ပြန်လည်အသုံးမပြုဘဲ ပိုလျှံနေသော စွန့်ပစ်ရေများအား ပတ်ဝန်းကျင် ရေထုဆီသို့ စွန့်ထုတ်မှုကို လျှော့ချနိုင်ရန် YMI စက်ရုံတွင် ရေဆိုးအငွေ့ပြန်ထုတ်စက်တပ်ဆင်ထားခြင်း • စွန့်ပစ်ရေသန့်စင်မှုအား အမျိုးသားပတ်ဝန်းကျင်အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များပါ အပိုဒ် ၂.၃.၇.၁ Base Metal Smelting and Refining ရှိ ထုတ်လွှတ်မှုဆိုင်ရာ သတ်မှတ်ချက်များနှင့် ကိုက်ညီမှုရှိစေရန် ဆောင်ရွက်ခြင်း	Negligible

		• သန့်စင်ထားသော စွန့်ပစ်ရေများကို အရည်အသွေး စစ်ဆေးရန်အတွက် အသိအမှတ်ပြုမှတ်ခွဲခန်းတွင် သုံးလတစ်ကြိမ် စစ်ဆေးခြင်း • အက်ဆစ် စိမ့်ဝင်ခြင်းမှ ကာကွယ်ရန် ဘက်ထရီခွဲသည့် နေရာတွင် မစိမ့်ဝင်နိုင်သော ကြမ်းပြင်အား ခင်းထားခြင်း • အကြွင်းအကျန် အက်ဆစ်များကို ပျက်ပြယ်စေရန် စွန့်ပစ်ရေ ပြုပြင်ရာတွင် Sodium Hydroxide သို့မဟုတ် Sodium Carbonate ကို ထည့်သွင်း ဆောင်ရွက်ခြင်း • မြေကြီးအတွင်းသို့ စိမ့်ဝင်မှုမှကာကွယ်ရန် ကွန်ကရစ် ရေနုတ်မြောင်းစနစ်ဖြင့် သတ်မှတ်ထားသော အနည်ကျရေကန်ဆီသို့ စီးဆင်းစေခြင်း • မိလ္လာရေများကို မိလ္လာကန်စနစ်ဖြင့် စုဆောင်းထားရှိခြင်း	
ဆူညံသံနှင့် တုန်ခါမှု	လည်ပတ်မှုအဆင့်အတွင်း ခဲထုတ်လုပ်မှု လုပ်ငန်းစဉ်သုံးပစ္စည်းများမှ ဆူညံသံ ထုတ်လွှတ်မှုများကြောင့် ဆူညံသံအထိခိုက်မခံသည့် receptors များပေါ်တွင် ဖြစ်နိုင်ခြေရှိသောသက်ရောက်မှုများ။	• ဆူညံသံပမာဏကို လျှော့ချရန်အတွက် ဆူညံသံမြင့်ကိရိယာများ (ဘက်ထရီခွဲစက်များ၊ အရည်ကျိုမီးဖို၊ ကွန်ပရက်ဆာများ) ပတ်လည်တွင် အတားအဆီးများ (ဥပမာ၊ အသံလုံသော နံရံများ၊ ခြံစည်းရိုးများ) ကို တည်ဆောက်ခြင်း • အသံစုပ်ယူရန်နှင့် ဆူညံသံထုတ်လွှင့်မှုကို	Negligible

		လျှော့ချရန်အတွက် ဆူညံသံ-ဟန့်တားသည့် ပစ္စည်းများ (ဥပမာ၊ acoustic panels) များကို တပ်ဆင်ခြင်း • စက်ပစ္စည်းများ ပုံမှန်ပြုပြင်ထိန်းသိမ်း ပေးခြင်းဖြင့် စက်ပိုင်းဆိုင်ရာဆူညံသံများကို လျှော့ချခြင်း • ညအချိန်အတွင်း ဆူညံသံများကို လျှော့ချရန် ဆူညံသံမြင့်မားသည့် လုပ်ငန်းဆောင်ရွက်မှုများကို အချိန်ဇယား ရေးဆွဲဆောင်ရွက်ခြင်း • ပတ်ဝန်းကျင်အပေါ် ဆူညံသံများနှင့် တုန်ခါမှုများ သက်ရောက်မှုကို လျှော့ချရန် နိုင်စေရန် သစ်ပင်များစိုက်ပျိုးခြင်း • စက်ကိရိယာများ မှန်ကန်စွာအသုံးပြုရန် အတွက် ဝန်ထမ်းများအား လေ့ကျင့်ပေးခြင်း • လျှော့ချရေးအစီအမံများ၏ ထိရောက်မှုကို အကဲဖြတ်ရန်နှင့် သတ်မှတ်ချက် ၇၀ dB ထက်ကျော်လွန်မှု မရှိစေရန် ဆူညံသံနှင့် တုန်ခါမှုအဆင့်များကို ပုံမှန်စောင့်ကြည့်ခြင်း	
စွန့်ပစ်ပစ္စည်း	ထုတ်လုပ်မှု လုပ်ငန်းစဉ်များမှ ထွက်လာသော စွန့်ပစ်ပစ္စည်းများ ဝန်ထမ်းအမှိုက်များနှင့် မီးဖိုချောင်သုံး အမှိုက်များ	• ပတ်ဝန်းကျင်ညစ်ညမ်းမှုနှင့် ယိုစိမ့်မှုတို့ကို ကာကွယ်ရန် ကွန်ကရစ်ကြမ်းခင်းနှင့် အကာအကွယ် နံရံများပါရှိသော သတ်မှတ်ထားသည့် သိုလှောင်ဧရိယာတွင် slag များကို	Minor

		စီမံခန့်ခွဲ ဆောင်ရွက်ခြင်း • ယိုစိမ့်ခြင်းများကို ကာကွယ်ရန်အတွက် ဓာတုပစ္စည်းများအား သိမ်းဆည်းရာတွင် သီးသန့် တံဆိပ်တပ်ထားသော သိုလှောင်ပုံများကို အသုံးပြုခြင်း • စွန့်ပစ်ပစ္စည်း သိုလှောင်ဧရိယာများကို ပုံမှန်စစ်ဆေးခြင်း • သုံးစွဲပြီးသား ဓာတုပစ္စည်းများကို ကိုင်တွယ်ခြင်း၊ သိုလှောင်ခြင်းနှင့် စွန့်ပစ်ခြင်းဆိုင်ရာ အတွက် ဝန်ထမ်းများအား သင်တန်းပေးခြင်း • YMI စက်ရုံတွင် စွန့်ပစ်ပစ္စည်းများကို ကိုင်တွယ်ခြင်း၊ လွှဲပြောင်းခြင်းနှင့် သယ်ယူပို့ဆောင်ခြင်းတို့အတွက် ရှင်းရှင်းလင်းလင်း တံဆိပ်တပ်ထားသော ပုံးများနှင့် ယာယီသိုလှောင်ရုံ ထားရှိဆောင်ရွက်ခြင်း • စွန့်ပစ်ပစ္စည်းများကို လက်ဖြင့် ကိုင်တွယ်ခြင်းကို တားမြစ်ထားသော်လည်း ရှောင်လွှဲ၍ မရပါက သင့်လျော်သော ဘေးကင်းရေးကြိုတင်ကာကွယ်မှုများဖြင့် လုပ်ဆောင်ခြင်း • သီးခြား စားသောက်ဆောင်ကို ထားရှိပြီး ထုတ်လုပ်မှု စက်များအနီးတွင် စားသောက်ခြင်းကို တားမြစ်ထားခြင်း	

		• အမှိုက်များကို အမျိုးအစားအလိုက် ခွဲခြား၍ သက်ဆိုင်ရာ မြို့နယ်စည်ပင်သာယာရေး ကော်မတီနှင့် ညှိနှိုင်း စွန့်ပစ်ခြင်း	
မြေဆီလွှာ	လည်ပတ်မှုအဆင့်အတွင်း ယိုစိမ့်မှုကြောင့် မြေဆီလွှာ အရည်အသွေးအပေါ် သက်ရောက်မှု ရှိနိုင်ခြင်း	• ပတ်ဝန်းကျင်ညစ်ညမ်းမှုနှင့် ယိုစိမ့်မှုတို့ကို ကာကွယ်ရန် ကွန်ကရစ်ကြမ်းခင်းနှင့် အကာအကွယ်နံရံများပါရှိသည့် သတ်မှတ်ထားသော သိုလှောင်ဧရိယာတွင် စွန့်ပစ်ပစ္စည်းများကို စီမံခန့်ခွဲခြင်း • ယိုစိမ့်ခြင်းများကို ကာကွယ်ရန်အတွက် ဓာတုပစ္စည်းများအား သိမ်းဆည်းရာတွင် သီးသန့် တံဆိပ်တပ်ထားသော သိုလှောင်ပုံများကို အသုံးပြုခြင်း • သိုလှောင်ဧရိယာများကို ပုံမှန်စစ်ဆေးခြင်းများ ပြုလုပ်ခြင်း • သုံးစွဲပြီးသား ဓာတုပစ္စည်းများကို ကိုင်တွယ်ခြင်း၊ သိုလှောင်ခြင်းနှင့် စွန့်ပစ်ခြင်းဆိုင်ရာ အတွက် ဝန်ထမ်းများအား သင်တန်းပေးခြင်း • သီးခြား စားသောက်ဆောင်ကို ထားရှိပြီး ထုတ်လုပ်မှု စက်များအနီးတွင် စားသောက်ခြင်းကို တားမြစ်ထားခြင်း • အမှိုက်များကို အမျိုးအစားအလိုက် ခွဲခြား၍ သက်ဆိုင်ရာ မြို့နယ်စည်ပင်သာယာရေး	Negligible

		ကော်မတီနှင့် ညှိနှိုင်း စွန့်ပစ်ခြင်း	
ဇီဝမျိုးစုံမျိုးကွဲ	သတ္တဝါများနှင့် အပင်များအပေါ် သက်ရောက်မှုများ	• ယိုဖိတ်မှုနှင့် ပတ်ဝန်းကျင် ညစ်ညမ်းမှုကို လျှော့ချရန် လျော့ပါးစေရေး အစီအမံများကို အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်း - အန္တရာယ်ရှိသော ပစ္စည်းများ စနစ်တကျ သိမ်းဆည်းခြင်းနှင့် စွန့်ပစ်ခြင်းအတွက် အမှိုက်စီမံခန့်ခွဲမှု အစီအစဉ်ကို ရေးဆွဲခြင်း။ - ယိုစိမ့်မှုမဖြစ်စေရန် စက်ပစ္စည်းများကို ပုံမှန်ထိန်းသိမ်းခြင်း။ • စီမံကိန်းဧရိယာအတွင်း ဇီဝမျိုးစုံမျိုးကွဲများ စောင့်ကြည့်ရေးအစီအစဉ်ကို ချမှတ်ခြင်း • စက်ရုံဝင်းအတွင်းနှင့် အပြင်ဘက်တွင် စိမ်းလန်းသောဧရိယာများကို ထိန်းသိမ်းထားပြီး ပန်းခူးခြင်း သို့မဟုတ် သစ်ပင်ခုတ်ခြင်းကို တားမြစ်ခြင်း	Negligible

၆. ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုနှင့် စောင့်ကြည့်စစ်ဆေးရေး အစီအစဉ်များ

၆.၁ အကောင်အထည်ဖော်ဆောင်ရွက်မည့် အဖွဲ့အစည်း

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) ၏ အပိုဒ်ခွဲ ၁၀၃ အရ စီမံကိန်းပိုင်ရှင်သည် အားလုံးသော ကတိကဝတ်များနှင့် အခြေအနေအရပ်ရပ်များအပါအဝင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်များအား အပြည့်အဝအကောင်အထည်ဖော်ဆောင်ရွက်ရမည်။ ကန်ထရိုက်တာနှင့် လက်အောက်ခံ ကန်ထရိုက်တာရုံးများ (ရှိခဲ့ပါက) တွင်လည်း တည်ဆဲဥပဒေများ၊ စည်းမျဉ်းစည်းကမ်းများ၊ လမ်းညွှန်ချက်များ၊ လုပ်ထုံးလုပ်နည်းများ အားလုံးကို လေးစားလိုက်နာစေရမည်ဟု ဖော်ပြထားပါသဖြင့် အတိအကျလိုက်နာ ဆောင်ရွက်သွားမည် ဖြစ်ပါ သည်။

စီမံကိန်းတည်ဆောက်မှုအဆင့်ကို ပြီးစီးပြီဖြစ်သောကြောင့် စီမံကိန်းလည်ပတ်မှုအဆင့် အတွက် အောက်ပါ စီမံခန့်ခွဲမှု အစီအစဉ်များကို ဆောင်ရွက်မည်ဖြစ်ပါသည်။

၁) လေထုအရည်အသွေးစီမံခန့်ခွဲမှုအစီအစဉ်
၂) ရေအရည်အသွေးစီမံခန့်ခွဲမှုအစီအစဉ်
၃) ဆူညံသံနှင့်တုန်ခါမှုစီမံခန့်ခွဲမှုအစီအစဉ်
၄) စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်
၅) မြေဆီလွှာစီမံခန့်ခွဲမှုအစီအစဉ်
၆) ဇီဝမျိုးစုံမျိုးကွဲစီမံခန့်ခွဲမှုအစီအစဉ်
၇) သယ်ယူပို့ဆောင်ရေးနှင့် ယာဉ်ကြောအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်
၈) လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေးစီမံခန့်ခွဲမှုအစီအစဉ်
၉) မကျေနပ်ချက်ကို ပြန်လည်ဖြေရှင်းရေး ယန္တရား
၁၀) ဓာတုပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်
၁၁) အရေးပေါ်အခြေအနေစီမံခန့်ခွဲမှုအစီအစဉ်

၆.၂ အရေးပေါ်တုန့်ပြန်မှုအစီအစဉ်

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 ၊ မြို့နယ်ရဲ စခန်း ၊ ကုမ္ပဏီနှင့်ချိတ်ဆက်ထားသည့် ဆေးခန်းများ ၊ ဆေးရုံများ ၊ တာဝန်ကျဆရာဝန်များ၏ ဖုန်းနံပါတ် များ)

၂. စီမံကိန်းနေရာရှိ ကြော်ငြာဘုတ်တွင် အန္တရာယ်သတိပေးချက်များအား အမြဲ ပြင်ဆင်ဖော်ပြထားခြင်း

(က) အရေးပေါ်ထွက်ပေါက်များ ၊ အရေးပေါ်အသက်ကယ်ပစ္စည်းများ ထားရှိရာနေရာ ၊ မီးသတ်ဆေးဗူး များနှင့် လုပ်သားများ စုဆုံရာနေရာ (စက်ရုံတွင်းတွင် အရေးပေါ်စုဝေးရာနေရာကို အတိအကျသတ်မှတ် ပေးပါမည်)

(ခ) အရေးပေါ်အသက်ကယ်ပစ္စည်းများ

(ဂ) ကုမ္ပဏီ လူနာတင်ယာဉ်ဖုန်းနံပါတ်များ

၆.၃ ကူးစက်ရောဂါအတွက် ကာကွယ်တားဆီးရေးနည်းလမ်းများ

စစ်တမ်းကောက်ယူချိန်တွင် Covid-19 ကူးစက်ရောဂါအတွက် ကာကွယ်တားဆီးရေးနည်းလမ်းများ ပြုလုပ် ထားသည်ကို အောက်ပါအတိုင်း လေ့လာတွေ့ရှိရပါသည်။ စက်ရုံအနေဖြင့် MOHS guidelines များကို အတိအကျလိုက်နာဆောင်ရွက်ကာ လက်ဆေးကန်နေရာများ စီမံထားရှိခြင်းနှင့် လူလူချင်းထိတွေ့မှု မရှိစေရန် သတ်မှတ်ထားသည့်အကွာအဝေးအတိုင်း ရှိနေစေခြင်း အစရှိသည့်စီမံခန့်ခွဲမှုများကို စနစ်တကျပြုလုပ်ထား ကြောင်းတွေ့ရပါသည်။ Covid-19 ကူးစက်ရောဂါကာလအတွင်း အောက်ပါတုန့်ပြန်ဆောင်ရွက်မှုများကို တွေ့ရှိရ ပါသည်။

- ဝင်ပေါက်တခုတည်းသာထားရှိပြီး အပူချိန်နှင့် တကိုယ်ရေသန့်ရှင်းမှုကို စစ်ဆေးခြင်း
- စက်ရုံဝင်ပေါက်တွင် လက်ဆေးရန် ပစ္စည်းများထောက်ပံ့ကာ လက်ဆေးသည့်နေရာ သတ်မှတ်ပေးထား ခြင်း

- လုပ်ငန်းခွင်နေရာအား သန့်ရှင်းအောင်ထားပြီး ပိုးသတ်ပေးထားပါသည်။ ဝန်ထမ်းနှင့် ထိတွေ့မှုအများဆုံး ဖြစ်နိုင်သည့် 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 နှိုးဆော်တိုက်တွန်း အားပေးမှုကို ပြုလုပ်ထားပါသည်။ သန့်ရှင်းမှုနှင့် ပိုးသတ်ခြင်းများအတွက် လိုအပ်သောပစ္စည်းများကို လည်း ထောက်ပံ့ပေးထားခြင်း
- အရက်ပျံပါသော လက်သန့်ဆေးများကို အသုံးပြုရန် အားပေးခြင်း
- ဝန်ထမ်းများကို တကိုယ်ရေသန့်ရှင်းမှုနှင့် ဇီဝလုံခြုံမှု သင်တန်းများ စီမံပေးခြင်း
- COVID-19 ကူးစက်ရောဂါနှင့်သက်ဆိုင်သည့် လက္ခဏာရပ်တခုခုတွေ့ရှိပါက လုပ်ဆောင်ရမည့် လုပ်ငန်း စဉ်များကို အလုပ်သမားများ ရှင်းလင်းပြောကြားထားခြင်း
- စက်ရုံအတွင်း၌ Covid-19 ရောဂါအသိပေးစာစောင်များနှင့် ပြေလျော့စေသည့်နည်းလမ်း အစီအစဉ်များ ကို ကပ်ထားပေးခြင်း
- မလိုအပ်သည့် ကိုယ်ခန္ဓာချင်းထိတွေ့မှုများ တတ်နိုင်သမျှ မပြုလုပ်ရန် တင်းကြပ်ထားခြင်း
- MOHS မှသတ်မှတ်ပေးထားသည့်အတိုင်း စောင့်ကြည့်နေရာများ စီမံထားရှိခြင်းနှင့် ကုန်ကြမ်း/ ကုန်ချော များ သယ်ယူပို့ဆောင်ရေး စည်းကမ်းများကို လိုက်နာခြင်း

၆.၄ EMP အတွက် ခန့်မှန်းကုန်ကျစရိတ်

စီမံကိန်းကုန်ကျစရိတ်တွင် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (EMP) အကောင်အထည်ဖော်မှုနှင့် ဆက်စပ်သော ခန့်မှန်းကုန်ကျစရိတ်များနှင့် ဤပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း (EIA) အစီရင်ခံစာတွင် အသေးစိတ်ဖော်ပြထားသည့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် ကုန်ကျ စရိတ်များကို ခန့်မှန်းဖော်ပြထားပါသည်။

စဉ်	အကြောင်းအရာ	ခန့်မှန်းကုန်ကျစရိတ် (USD)
၁	လေထုအရည်အသွေးစီမံခန့်ခွဲမှုအစီအစဉ်	၂၀၀,၀၀၀
၂	ဆူညံသံနှင့်တုန်ခါမှုစီမံခန့်ခွဲမှုအစီအစဉ်	၅၀,၀၀၀
၃	ရေအရည်အသွေးစီမံခန့်ခွဲမှုအစီအစဉ်	၂၀၀,၀၀၀
၄	စွန့်ပစ်ပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်	၅၀,၀၀၀

၅	ဇီဝမျိုးစုံမျိုးကွဲစီမံခန့်ခွဲမှုအစီအစဉ်	၁၀,၀၀၀
၆	လုပ်ငန်းခွင်ကျန်းမာရေးနှင့် ဘေးကင်းရေးစီမံခန့်ခွဲမှုအစီအစဉ်	၁၀,၀၀၀
၇	သယ်ယူပို့ဆောင်ရေးနှင့် ယာဉ်ကြောအန္တရာယ်ကင်းရှင်းရေး အစီအစဉ်	၁၀,၀၀၀
၈	ဓာတုပစ္စည်းစီမံခန့်ခွဲမှုအစီအစဉ်	၁၀၀,၀၀၀
၉	အရေးပေါ်အခြေအနေစီမံခန့်ခွဲမှုအစီအစဉ်	၁၀၀,၀၀၀
	စုစုပေါင်း	**၇၃၀,၀၀၀**

၆.၅ ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြပ်ကြည့်နှင့် အစီရင်ခံတင်ပြခြင်းအစီအစဉ်

စီမံကိန်း၏ ပတ်ဝန်းကျင်၊ ကျန်းမာရေးနှင့် ဘေးအန္တရာယ်ကင်းရှင်းရေးအဖွဲ့ (EHS Team) မှ အဆိုပြု စီမံကိန်းနှင့်ပတ်သက်၍ လစဉ် (သို့မဟုတ်) အပတ်စဉ် စောင့်ကြပ်စစ်ဆေးခြင်းအား ဆောင်ရွက် သွားမည်ဖြစ်ပါသည်။ အဆိုပါ စောင့်ကြပ်ကြည့်ရှုခြင်းအစီရင်ခံစာအား ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်ပါဖော်ပြချက်များအတိုင်း ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ (၆) လ တစ်ကြိမ် တင်ပြသွားမည်ဖြစ်ပါသည်။

မှတ်ချက်။ ။အဆိုပြုစီမံကိန်းအတွက် လက်ရှိခန့်မှန်းကုန်ကျစရိတ်ထက် ကျော်လွန်ပါက လျာထား ရန်ပုံငွေအား ထပ်မံဖြည့်စွက်ဆောင်ရွက်သွားမည်ဖြစ်ပါသည်။

ဇယား ၆.၁ ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ်

သက်ရောက်မှုအမျိုးအစား	တိုင်းတာမည့် ပါရာမီတာ	တည်နေရာ	အကြိမ်	ဆောင်ရွက်မည့်အဖွဲ့	လိုက်နာမည့် စံနှုန်း	ရန်ပုံငွေလျာထား ချက်
ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြပ်ကြည့်ရှုခြင်းအစီအစဉ် (စီမံကိန်းလည်ပတ်သည့်အဆင့်)						
လေအရည်အသွေး	SO_2, NO_2, O_3, CO, $PM_{2.5}$, PM_{10}	AQ-၁: Near Production Area, YMI Factory ၁၇°၁၀'၁.၁၈"N ၉၅°၅၈'၂၆.၁၁"E AQ-၂: Dhama Yayaye Monastery ၁၇°၀၉'၁၉.၁၃၈"N ၉၅°၅၈'၄၃.၃၈၆"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (၂၀၁၅)	၇,၀၀၀,၀၀၀ per year
အသံဆူညံမှုနှင့်တုန်ခါမှု	Noise and Vibration level (dB)	NV-၁: Near Production Area, YMI Factory ၁၇°၁၀'၂.၀၉"N ၉၅°၅၈'၂၄.၉၂"E NV-၂: Dhama Yayaye Monastery ၁၇°၀၉'၁၉.၁၃၈"N ၉၅°၅၈'၄၃.၃၈၆"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (၂၀၁၅)	၂,၄၀၀,၀၀၀ per year

သက်ရောက်မှုအမျိုးအစား	တိုင်းတာမည့် ပါရာမီတာ	တည်နေရာ	အကြိမ်	ဆောင်ရွက်မည့်အဖွဲ့	လိုက်နာမည့် စံနှုန်း	ရန်ပုံငွေ လျာထား ချက်
မြေပေါ်ရေ အရည်အသွေး	Biological Oxygen Demand, Chemical Oxygen Demand, Oil and Grease, pH, Total Coliform Bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solids	SW-၁: Drainage Water, Drainage channel of the factory ၁၇°၁၀'၇.၆၈"N ၉၅°၅၈'၂၄.၃၀"E SW-၂: Wastewater, Final wastewater treatment pond ၁၇°၁၀'၀.၄၅"N ၉၅°၅၈'၂၆.၈၈"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (၂၀၁၅)	၄,၀၀၀,၀၀၀ per year
မြေအောက်ရေ အရည်အသွေး	Total Coliforms, Fecal Coliforms, Taste, Odor, Color, Turbidity, Arsenic, Lead, Nitrate, Manganese, Chloride, Hardness, Iron, pH, Sulphate, Total Dissolved Solids (TDS)	GW-၁ Groundwater, Tube well within factory compound ၁၇°၁၀'၇.၁၇"N ၉၅°၅၈'၂၃.၆၄"E	Twice/year	YMI	National Drinking Water Quality Standards, Ministry of Health (၂၀၁၉)	၂,၀၀၀,၀၀၀ per year
မြေအရည်အသွေး	Zinc (Zn), Copper (Cu), Manganese (Mn), Iron (Fe), Lead (Pb), Cadmium (Cd),	SQ-၁: Bare soil near the raw materials store area	Twice/year	YMI	Applicable International Guidelines	၂,၀၀၀,၀၀၀ per year

သက်ရောက်မှုအမျိုးအစား	တိုင်းတာမည့် ပါရာမီတာ	တည်နေရာ	အကြိမ်	ဆောင်ရွက်မည့်အဖွဲ့	လိုက်နာမည့် စံနှုန်း	ရန်ပုံငွေလျာထား ချက်
	Nickel (Ni), Chromium (Cr), Arsenic (As), Mercury (Hg)	၁၇°၁၀'၀.၂၈"N ၉၅°၅၈'၂၂.၆၈"E				
စွန့်ပစ်ပစ္စည်း	- Amount and Type of Waste	Trash Bins	Weekly	YMI	Township Development Committee Guidelines	၁,၀၀၀,၀၀၀ per year
ဇီဝမျိုးစုံမျိုးကွဲ	- Flora and Fauna	Project Area	Annually	YMI	The Conservation of Biodiversity and Protected Areas Law, (၂၀၁၈)	၁,၀၀၀,၀၀၀ per year
လုပ်ငန်းခွင်ဘေး အန္တရာယ် ကင်းရှင်းရေး	- First Aid Box and safety equipment - Records accidents and worker's medical checkups condition	Project Area	Weekly	YMI	Occupational Safety and Health Law (၂၀၁၉)	၅၀၀,၀၀၀ per month
အများပြည်သူဘေး အန္တရာယ် ကင်းရှင်းရေး	- Records accidents and medical condition	Project Area	Annually	YMI	The Social Security Law (၂၀၁၂) Public Health Law (၁၉၇၂)	၁,၀၀၀,၀၀၀ per year

သက်ရောက်မှုအမျိုးအစား	တိုင်းတာမည့် ပါရာမီတာ	တည်နေရာ	အကြိမ်	ဆောင်ရွက်မည့်အဖွဲ့	လိုက်နာမည့် စံနှုန်း	ရန်ပုံငွေလျာထား ချက်
အရေးပေါ်အခြေအနေ တုန့်ပြန်မှုနှင့် စီမံခန့်ခွဲမှု အစီအစဉ်	- Evacuation routes and procedures - First aid supplies and training - Emergency contact information	Project Area	Twice/year	YMI	The Employment and Skill Development Law (၂၀၁၃)	၂,၀၀၀,၀၀၀ per year
မီးအန္တရာယ် ကင်းရှင်းရေး	- Firefighting equipment (fire extinguisher, firefighting hose, etc.) - Fire Detection System	Entire Boundary	Monthly	YMI	Myanmar Fire Brigade Law (၂၀၁၅)	၁,၀၀၀,၀၀၀ per year
စောင့်ကြပ်ကြည့်ရှုမည့် အစီအစဉ်	Monitoring according to EMP plan and monitoring report preparation		Biannually	YMI	EIA Procedure ၂၀၁၅	၄,၀၀၀,၀၀၀ per year
Decommissioning Phase						
လေအရည်အသွေး	SO_2, NO_2, O_3, CO, CO_2, $PM_{2.5}$, PM_{10}	AQ-၁: Near Production Area, YMI Factory ၁၇°၁၀'၁.၁၈"N ၉၅°၅၈'၂၆.၁၁"E AQ-၂: Dhama Yayaye Monastery	Once, during decommissioning	YMI	National Environmental Quality (Emission) Guidelines (၂၀၁၅)	၃,၀၀၀,၀၀၀

သက်ရောက်မှုအမျိုးအစား	တိုင်းတာမည့် ပါရာမီတာ	တည်နေရာ	အကြိမ်	ဆောင်ရွက်မည့်အဖွဲ့	လိုက်နာမည့် စံနှုန်း	ရန်ပုံငွေလျာထား ချက်
		၁၇°၀၉'၁၉.၁၃၈"N ၉၅°၅၈'၄၃.၃၈၆"E				
စွန့်ပစ်ပစ္စည်း	Waste generated from decommissioning activities such as concrete, metal, and wood	Project Area	Once, during decommissioning	YMI	Township Development Committee Guidelines	၅၀၀,၀၀၀
အသံဆူညံမှု	Noise level (dB)	NV-၁: Near Production Area, YMI Factory ၁၇°၁၀'၂.၀၉"N ၉၅°၅၈'၂၄.၉၂"E NV-၂: Dhama Yayaye Monastery ၁၇°၀၉'၁၉.၁၃၈"N ၉၅°၅၈'၄၃.၃၈၆"E	Once, during decommissioning	YMI	National Environmental Quality (Emission) Guidelines (၂၀၁၅)	၁,၂၀၀,၀၀၀
လုပ်ငန်းခွင်ဘေးအန္တရာယ်ကင်းရှင်းရေး	- First Aid Box and safety equipment - Accidents Records	Project Area	Weekly	YMI	Occupational Safety and Health Law (၂၀၁၉)	၁,၀၀၀,၀၀၀

၆.၆ လူမှုတာဝန်သိလုပ်ငန်းများအစီအစဉ်

YMI စက်ရုံအနေဖြင့် စီမံကိန်းတည်ရှိရာ ဒေသတွင်းပညာရေးနှင့် အလုပ်အကိုင်ကျွမ်းကျင်ရေးတို့အတွက် အကောင်အထည်ဖော်ဆောင်ရွက်သွားမည် ဖြစ်ပါသည်။ YMI စက်ရုံအနေဖြင့် အောက်ပါ လူမှုတာဝန်သိလုပ်ငန်းများအား အဓိကထား ဆောင်ရွက်သွားပါမည်။

(၁) လုပ်ငန်းခွင်ကျွမ်းကျင်မှု လိုအပ်သောနေရာများတွင် ဖွံ့ဖြိုးတိုးတက်စေရန် လေ့ကျင့်ရေး စင်တာများ 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 ထောက်ပံ့ပေးခြင်း (အသားတင်အမြတ်ငွေ၏ ၀.၅ ရာခိုင်နှုန်းအထိ)

YMI စက်ရုံအနေဖြင့် အသားတင်အမြတ်ငွေ၏ ၂ ရာခိုင်နှုန်းအထိ လူမှုတာဝန်သိလုပ်ငန်းများအတွက် သုံးစွဲကျခံ သွားမည်ဖြစ်ပြီး ဒေသအတွင်း စီမံကိန်းသက်ရောက်ခံနေရာများတွင် အဓိက ကျခံသုံးစွဲသွားပါမည်။

၇. ပြည်သူလူထုသို့ သတင်းအချက်အလက်ထုတ်ပြန်ခြင်းနှင့် ဆွေးနွေးတိုင်ပင်သည့် အစည်းအဝေးများ

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းများ (၂၀၁၅) အပိုဒ် ၆၁ အရ စီမံကိန်း ပိုင်ရှင်များအနေဖြင့် ဆွေးနွေးတိုင်ပင်ခြင်းအစည်းအဝေးကို အချိန်ကိုက်ကျင်းပပေးခဲ့ပြီး စီမံကိန်း အကြောင်းအရာများ၊ ကောင်းကျိုးဆိုးပြစ်များ၊ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုရေးရာ ဆန်းစစ်တွေ့ရှိချက်များကို အကြံပေးများအကူအညီဖြင့် နည်းလမ်းတကျ ဆောင်ရွက်ခဲ့ပါသည်။

၇.၁ စီမံကိန်းသက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးသည့် အစည်းအဝေးများ

Covid-၁၉ ကာလအတွင်း အစည်းအဝေးပြုလုပ်ရသည်ဖြစ်ပါသောကြောင့် ဖိတ်ကြားနိုင်သည့်ဦးရေကန့်သတ် မှု ပြုလုပ်ရသည်ဖြစ်ပါသောကြောင့် စီမံကိန်းပိုင်ရှင် ၊ ပတ်ဝန်းကျင်အကြံပေးများ နှင့် မြို့နယ်အုပ်ချုပ်ရေးမှူး ရုံးတို့ ပူးပေါင်းတိုင်ပင်ကာ တစ်နေရာတည်းတွင် လူစုလူဝေးမဖြစ်စေရန်ကာကွယ်ရင်းအခြေအနေနှင့် လိုက်လျော ညီထွေဖြစ်မည့် အစည်းအဝေးတစ်ရပ် ဖြစ်မြောက်စေရန် ဆောင်ရွက်ရပါသည်။ အစည်းအဝေးတက်ရောက်သူ များသို့ လက်ဆေးသန့်စင်ရည်များ ၊ မျက်နှာဖုံး (Masks) များကို ပေးဝေကာ အစည်းအဝေး ခန်းမအတွင်း တစ်ဦးနှင့် တစ်ဦး လုံလောက်စွာကွာဝေးစေရန် (social distancing) ချမှတ်ဆောင်ရွက်ချက်များအား အတိအကျ လိုက်နာကာ ပြုလုပ်ခဲ့ပါသည်။ တက်ရောက်သူများအား လိပ်မူ ဖိတ်ကြားကာ စုစုပေါင်း ၁၄ ယောက် တက်ရောက် ခဲ့ပါသည်။

အစည်းအဝေးတက်ရောက်သူများစာရင်း

No.	Name	Position	Department	Contact
၁	U Khin Zaw	Sub department officer (Electric)	Directorate of Industrial Supervision and Inspection: DISI	၀၉ ၇၉၅၁၅၈၂၇
၂	U Maung Nge	Security Officer/ Myaungtagar Industrial Zone	Police Station	၀၉ ၉၇၀၅၅၃၆၆၃
၃	U Hla Soe	Administrator	Forest Department (Hmawbi)	၀၉ ၄၂၃၆၆၉၉၀၂
၄	U Kyaw Htay	Administrator	Kularkone Village	၀၉ ၅၀၅၉၇၉၈
၅	U Kyaw Htoo	Factory Officer	Yangon Metal Industry	၀၉ ၂၅၄၀၄၃၆၅၄
၆	U Myo Thu	Safety Manager	Yangon Metal Industry	၀၉ ၉၅၉၅၆၀၃၁၀
၇	U Moe Kyaw Thu	Assistant Manager (QC)	Yangon Metal Industry	၀၉ ၄၅၀၀၆၃၁၀၇
၈	U Nyi Nyi Tun	Admin Manager	Yangon Metal Industry	၀၉ ၄၂၀၁၂၄၃၄၉
၉	U Myo Nyunt Aung	Deputy Factory Manager	KMN Galvanizing	၀၉ ၉၇၉၇၆၅၂၂၆
၁၀	U Tint Myo Naing	MD	Yangon Metal Industry	၀၉ ၅၁၀၃၇၇၉
၁၁	Dr. Kyaw Nyein Aye	Environmental Consultant	EKTA	၀၉ ၅၀၃၈၆၅၆
၁၂	Dr. Lai Lai Win	Environmental Consultant	EKTA	၀၉ ၇၉၇၂၄၁၄၁
၁၃	Daw Nan Thazin Oo	Social	EKTA	၀၉ ၇၇၇၀၀၆၃၈၉
၁၄	Daw Ei Ei Win Myat	Social	EKTA	၀၉ ၇၇၇၀၀၆၃၉၁

၇.၂ 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။ စက်ရုံအခြေအနေကို ကြည့်လိုက်တဲ့အခါမှာ ကျွန်တော့်အနေအထားနဲ့ ပြောရရင် သန့်ရှင်းသပ်ရပ်မှုတွေ အများကြီးတွေ့ရပါတယ်။ ဒါပေမယ့် လိုအပ် ချက်ဆိုတာကတော့ ရှိလာနိုင်ပါတယ်။ ကျွန်တော်တို့ကတော့ ပညာရှင် မဟုတ်တဲ့အတွက် လိုအပ်ချက်တွေကို မဆောင်ရွက် နိုင်ပါဘူး။ ပညာရှင်တွေအနေနဲ့ စနစ်တကျ ဆောင်ရွက်ပေးစေချင်ပါတယ်။ ယခုစက်ရုံကစွန့်ပစ်တဲ့ Battery တွေကို ပြန်လည်ထုတ်လုပ်တာ ဖြစ်တဲ့အတွက် လုပ်သားများ၏ ကျန်းမာရေးနဲ့ ပတ်သက်ပြီး ဆေးစစ်မှု များကို ၆လ	ဦးတင်မျိုးနိုင် (MD, YMI) အခုလိုဆွေးနွေးပေးတာကျေးဇူးတင်ပါတယ်။ ကျွန်တော်တို့ကုမ္ပဏီစတည်ထောင်ကတည်းက ဝန်ထမ်းတွေကို မိသားစုတွေလို စောင့်ရှောက်ပါတယ်။ ဝန်ထမ်းတစ်ယောက်က စက်ရုံကိုဝင်လာတာနဲ့ အဝတ်အစားလဲဖို့ အဆင်သင့် ထားပေးထားပါတယ်။ ပြန်ရင်လည်း အဲ့အဝတ်ကို ချွတ်ထားခဲ့ရုံပါဘဲ။ စားသောက် ရေးအပိုင်းမှာလည်း အသီးရွက် ဟင်းရည် ငါးပိတို့စရာနဲ့ တပတ်ကို အသား ဟင်း ၆ ရက်ကျွေးပါ တယ်။ တစ်နေ့ကို ထမင်း ၃ နပ် ကျွေးပါတယ်။ တစ်ပတ်တစ်ခါ နွားနို့တိုက်ပါတယ်။ တစ်နေ့ကို ဌက်ပျောသီး ၂ လုံး မဖြစ်မနေ စားခိုင်းပါတယ်။ ဆေးစစ်မှုအပိုင်းအနေနဲ့ကတော့ ရုံးဝန်ထမ်းတွေကို တစ်နှစ် ၁ ကြိမ် စစ်ဆေးပေးပါတယ်။ Operation လုပ်တဲ့ဝန်ထမ်းတွေ ကိုတော့ ၆ လ ၁ ကြိမ် စစ်ပေးပါတယ်။ ကုမ္ပဏီစရိတ်နဲ့ဘဲ အားလုံးကို စစ်ပေးတာဖြစ်ပါတယ်။ ဝန်ထမ်း များအနေနဲ့ ကျန်းမာရေးစစ်ဆေးချက်အရ သွေးတွင်းခဲပါဝင်မှု level နဲ့နဲ့ တက်

	တစ်ကြိမ်လုပ်ဆောင် ပေးဖို့ ကျွန်တော် အနေနဲ့အကြံပြုချင် ပါတယ်။ ဝန်ထမ်းများအနေနဲ့က သူတို့စရိတ်နဲ့ သူတို့ဆေးစစ်ဖို့ဆိုတာက မဖြစ်နိုင်ပါဘူး။ စက်ရုံအနေနဲ့ အလုပ်သမားများကို စနစ်တကျနဲ့ ဂရုစိုက်ပေးစေချင်ပါတယ်။ ကျွန်တော်တို့ အုပ်ချုပ်ရေးအပိုင်းအနေနဲ့က ပြည်သူလူထုတွေထိခိုက်နစ်နာမှု မဖြစ်အောင် အမြဲတမ်းကြိုးစားနေရတာပါ။ ကျွန်တော်တို့က အခြေခံလူတန်းစားတွေနဲ့ အမြဲထိတွေ့နေရတာဖြစ်ပါတယ်။ ခုစက်ရုံအနေနဲ့လည်း အလုပ်သမားတွေနစ်နာမှုမရှိအောင် လုပ်ဆောင်ပေးပါလို့ အကြံပြုချင်ပါတယ်။	တယ်ဆိုတာနဲ့ ဌာနပြောင်းပေးတာတွေ 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 စက်ရုံ ရှိပါတယ်။ ကုမ္ပဏီမှ ခဲစတင်ထုတ်လုပ်ရခြင်း ရည်ရွယ်ချက် ကတော့ ပြည်တွင်းအစားထိုးအတွက်ကိုစထုတ်တာပါ။ ပစ္စည်းတွေ ထုတ်ဖို့အတွက် ကိုးရီးယားကနေစက်ပစ္စည်းတွေကို ဝယ်ယူတာ ဖြစ်ပါတယ်။ အခု**ဒီ**စက်နဲ့ လည်ပတ်တော့ ခဲတွေကပိုထွက်လာပါတယ်။ အဲ့ဒါကြောင့် **export** စတင်ပို့ ခြင်းဖြစ်ပါတယ်။ ကျွန်တော်တို့ စွန့်ပစ်ရေတွေကို **zero drain** ဆိုပြီး အပြင်ကိုလုံးဝမစွန့်ထုတ်ဘူးဆိုတဲ့ ဟာကို ကြိုးစားလုပ်ဆောင်နေပါတယ်။ အဲ့ဒီ **system** က အမေရိကန်နဲ့ ဥရောပမှာ အသုံးပြုတာဖြစ်ပါတယ်။ အခြား စက်ရုံတွေအနေနဲ့ အဲ့ဒီ **system** ကို အသုံးပြုချင်တယ်ဆိုရင် ကျွန်တော့်တို့ အနေနဲ့ **design share** လို့ရပါတယ်။ ကျွန်တော်တို့အနေနဲ့ နိုင်ငံတကာ **secondary lead conference** ကိုနှစ်နှစ် တစ်ကြိမ်တက်ရောက်ပါတယ်။ အဲ့ဒီမှာက နည်းပညာ ပြောင်းလဲမှုတွေ၊ စက်ပိုင်းဆိုင်ရာပြောင်းလဲမှုတွေ၊ ပတ်ဝန်းကျင်ကို ဘယ်လိုတိုးတက်အောင် လုပ်မယ်ဆိုပြီး ဆွေးနွေးတာတွေရှိပါတယ်၊ အဲ့ဒါတွေကို ကြိုးစားပြီး အားလုံး အတွက် ရေရှည်မှာ အကျိုးရှိအောင် လုပ်ဆောင်ပါတယ်။
ဒေါက်တာကျော်ငြိမ်းအေး (EKTA)	အလုပ်သမားဝန်ကြီးဌာနကလည်း စည်းကမ်းထုတ်ထားတာရှိပါတယ်။ အလုပ်ခွင်ကျန်းမာရေး၊ အလုပ်ခွင် အန္တရာယ်ကင်းရှင်းရေးတွေ ရှိပါတယ်။ ကျွန်တော်တို့ရေးသားမယ့် အစီရင်ခံစာထဲမှာလဲ ထည့်သွင်းရေးသား မှာ ဖြစ်ပါတယ်။ စက်ရုံကလည်း နိုင်ငံတကာနည်းပညာတွေနဲ့ တည်ဆောက် ထားတာဖြစ်တဲ့အတွက် အဲ့စည်းကမ်းတွေက ပါပြီးသားဖြစ်ပါတယ်။ ယခုလို စက်ရုံမျိုးဆိုတာက စွန့်ပစ်ပစ္စည်းတွေကို ပြန်လည်သန့်စင်တဲ့ recycle industry လို့ခေါ်ပါတယ်။ ကျွန်တော်တို့အနေနဲ့ ယခုလိုစက်ရုံတွေကို ကြိုဆို ရမှာပါ။ စွန့်ပစ်ပစ္စည်းတွေဆိုတာက အန္တရာယ်များပါတယ်။ ကျွန်တော်တို့ နိုင်ငံမှာက နည်းပညာတွေခေတ်မမီသေးပါဘူး။ ယခုထက်ပိုမိုခေတ်မီလာ ရင် စွန့်ပစ်ပစ္စည်းတွေထဲက တန်ဖိုးမြင့်သတ္ထုတွေပြန်ထုတ်တာတွေ ရှိပါ တယ်။ အဆင်မြင့်တဲ့ Battery နည်းပညာဟာလည်း ကျွန်တော်တို့ သဘာဝ ပတ်ဝန်းကျင်အတွက် လောင်စာဆီ လျှော့ချတဲ့နေရာမှာ လိုအပ်ပါတယ်။

	ကျွန်တော်တို့နိုင်ငံမှာ ခဲသတ္ထုစက်ရုံတွေဖွံ့ဖြိုးလာမှ ဒါတွေကဖြစ်လာ မှာပါ။ ခုလိုဆွေးနွေးကြတာကလည်း ကောင်းပါတယ်။ ကျွန်တော်တို့နိုင်ငံအနေနဲ့လည်း ခုလိုလုပ်ငန်းရှင်များကိုကြိုဆိုမှ ကမ္ဘာကိုရင်ဘောင်တန်းနိုင်မှာ ဖြစ်ပါတယ်။
ဦးမျိုးညွှန့်အောင် (Khin Maung Nyunt Steel Products & Galvanizing Co.,Ltd)	ကျွန်တော်တို့စက်ရုံလည်း **EIA** လုပ်ဆောင်နေတာဖြစ်တဲ့အတွက် လုပ်ငန်းစဉ်ကို နားလည်သဘောပေါက်ပါတယ်။ အခုလို ပတ်ဝန်းကျင်ကို အလေးထားလုပ်ဆောင်တဲ့ကုမ္ပဏီများကို ကြိုဆိုပါတယ်။ မြောင်းတကာစက်မှုဇုံမှာ အဓိကပြဿနာက **air pollution** ဖြစ်ပါတယ်။ ကျွန်တော်တို့ တဦးတယောက်ထဲအနေနဲ့လည်း ဒါကိုထိန်းလို့ မရပါဘူး။ အားလုံးဝိုင်းဝန်းလုပ်ဆောင်မှရမှာဖြစ်ပါတယ်။
ဒေါက်တာလဲ့လဲ့ဝင်း (ပတ်ဝန်းကျင်အကြံပေး)	အခုလိုအစည်းဝေးတက်ပေးတာကျေးဇူးတင်ပါတယ်။ ဒေသခံတွေရဲ့ အကြံပေးချက်များကလည်း အရေးပါပါတယ်။ အစည်းအဝေးတက်ရောက်လာတဲ့ သက်ဆိုင်ရာဌာနဆိုင်ရာများ၏ အကြံပြုချက်များကလည်း အရေးပါတဲ့အတွက် အကြံပြုပေးစေချင်ပါတယ်။ ကျွန်မတို့အနေနဲ့ အကြံပြုချက်များကို စိစစ်ပြီး ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနကိုတင်ပြသွားမယ့် အစီရင်ခံစာထဲမှာ ထည့်သွင်းပေးသွားမှာ ဖြစ်ပါတယ်။

ရှင်းလင်းချက် presentation file များနှင့် အကြံပြုတင်ပြချက်များကို အောက်ပါဇယားတွင် ဖော်ပြထားပြီး အသးစိတ်အချက်အလက်များကို နောက်ဆက်တွဲ ၃ တွင် ဖော်ပြထားပါသည်။

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

၇.၄ ဆန်းစစ်လေ့လာမှုကာလတွင် ပြုလုပ်သော စီမံကိန်းသက်ရောက်ခံများနှင့် ဆွေးနွေးတိုင်ပင်မှုများ

အကြံပေးအဖွဲ့များနှင့် စက်ရုံမှ တာဝန်ရှိသူများ၊ စီမံကိန်းသက်ရောက်ခံကျေးရွာများမှ အမျိုးသား/အမျိုးသမီးအုပ်စုများသည် Covid-၁၉ 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 ၇-၁ Consultants များ၊ စက်ရုံတာဝန်ရှိသူများ နှင့် စီမံကိန်းသက်ရောက်ခံပြည်သူလူထု၏ တွေ့ဆုံဆွေးနွေးမှု မှတ်တမ်းပုံရိပ်များ

၇.၅ ပြည်သူလူထုသို့ သတင်းထုတ်ပြန်ခြင်း

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-၁၉ ကာလ သွားလာဆက်သွယ်ရေးခက်ခဲပါသောကြောင့် ကျေးရွာအုပ်ချုပ်ရေးမှူးနှင့် ဆက်သွယ်၍ မရခဲ့ပါ။ အစီရင်ခံစာအ ကျဉ်းချုပ်ကို ကျေးရွာအုပ်ချုပ်ရေးမှူးရုံးများတွင် ဖြန့်ဝေကာ EIA အစီရင်ခံစာရေးဆွဲစဉ်ကာလတွင် စီမံကိန်းသက် ရောက်ခံများ၏ သဘောထားများ၊ မှတ်ချက်များကို အိမ်တိုင်ရာရောက်စနစ်ဖြင့် ကောက်ယူဖြည့်စွက် တင်ပြထားပါသည်။

အကြံပြုတင်ပြလွှာများဖြင့် ဖြေဆိုသူများစာရင်း

No.	Participants	Position	Work Place
၁	U Kyaw Htay	Village Tract Administrator	Administrative office, Kular Kone village
၂	U Kyaw Myo Naing	Village Tract Administrator	Administrative office, Myaung Ta Kar village
၃	U Than Shwe	Village Administrative member	Administrative office, Kan Ka Lay village
၄	U Kyaw Htoo	Factory Manager	Myaung Ta Kar Industrial Zone
၅	U Moe Myint Win	General Manager	Myanmar Smelting & Refining Co., Ltd.
၆	U Ye Kyi	Management Officer	Han Steel
၇	U Nyi Nyi Tun	Admin Manager	YMI
၈	U Zaw Min Yu	Admin Officer	Japfa Comfeed Mill
၉	Admin Manager	Admin Office	Sogo Steel Industry
၁၀	U Myo Nyunt Aung	Deputy Factory Manager	Khin Maung Nyunt Steel Production & Galvanizing

၇.၅.၁ ကျေးရွာနေပြည်သူများနှင့် စက်မှုဇုံ နေထိုင်သူများမှ အဓိကအကြံပြုချက်များ

ကျေးရွာနေပြည်သူများနှင့် စက်မှုဇုံ နေထိုင်သူများမှ အဓိကဆွေးနွေးတင်ပြချက်မှာ စက်ရုံအနေဖြင့် စနစ်တကျ မလည်ပတ်သော် ခဲဆိပ်သင့်မှုအန္တရာယ်ကို ကြုံတွေ့နိုင်ပါကြောင်းနှင့် စက်ရုံလုပ်ငန်းများကြောင့် ဒေသတွင်းစီးပွားရေးနှင့် အလုပ်အကိုင်အခွင့်အလမ်းများ တိုးတက်လာခြင်းကြောင့် လက်ခံပါကြောင်း အဓိက ဆွေးနွေးတင်ပြ ခဲ့ကြပါသည်။

၈. နိဂုံးချုပ် အကြံပြုချက်များ

အဆိုပါ YMI ၏ ခဲ အရည်ကျိုု စက်ရုံသည် သာမန်မိရိုးဖလာ ခဲ ပြန်ကျိုသည့် စက်မှုလုပ်ငန်းတစ်ခုထက် ပိုမိုသည့် နည်းပညာသုံး စနစ်တကျ စီမံခန့်ခွဲမှု ပါရှိသည့် စက်မှုသုံး စွန့်ပစ်အမှိုက်များ၊ ဘေးထွက်ပစ္စည်းများကို ကျယ်ပြန့်သည့် နည်းစဉ်များဖြင့် ကုန်ထုတ်လုပ်မှုဆောင်ရွက်နေသော စက်ရုံတစ်ခု ဖြစ်ပါသည်။ ဘက္ထရီအိုးများမှ ခဲ သတ္တုစင်များ အဖြစ်သို့ ပြန်လည် သန့်စင်ရာတွင် သဘာဝပတ်ဝန်းကျင် ညစ်ညမ်းမှုကို ထိန်းချုပ်ထားသည့် နည်းစနစ်များကိုလည်း အပြည့်အဝပေါင်းစပ် ထည့်သွင်းထားသည် ကိုလည်း တွေ့ရှိရပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် စီမံကိန်းသက်ဆိုင်သူများ၊ အနီးတွင် နေထိုင်သူပြည်သူများနှင့်အတူ စီမံကိန်းအားစိတ်ဝင်စားသူပုဂ္ဂလိကအကြံပြုချက်၊ ဆွေးနွေးတင်ပြချက်များအားလုံးအား စီမံကိန်းအတွက် အထောက်အကူပြုမည်ဆိုပါက ထည့်သွင်းစဉ်းစားပေးသွားပါမည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းတွင် ပြည်သူလူထု ၊ ထိခိုက်ခံ ပုဂ္ဂိုလ်များ အားလုံး၏ ပတ်ဝန်းကျင်နှင့် လူမှု ရေးဆိုင်ရာ ဆွေးနွေးတင်ပြချက်များ ပါဝင်စေပါမည်။ တွေ့ဆုံဆွေးနွေးပွဲများမှ ရရှိလာသော အချက်အလက်များအား ထိခိုက်မှုများကို လျော့ချစေရန်နည်းလမ်းများနှင့် စီမံခန့်ခွဲမှုများ၊ စောင့်ကြည့်စစ်ဆေးခြင်းများတွင် ထိခိုက်မှုလျော့နည်းစေရန်အတွက် ထည့်သွင်းစဉ်းစားကာ ဆောင်ရွက်ပါမည်။

EXECUTIVE SUMMARY

1. INTRODUCTION

This EIA (Environmental Impact Assessment) scoping report is prepared by Olive Bright Environmental Solutions Limited (OBES) 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.

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://yangonmetal.com/
Address:	No. (261/262/263), Parami Road, Myaung Ta Kar Industrial Zone, Hmawbi Township, Yangon.

1.2 EIA CONSULTANT

The Environmental Impact Assessment (EIA) for Yangon Metal Industry Co., Ltd. is prepared by Olive Bright Environmental Solutions Limited (OBES), following and referencing the Environmental Conservation Law (2012), Environmental Conservation Rules (2014), Environmental Impact Assessment Procedure (2015), and National Environmental Quality (Emission) Guidelines (2015). The information of the consultant organization is described in the following.

Name of Organization:	Olive Bright Environmental Solutions Limited
Company Registration No.	131580223
EIA License No.	EIA-CO(A)002/2023
Contact Person:	Dr. Lai Lai Win (Director)
Address:	No.9, Block 36, Nawaday Garden Housing, Yangon - Pathein Road, Hlaing Thar Yar Township, Yangon, Myanmar.
Phone No.	+959765479692, +959765638892
Email:	obesservices@obcmm.com
Website:	www.obcmm.com

2. LEGAL FRAMEWORK

Yangon Metal Industry Company Limited will strictly follow to comply applicable laws, rules, and guidelines, especially to Environmental Impact Assessment Procedure, National Environmental Quality (Emissions) Guidelines, and the laws related to the Lead Smelting and Refining Project. The followings are the list of laws and regulations that applied and commits to follow related to the proposed project.

1) Environmental Conservation Law, 2012
2) Environmental Conservation Rules, 2014
3) Environmental Impact Assessment Procedure, 2015
4) National Environmental Quality (Emission) Guidelines, 2015
5) The Myanmar Investment Law, 2016
6) Myanmar Investment Rules, 2017
7) The Conservation of Biodiversity and Protected Areas Law, 2018
8) The Protection and Preservation of Antique Objects Law, 2015
9) The Protection and Prevention of Ancient Monuments law, 2015,
10) The Public Health Law, 1972
11) The Prevention and Control of Communicable Diseases Law, 1995
12) The Control of Smoking and Consumption of Tobacco Product Law, 2006
13) The Labor Organization Law, 2011
14) The Settlement of Labor Dispute Law, 2012
15) Employment and Skill Development Law, 2013
16) The Leave and Holiday Act, 1951; Amendment in 2014
17) Workmen's Compensation Act, 1923
18) The Social Security Law, 2012
19) Occupational Safety and Health Law, 2019
20) The Minimum Wage Law, 2013
21) The Payment of Wages Law, 2016

22) The Prevention of Hazard from Chemical and Related Substances Law, 2013
23) The Myanmar Fire Brigade Law, 2015
24) Traffic Safety and Motor Vehicle Management Law, 2020
25) The Conservation of Water Resources and Rivers Law, 2006
26) The Conservation of Water Resources and Rivers Rules, 2013

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 3-1**.

Table 3.1 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 3-1 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 3-2**.

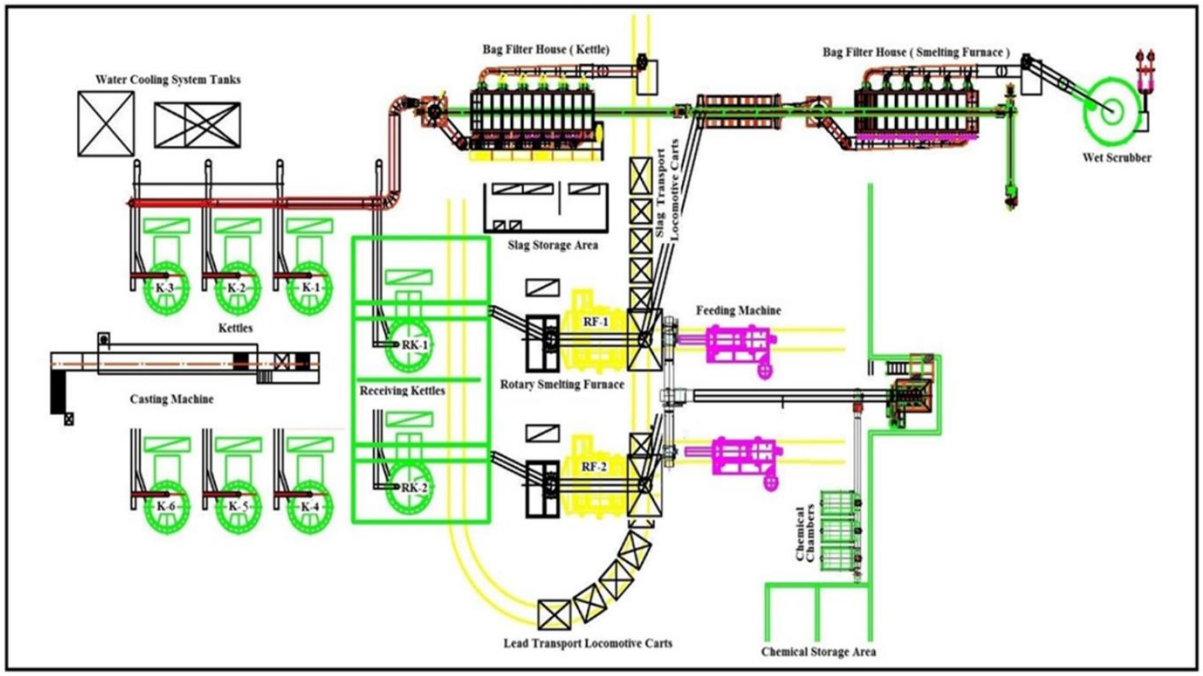


Figure 3-2 Machinery Layout Plan

3.2 RAW MATERIALS AND PRODUCTION PROCESS

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

Figure 3-3 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 3-4**.

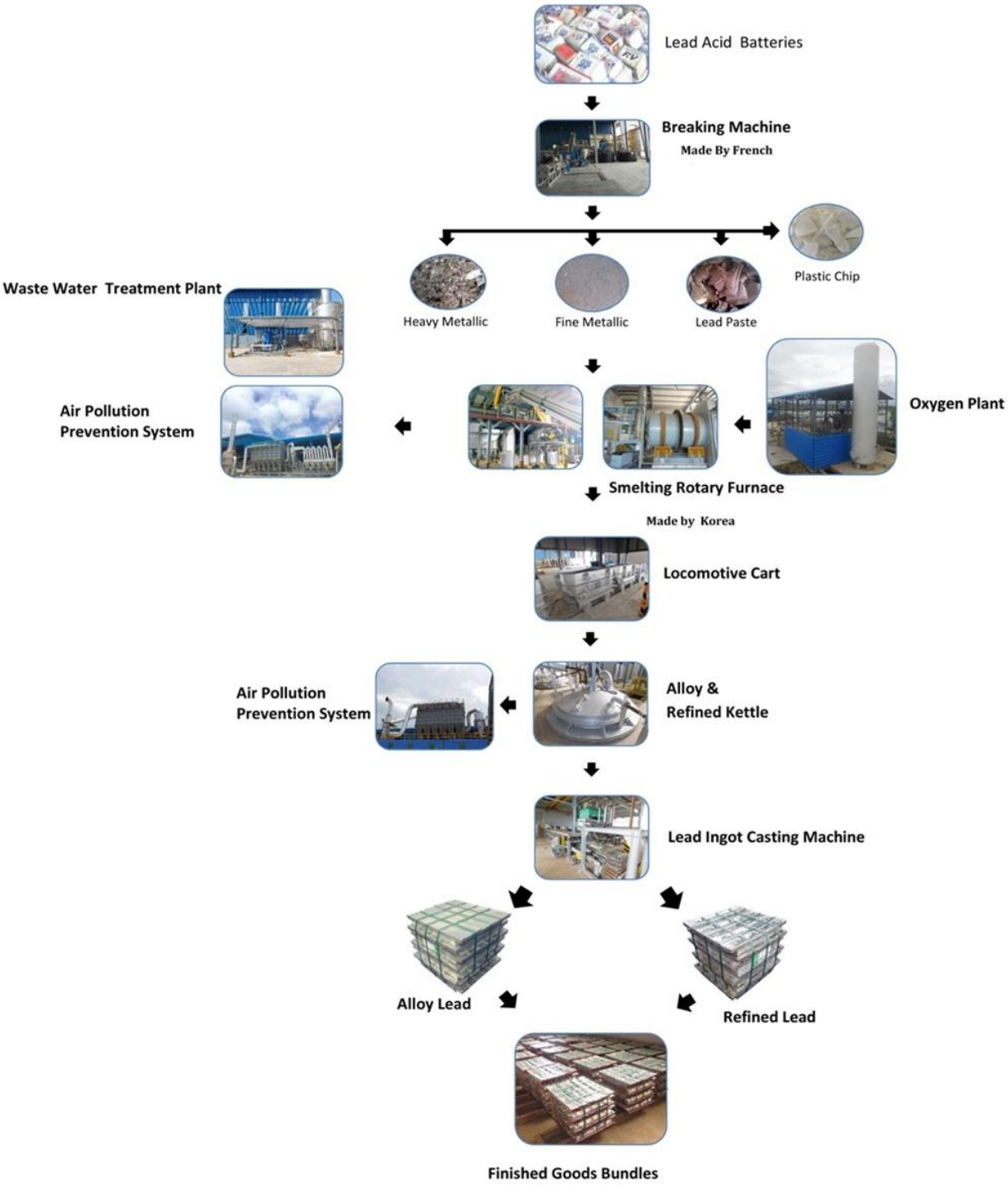


Figure 3-4 Production Process Flow Diagram of YMI

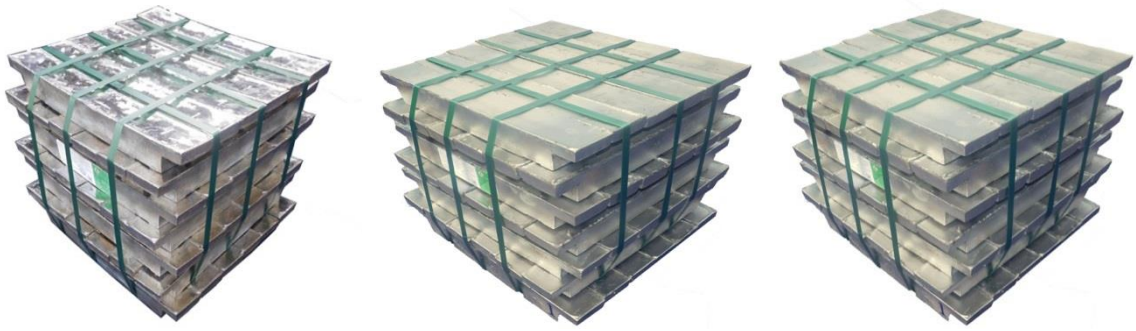


Figure 3-5 Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot

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 option is considered based on the current situation as follows.

Table 3.2 Study of Zero 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.

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 3.3 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.

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 Hmawbi township and which is located around by the other industrial production nearby.

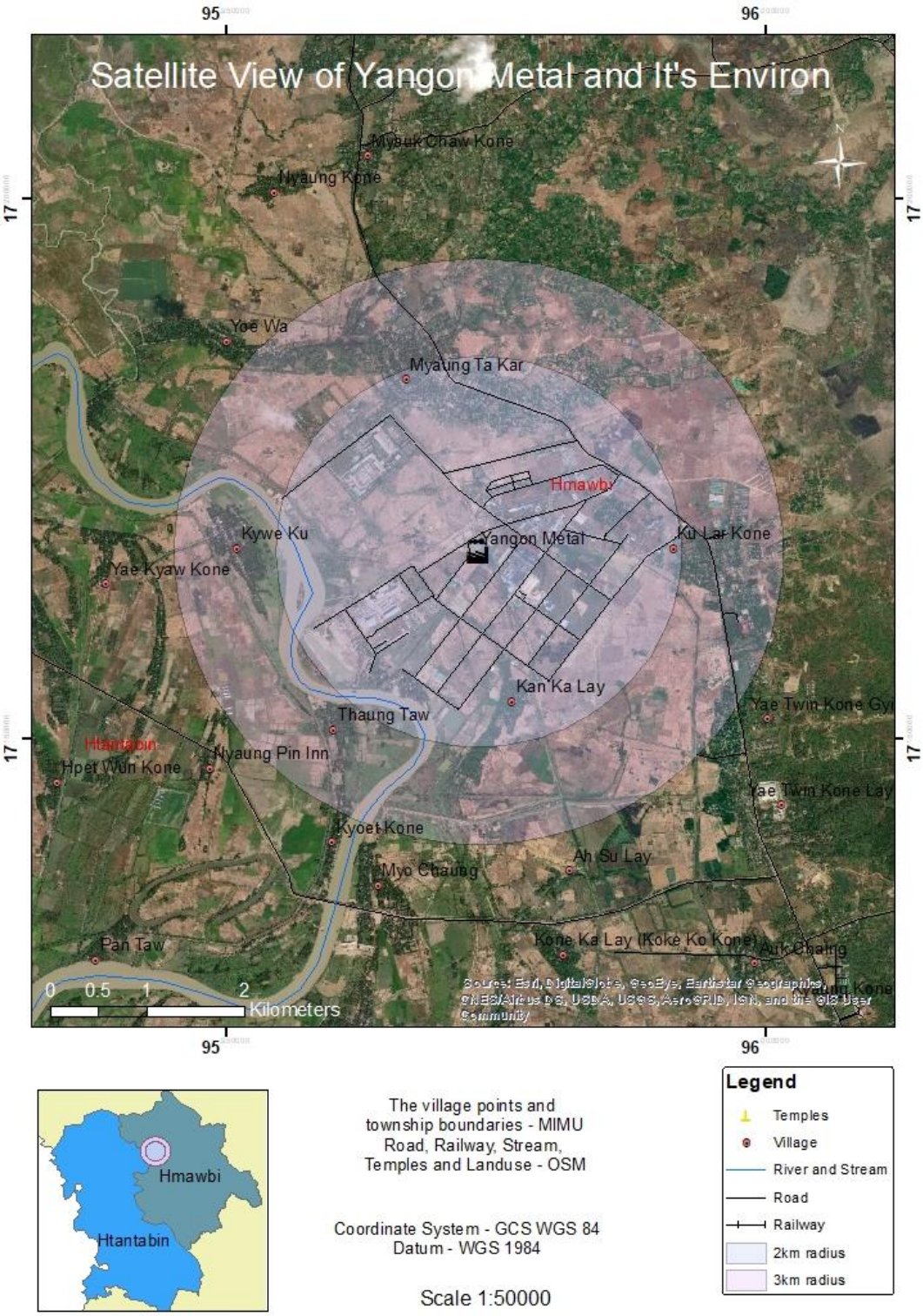


Figure 4-1 Satellite View of YMI Project Area

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 4.1 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 4.2 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	

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 4.3 Daily Average Vibration Level Results at Myaung Ta Kar Industrial Zone

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 4.4 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.

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

Table 4.5 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.

4.1.4 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 4.6 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.

4.1.5 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 4.7 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 4-2 Traffic Survey Locations

Table 4.8 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

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 4-3**.

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 4-4**.

Table 4.9 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

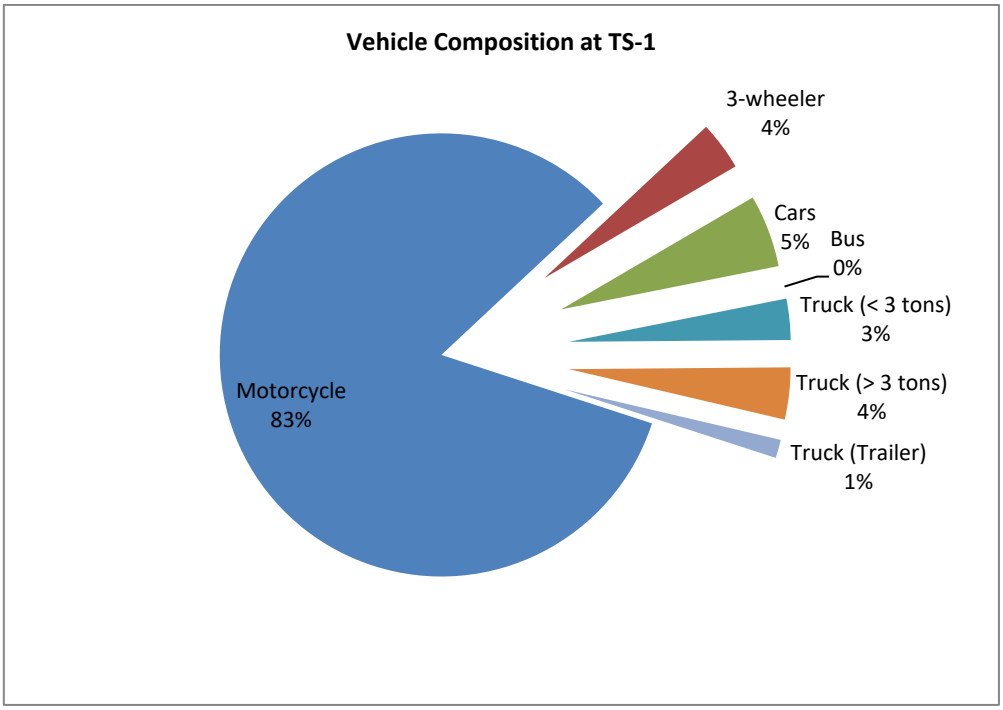


Figure 4-3 Vehicle Composition at TS-1

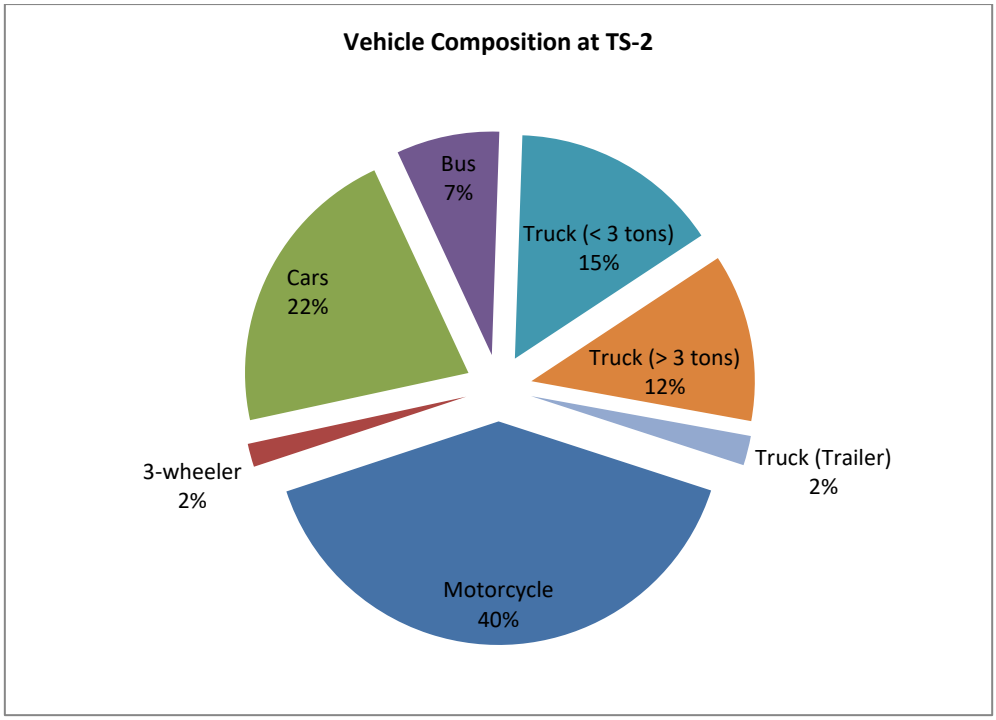


Figure 4-4 Vehicle composition at TS-2

4.2 ECOLOGICAL COMPONENTS

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

Table 4.10 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

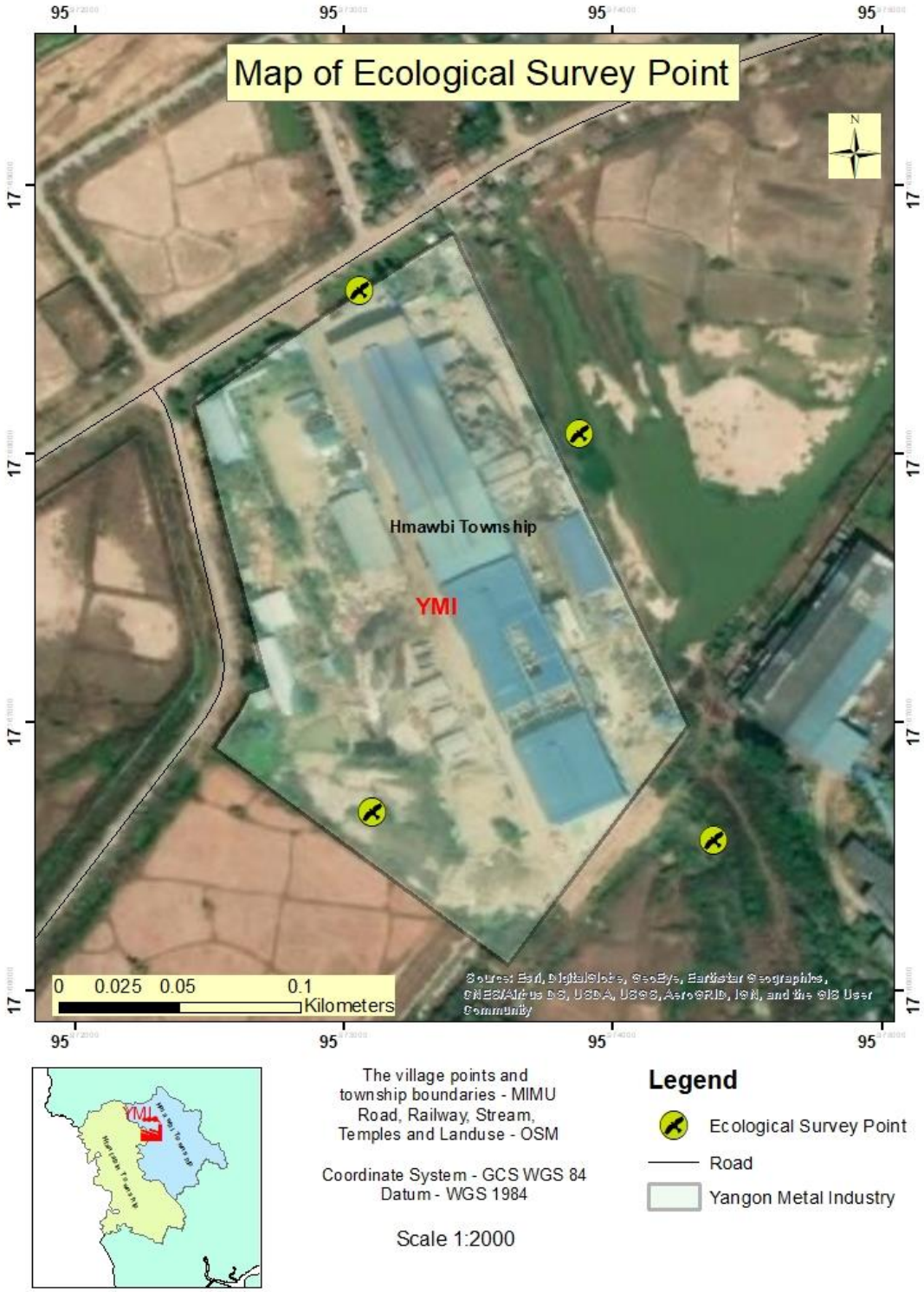


Figure 4-5 Ecological Survey Area

4.2.1 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*).

4.2.2 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.

4.3 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.

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

4.3.1 Survey Results

The 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	Social survey team + a medical doctor	❖ Two responsible persons from the YMI factory also

2	Kular Kone	26.8.2020	Social survey team + a medical doctor	❖ 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.
3	Kan Ka Lay	24.8.2020	Social survey team + a medical doctor	
4	Kywe Ku	24.8.2020	Social survey team + a medical doctor	
5	Industrial Zone	27.8.2020	Social survey team + a medical doctor	
6	Other Places	24.8.2020	Social survey team + a medical doctor	

Figure 4-6 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

4.3.2 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.

Figure 4-7 Photographic Records of Staff Health Survey in YMI Factory Clinic

Figure 4-8 Photographic Records of Community Health Survey at the Affected Villages

4.3.3 Investigation Results of Occupational and Community Health Survey

The 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

Impact is described in terms of its various relevant characteristics (e.g., type, scale, duration, frequency, extent).

Characteristics	Definition	Designations
Type	A descriptor indicating the relationship of the potential impact to the Project (in terms of cause and effect).	• Direct • Indirect • Induced
Extent	The “reach” of the potential impact (e.g., confined to a small area around the Project Footprint, projected for several kilometres, etc.).	• Local • Regional • International

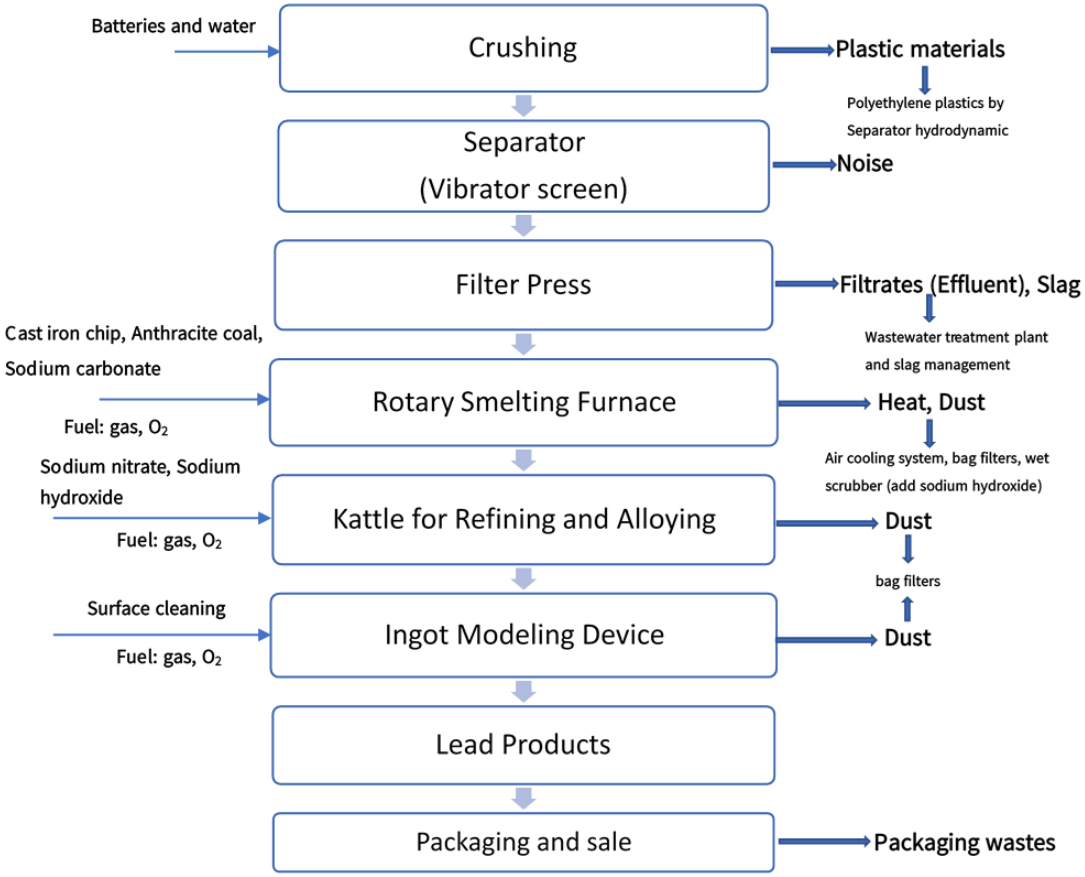
Duration	The time period over which a resource / receptor is potentially affected.	• Temporary • Short Term • Long Term
Scale	The size of the potential impact (e.g., the size of the area with the potential to be damaged or impacted, the fraction of a resource that could potentially be lost or affected, etc.).	No fixed designations; intended to be a numerical value or a qualitative description of "intensity".
Frequency	A measure of the constancy or periodicity of the potential impact.	No fixed designations; intended to be a numerical value or a qualitative description.

Once magnitude of impact and sensitivity/vulnerability/importance of resource/receptor have been characterized, the significance can be assigned for each impact. Impact significance is designated using the matrix shown in Table.

		Sensitivity/Vulnerability/Importance		
		Low	**Medium**	**High**
Magnitude of Impact	**Negligible**	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

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 5.1 Environmental Impacts and Mitigation Measures

Components	Impact	Mitigation Meausres	Residual Impact Significance
Air Quality	Potential impacts on Ambient Air Quality due to the emissions of sulfur oxides, nitrogen oxides, and particulates.	• Installation of air emission preventive measures, such as Rotary Furnace, Bag House, Wet Scrubber, Cyclone, Dust Collection Line and Blowing Motor and Blowing Fan. • Lead smelting, casting, and related processes are enclosed to minimize lead concentrations in ambient air. • Conveyors are used throughout production to prevent worker contact with dust particles. • A scheduled maintenance plan is in place for air emission control devices. • Filters in the system and chimney are replaced regularly, with functionality tested periodically. • A monitoring system will track air quality emissions from the chimney to the environment, ensuring compliance with standards. • Air quality parameters will be monitored according to Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining, with documented measurements.	Negligible
Water Quality	Potential impacts on Water Quality	• Industrial wastewater from lead recycling is treated using circular wastewater treatment units, with treated effluent reused in production from settling ponds. • A thermal evaporator unit at the YMI factory	Negligible

		handles excess effluent not reused in operations, minimizing discharge to surrounding water bodies. • Wastewater treatment complies with Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining, ensuring prescribed discharge limits are met. • Treated wastewater is analysed quarterly at a recognized laboratory for quality verification. • An impermeable floor has been constructed in the battery breaking section to prevent acid seepage. • Sodium Hydroxide or Sodium Carbonate is added during the treatment of discharged water to neutralize any residual acid. • Surface runoff is directed through gravity-fed drainage lines to a designated sedimentation pond, with a concrete drainage system to prevent ground infiltration. • Domestic wastewater, including sewage from various sources, is collected using a septic tank system.	
Noise & Vibration	Potential impacts on noise sensitive receptors due to noise emissions from lead recycling process equipment during the operation phase.	• Construct physical barriers (e.g., soundproof walls, fences) around high-noise equipment (battery-breaking machines, rotary smelting furnace, compressors) to reduce noise levels. • Use enclosures around noisy machinery to absorb and contain sound, preventing it from reaching the factory perimeter. • Install noise-dampening materials (e.g., acoustic panels) on walls and ceilings in	Negligible

		areas with heavy machinery to absorb sound and reduce noise transmission. • Maintain equipment (ventilators, conveyors, electric motors) to minimize mechanical noise by addressing friction, worn parts, and loose components through regular maintenance and lubrication. • Schedule high-noise activities during daytime hours to minimize disturbances during night time, benefiting sensitive receptors like nearby monasteries. • Upgrade older machines to low-noise models to significantly reduce the factory's overall noise profile. • Use landscaping with trees and bushes to absorb noise and vibrations, reducing their impact on surrounding areas. • Train employees on best practices for minimizing vibration, such as proper loading of equipment and operating machinery at balanced speeds. • Continue routine monitoring of noise and vibration levels at key points (YMI facility and nearby receptors) to assess the effectiveness of mitigation measures and ensure compliance with the industrial noise standard of 70 dB.	
Waste	Waste generated from smelting rotary furnace, refining and casting processes Staff wastes and kitchen wastes	• Slag waste is managed in a designated storage area with a covered facility featuring a concrete floor and walls to prevent environmental pollution and leaching. • Dedicated, labelled storage containers are used for spent chemicals, stored in areas with	Minor

		secondary containment systems to prevent spills and leaks. • Regular inspections of storage areas are conducted to ensure containment integrity. • Ongoing training is provided for employees on the handling, storage, and disposal of spent chemicals. • The YMI factory is equipped with storage facilities and trash bins for efficient waste handling, transfer, and transportation, with separate, clearly labelled bins for: • Manual handling of waste is prohibited, but if unavoidable, it will be done with appropriate safety precautions. • A designated kitchen room is provided, and eating near operational machines is prohibited; biodegradable waste is collected only in the dining area. • Solid waste is segregated by type and disposed of in coordination with the relevant Township Development Committee.	
Soil	Potential impacts on soil quality due to leakage during the operation phase.	• Conduct regular inspections of storage, piping, and equipment in the lead recycling process to promptly identify and repair leaks or damage. • Construct an impermeable floor in the battery breaking section to prevent acid seepage; neutralize residual acid in discharged water with Sodium Hydroxide or Sodium Carbonate as needed. • Store chemicals in designated, labelled, weather-resistant areas with proper ventilation and security; avoid ground	Negligible

		storage to prevent soil contamination and use closed containers for safe transport and handling. • Implement dust control measures in lead processing, smelting, and handling areas to reduce soil contamination from particulates. • Develop and implement a waste management plan for hazardous and non-hazardous waste from the lead recycling process. • Provide regular training for personnel on emergency response procedures, including handling chemical spills and accidental releases. • Conduct regular soil sampling and analysis around the facility to monitor for contamination by lead, heavy metals, and hazardous chemicals.	
Biodiversity	Potential impacts on disturbance and displacement of fauna and flora.	• Implement strict measures to minimize the risk of spills and contamination, including: - Developing a waste management plan for proper storage and disposal of hazardous materials. - Conducting regular maintenance of equipment to prevent leaks. • Establish a monitoring plan to track the diversity of species in and around the project area. • Maintain green areas both inside and outside the factory compound with a strict policy prohibiting unauthorized picking of flowers or cutting of trees.	Negligible

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1 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".

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

1) Air Quality Management
2) Water Quality Management
3) Noise and vibration Management
4) Waste Management
5) Soil Management
6) Biodiversity Management
7) Transportation and Traffic Safety Plan
8) Occupational Health and Safety Management
9) Grievance Redress Mechanism
10) Chemical Management Plan
11) Incident Management

6.2 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.

6.3 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.

6.4 BUDGET ALLOCATION FOR EMP

The project cost includes the estimated expenses associated with the implementation of the Environmental Management Plan (EMP) and the installation of pollution abatement and mitigation measures as detailed in this Environmental Impact Assessment (EIA) report. The costs for the Environmental Management Plan have been specifically estimated.

No.	Description	Approx. Capital Cost (USD)
1	Air Quality Management Plan	200,000
2	Noise and Vibration Management Plan	50,000
3	Water Quality Management Plan	200,000
4	Waste Management Plan	50,000
5	Biodiversity Management Plan	10,000
6	Occupational Health and Safety Management Plan	10,000

7	Community Health and Safety Management Plan	10,000
8	Fire Safety Management Plan	100,000
9	Emergency Response Plan	100,000
	Total	**730,000**

6.5 ENVIRONMENTAL MONITORING AND REPORTING PLAN

The EHS team will be conducted weekly or monthly inspections of the proposed project. The monitoring report will be submitted to the Environmental Conservation Department every six months, as mentioned in the EMP.
Note: If the project is beyond the current estimated cost, the necessary funds will be expanded.

Table 6.1 Environmental Monitoring Plan

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
Environmental Monitoring Plan (Operation Phase)						
Air quality	SO_2, NO_2, O_3, CO, $PM_{2.5}$, PM_{10}	AQ-1: Near Production Area, YMI Factory 17°10'1.18"N 95°58'26.11"E AQ-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	7,000,000 per year
Noise and Vibration	Noise and Vibration level (dB)	NV-1: Near Production Area, YMI Factory 17°10'2.09"N 95°58'24.92"E NV-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	2,400,000 per year
Surface Water quality	Biological Oxygen Demand, Chemical Oxygen Demand, Oil and Grease, pH, Total Coliform Bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solids	SW-1: Drainage Water, Drainage channel of the factory 17°10'7.68"N 95°58'24.30"E SW-2: Wastewater, Final wastewater treatment pond 17°10'0.45"N 95°58'26.88"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	4,000,000 per year
Groundwater Quality	Total Coliforms, Fecal Coliforms, Taste, Odor, Color, Turbidity, Arsenic,	GW-1 Groundwater, Tube well within factory compound	Twice/year	YMI	National Drinking Water Quality	2,000,000 per year

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
	Lead, Nitrate, Manganese, Chloride, Hardness, Iron, pH, Sulphate, Total Dissolved Solids (TDS)	17°10'7.17"N 95°58'23.64"E			Standards, Ministry of Health (2019)	
Soil	Zinc (Zn), Copper (Cu), Manganese (Mn), Iron (Fe), Lead (Pb), Cadmium (Cd), Nickel (Ni), Chromium (Cr), Arsenic (As), Mercury (Hg)	SQ-1: Bare soil near the raw materials store area 17°10'0.28"N 95°58'22.68"E	Twice/year	YMI	Applicable International Guidelines	2,000,000 per year
Waste	- Amount and Type of Waste	Trash Bins	Weekly	YMI	Township Development Committee Guidelines	1,000,000 per year
Biodiversity	- Flora and Fauna	Project Area	Annually	YMI	The Conservation of Biodiversity and Protected Areas Law, (2018)	1,000,000 per year
Occupational Health and Safety	- First Aid Box and safety equipment - Records accidents and worker's medical checkups condition	Project Area	Weekly	YMI	Occupational Safety and Health Law (2019)	500,000 per month
Community Health and Safety	- Records accidents and medical condition	Project Area	Annually	YMI	The Social Security Law (2012) Public Health Law (1972)	1,000,000 per year
Emergency Response and Management Plan	- Evacuation routes and procedures - First aid supplies and training	Project Area	Twice/year	YMI	The Employment and Skill Development Law (2013)	2,000,000 per year

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
	- Emergency contact information					
Fire Safety	- Firefighting equipment (fire extinguisher, firefighting hose, etc.) - Fire Detection System	Entire Boundary	Monthly	YMI	Myanmar Fire Brigade Law (2015)	1,000,000 per year
Preparation of Monitoring Report	Monitoring according to EMP plan and monitoring report preparation		Biannually	YMI	EIA Procedure 2015	4,000,000 per year
Decommissioning Phase						
Air quality	SO_2, NO_2, O_3, CO, $PM_{2.5}$, PM_{10}	AQ-1: Near Production Area, YMI Factory 17°10'1.18"N 95°58'26.11"E AQ-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Once, during decommissioning	YMI	National Environmental Quality (Emission) Guidelines (2015)	3,000,000
Waste	Waste generated from decommissioning activities such as concrete, metal, and wood	Project Area	Once, during decommissioning	YMI	Township Development Committee Guidelines	500,000
Noise	Noise level (dB)	NV-1: Near Production Area, YMI Factory 17°10'2.09"N 95°58'24.92"E NV-2: Dhama Yayaye Monastery	Once, during decommissioning	YMI	National Environmental Quality (Emission) Guidelines (2015)	1,200,000

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
		17°09'19.138"N 95°58'43.386"E				
Occupational Health and Safety	- First Aid Box and safety equipment - Accidents Records	Project Area	Weekly	YMI	Occupational Safety and Health Law (2019)	1,000,000

6.6 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.

7. 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.

7.1 PUBLIC 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

7.2 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 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	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 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

	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.	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 5.

7.3 MAIN ISSUES AND SUGGESTIONS AT 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.

7.4 PUBLIC CONSULTATION DURING EIA STAGE

Focus group discussion was conducted by 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 7-1 Stakeholder Consultation of Consultants with the YMI Factory and Surrounding Village Community

7.5 PUBLIC DISCLOSURE

The suggestion form was prepared by 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.

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

7.5.1 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.

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.

CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

This Environmental Impact Assessment (EIA) report is prepared for **"Lead Smelting and Refining Process"** (herein refers "the Project") which was implemented by **Yangon Metal Industry Company Limited (YMI)**, (refers as "the Project Proponent"). **Olive Bright Environmental Solutions Limited (OBES)** 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 Hmawbi 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 1-1 Factory Area and its Environments of Yangon Metal Industry Co., Ltd.

1.2.1 Contact Detail of Project Proponent

Yangon Metal Industry Co., Ltd. (YMI) is located in No. (261/262/263), Parami Road, Myaung Ta Kar Industrial Zone, Hmawbi 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), Parami Road, Myaung Ta Kar Industrial Zone, Hmawbi Township, Yangon.

1.3 EIA CONSULTANT

Olive Bright Environmental Solutions Limited (OBES) acts as a third-party consultant firm, bringing together professionals and experts from a variety of fields to carry out the Environmental Impact Assessments (EIAs), Initial Environmental Examinations (IEEs), Environmental Management Plans (EMPs), and Environmental Monitoring Reports (EMoPs) regarding the environmental and social impacts of the development projects under the contract agreement of project proponents. OBES is obtained Environmental Impact Assessment License (Organization) with the license number (EIA-CO(A)002/2023) from Environmental Conservation Department (ECD) under Ministry of Natural Resources and Environment Conservation. OBES operates as a local environmental consulting firm, specializing in environmental quality assessment and monitoring, conducting social surveys, performing site inspections, and producing comprehensive environmental reports. The information of the consultant organization is described in the following.

Name of Organization:	Olive Bright Environmental Solutions Limited
Company Registration No.	131580223
License No.	EIA-CO(A)002/2023
Contact Person:	Dr. Lai Lai Win (Director)
Address:	No.9, Block 36, Nawaday Garden Housing, Yangon - Pathein Road, Hlaing Thar Yar Township, Yangon, Myanmar.
Phone No.	+959765479692, +959765638892
Email:	obesservices@obcmm.com
Website:	www.obcmm.com

Table 1.1 List of Consultants and its Area of Expertise

Team Leader			
Name	**License No. by ECD**	**Area of Expertise**	**Responsibilities**
Dr. Lai Lai Win	EIA-C 019/2023	- Water Pollution Prevention, Control, Monitoring and Prediction of Impacts - Ecology and Biodiversity - Solid Waste and Hazardous Waste Management - Risk Assessment and Hazard Management	Project Management and Team Leading
Team Member			
Name	**License No. by ECD**	**Area of Expertise**	**Responsibilities**
U Min Min Oo	EIA-C 020/2023	- Air Pollution Prevention and Control - Meteorology, Air Quality Assessment and Forecast	Consultant
Daw Myat Thitsar Naing	EIA-C 021/2023	- Social Study and Analysis	Consultant
U Myo Thura	EIA-C 046/2023	- Geological Assessment - Soil Conservation	Consultant
Daw Aye Aye Soe	EIA-C 068/2024	- Land Use	Consultant
U Khin Maung Win	EIA-AC 028/2023	- Water Pollution Prevention, Control, Monitoring and Prediction of Impacts - Hydrology, Surface Water and Ground Water Conservation - General Environmental Management	Associate Consultant
U Kyaw Win Han	EIA-AC 027/2023	- Air Pollution Monitoring	Associate Consultant
U Si Yan Hein	EIA-AC 026/2023	- Geological Assessment	Associate Consultant
U Htet Thiha Phone Myint	EIA-AC 032/2023	- Noise and Vibration	Associate Consultant
U Khin Maung Aye	EIA-AC 018/2023	- Archaeological and Cultural Heritage	Associate Consultant
Dr. Phyu Phyu Myint	EIA-AC 020/2023	- Health Impact Assessment	Associate Consultant

U Soe Paing Hein	EIA-AC 019/2023	- General Environmental Management	Associate Consultant
Daw Myint Myint Soe	Consultant License Processing	- Economic Analysis	Supportive Team Member
Dr. Kaung Htet Swan	Consultant License Processing	- Air Pollution Monitoring	Supportive Team Member

CHAPTER 2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORKS

2.1 NATIONAL ENVIRONMENTAL POLICY

The Policy provides long-term guidance for government organizations, civil society, the private sector and development partners on the achievement of environmental protection and sustainable development objectives in Myanmar. This Policy builds on Myanmar's 1994 National Environment Policy, the 1997 Myanmar Agenda 21, the 2009 National Sustainable Development Strategy, the 2008 Constitution of the Republic of the Union of Myanmar, the 2012 Environmental Conservation Law, the 2015 National Comprehensive Development Plan and the 2018 Myanmar Sustainable Development Plan.

National Environmental Policy Vision and Mission

Vision

A clean environment, with healthy and functioning ecosystem, that ensures includes development and wellbeing for all people in Myanmar.

Mission

To establish national environmental policy principle for guiding environmental protection and sustainable development and for mainstreaming environmental consideration into all polices, laws, regulation, plans, strategic, programs and projects in Myanmar.

2.2 LAWS RELATED TO THE PROPOSED PROJECT AND COMMITMENTS

The project proponent (YMI) will comply with all national laws, rules and regulations that related to the project activities. The followings are the list of laws and regulations that applied and commits to follow related to the proposed project.

Table 2.1 List of Legal Commitments

No	Laws, Regulation, or Guidelines	Commitments
1	Environmental Conservation Law, 2012 Section 7 (o), 14, 15, 19	The company commits to comply - To compensate if there is environmental population by the project, to contribute a portion of the project profit as prescribed by the Ministry for environmental conservation activities

		according to Section 7 (o) of the Environmental Conservation Law 2012, - To treat, discharge, dispose and accumulate the materials that cause environmental pollution in accordance with the specified environmental standards according to Section 14, - To monitor, control, manage, reduce, or avoid by installing support equipment or control equipment, or dispose in accordance with the measures not to damage the environment the environmental pollutions according to Section 15, - To follow the rules, notice of order, order, instruction, and restriction in the procedure mentioned in Section 19 issued by Environmental Conservation Law.
2	Environmental Conservation Rules, 2014 Rule 69 (a, b)	According to Environmental Conservation Rules (2014)'s Rule 69 (a) and (b), the project proponent commits to comply - Not to emit, dispose and pile the hazardous waste or hazardous substances stipulated by rule. - Not to carry out any activity which can damage the ecosystem and the natural environment, except for the permission of the Ministry.
3	Environmental Impact Assessment Procedure, 2015	The project company commits to comply section 102 to 110, 113, 115, and 117 as per following. - To take responsibility for all the adverse impacts occurred by the actions and omissions of project proponent, and the person and organizations authorized by the project proponent. - To make the monitoring report publicly available on the project's website and office within ten days of submission to the Ministry and let anyone request the digital copy of the report and to send the report via proper way within ten days of receiving the request. - To give permission the representatives to enter the project site during working hours, and the Ministry, if necessary, to the project site and other project associates for purposes of monitoring and inspection in accordance with section 113.

		- In the event of emergency, or fail of environmental and social requirements, to give immediate access to the representative at any time according to the section 115. - To extend the access by the representatives to the project contractors and subcontractors in accordance with section 117.
4	National Environmental Quality (Emission) Guidelines, 2015	The company will follow General and Industry-specific Guidelines of the National Environmental Quality (Emission) Guidelines 2015 to control noise and vibration, air emissions and effluent discharges.
5	The Myanmar Investment Law, 2016 Section 50, 51, 72, 75	According to Myanmar Investment Law, 2016 (Section 50, 51, 72, 75), the project proponent commits to - To act in compliance with land use rights according to the section 50, - To comply with the provisions on the appointment of staff and workers mentioned in section 51, - To inform the commission if the permitted investment is transferred and rent to another one during the term of business mentioned in section 72, - To comply with the provisions of the income exemption mentioned in section 75.
6	Myanmar Investment Rules, 2017 Rule 202, 203, 206, 212	The project company commits to comply with rule 202, 203, 206 and 212 as follows. - To comply with rule 202, all terms and conditions in permits and other applicable laws when the investment is carried out in accordance with Myanmar Investment Rule (2017). - To fully assist the negotiation processes with the relevant government departments and government organizations for the affected persons due to proposed project according to Rule 203. - To submit the application attached with reference documents to the Commission and obtain the approval if the company desires to appoint expert foreigner according to Rule 206.

		- To ensure that Bodily Injury Insurance and Workmen Compensation Insurance at any insurance business entitled to carry out insurance business within the Union by the company in accordance with Rule 212.
7	The Conservation of Biodiversity and Protected Areas Law, 2018 Section 35 (a, c, d), 39 (d).	The company commits to comply with the provisions mentioned in the section 35 (a, c, d) and 39 (d) of The Conservation of Biodiversity and Protected Areas Law, 2018.
8	The Protection and Preservation of Antique Objects Law, 2015 Section 12.	If any known or suspected antique objects are found during the implementation of proposed project, the company will be promptly reported to the relevant Ward and Village-Tract Administration Office in accordance with section 12 of The Protection and Preservation of Antique Objects Law, 2015.
9	The Protection and Prevention of Ancient Monuments law, 2015, Section 15 (c, d), 20 (f)	According to the section 15 (c, d) of The Protection and Preservation of Ancient Monuments Law 2015, the company will apply to get prior permission to the Department if the proposed project is to be implemented within the specified area of an ancient monument. According to the section 20 (f), the company will not carry out discarding chemical substance and rubbish which can affect an ancient monument and the environment without a written prior permission.
10	The Public Health Law, 1972 Section 3, 5	The project company will cooperate with the authorized person or organization in line with the section 3 and 5 of the Public Health Law, 1972. - The project owner will abide by any instruction or stipulation for public health. - The project owner will accept any inspection, anytime, anywhere if it is needed.
11	The Prevention and Control of Communicable Diseases Law, 1995 Section 4, 9, 11	The project proponent commits to comply with the Section 4, 9, and 11 mentioned in the Prevention and Control of Communicable Diseases Law, 1995 as follows. - To comply with the measures undertaken by Ministry of Health and the Department of Health in respect of prevention of the occurrence and

		spread of communicable disease and control according to the section 4. - To report immediately to the nearest health department or hospital in accordance with the section 9. - To follow the instructions of Health Officer according to the section 11.
12	The Control of Smoking and Consumption of Tobacco Product Law, 2006 Section 9	The project owner commits to comply the provisions mentioned in section 9 of the Control of Smoking and Consumption of Tobacco Product Law, 2006.
13	The Labor Organization Law, 2011 Section 17 to 22	The project proponent commits to comply the provisions acted in the section 17 to 22 of the Labor Organization Law, 2011. *Section 17:* The project owner promises to allow the labor organization to negotiate and settle with the employer if the workers are unable to obtain and enjoy the rights of the workers contained in the labor laws and to summit demands to the employer and claim in accord with the relevant law if the agreement cannot be reached. *Section 18:* The project owner promises to demand the re-appointment of worker is dismissed by the employer without the conformity with the labor laws. *Section 19:* The project owner promises to send the representatives to the Conciliation Body in settling a dispute between the employer and the worker. *Section 20:* The project owner promises the labor organization to participate and discuss in discussing with the government, the employer and the complaining employees in respect of employee's rights or interest contained in the labour laws. *Section 21:* The project owner promises the labour organization to participate in solving the collective bargains of the employees in accord with the labour laws. *Section 22:* The project owner promises the labour organization to carry out the holding the meetings, going on strike and other collective activities in line with the labour laws.

14	The Settlement of Labor Dispute Law, 2012 Section 38, 39, 40, 51	The project proponent commits to comply the provisions acted in the section 38, 39, 40, and 51 of the Settlement of Labor Dispute Law, 2012.
15	Employment and Skill Development Law, 2013 Section 14, 15, 30	According to Employment and Skill Development Law, 2013 (Section 14, 15, 30), the project proponent commits - To carry out Skill Development of Workers and Training programs according to the section 14 and 15 of Employment and Skill Development Law, 2013. - To compliance with the provisions of section 30.
16	The Leave and Holiday Act, 1951; Amendment in 2014 Section 3, 4, 5, 7 (a)	The project company commits to comply the provisions mentioned in Section 3, 4, 5, and 7(a) of the Leave and Holiday Act, 1951; Amendment in 2014.
17	Workmen's Compensation Act, 1923 Section 13	The project company commits to comply the provisions mentioned in Section 13 of Workmen's Compensation Act, 1923.
18	The Social Security Law, 2012 Section 11(a), 15 (a), 18 (b), 48, 49, 75.	According to the Social Security Law, 2012's Section 11(a), 15(a), 18(b), 48, 49, and 75, the project proponent commits to comply - - the provisions of section 11 (a), - setting up the social security fund according to the Section 15 (a), - the provisions mentioned in Section 18 (b), 48, 49 and 75.
19	Occupational Safety and Health Law, 2019 Section 12, 14, 16, 17, 18, 26, 27, 36, 43.	Occupational Safety and Health Law, 2019, Section 12, 14, 16, 17, 18, 26, 27, 36 and 43, the project proponent commits to comply with - the provisions mentioned in the Section 12 and 14. - the instructions by the inspectors according to the Section 16. - the provisions mentioned in the Section 17 and 18. - the provisions for occupational safety in accordance with the Section 26.

		- the provisions mentioned in the Section 27, 36 and 43.
20	The Minimum Wage Law, 2013 Section 12, 13 (a, b, c, d, e, f, g), 18.	The project company commits to comply with the provisions of the Section 12, 13 (a, b, c, d, e, f, g), and 18 mentioned in the Minimum Wage Law, 2013.
21	The Payment of Wages Law, 2016 Section 3, 4, 5.	The project company commits to comply with the provisions of the section 3, 4 and 5 mentioned in The Payment of Wages Law, 2016.
22	The Prevention of Hazard from Chemical and Related Substances Law, 2013 Section 15, 16, 17, 27.	According to The Prevention of Hazard from Chemical and Related Substances Law, 2013, the company commits to comply with the provisions mentioned in the section 15 and 16. According to the section 17, the company will put the insurance in accordance with the prescriptive stipulations to be able to pay the compensation if the impact and damage is occurred. The company commits to follow the provisions mentioned in Section 27.
23	The Myanmar Fire Brigade Law, 2015 Section 25 (a, b)	According to The Myanmar Fire Brigade Law 2015, Section 25, the project company commits to follow the directive of the Department of Fire Services.
24	Traffic Safety and Motor Vehicle Management Law, 2020 Section 9 (a), 12 (c), 14 (d), 18 (a), 81 (g).	The project company commits to comply with the provision under Traffic Safety and Motor Vehicle Management Law, 2020 as follows. According to the section 9 (a), the company will follow the regulations and restrictions on the vehicles allowed to travel in the country. According to section 12 (c), the company will follow rules, standards and norms on safety and environmental protection in relation to the initial registration of motor vehicles issued by the Ministry. According to section 14 (d), the company will follow the speed limit for the safe movement of vehicles traveling on public roads. According to section 18 (a), the company will perform maintenance and repair in accordance with the standards set by the Department to drive the vehicle safely.

		According to section 81 (g), The company will not transport dangerous goods in public places without complying with the regulations.
25	The Conservation of Water Resources and Rivers Law, 2006 Section 30.	According to section 30 of The Conservation of Water Resources and Rivers Law 2006, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.
26	The Conservation of Water Resources and Rivers Rules, 2013 Rule 47.	According to rule 47 of The Conservation of Water Resources and Rivers Rules 2013, the company will obtain the approval of the relevant ministry if it is necessary to utilizing river water intake for the proposed project.

2.3 INTERNATIONAL TREATIES AND CONVENTION

Myanmar has also committed to the following international agreements and protocols on environmental, social, safety, and occupational issues, as shown in Table.

Table 2.2 International Environmental Convention/Protocol/Agreement

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)
2	United Nations Framework Convention on Climate Change, New York, 1992 (UNFCCC)	25-11-1994 (Ratification)
3	The Kyoto Protocol (international agreement linked to the UNFCCC), Kyoto, 1997	13-08-2003 (Ratification)
4	Convention on Biological Diversity, Rio de Janeiro, 1992	25-11-1994 (Ratification)
5	The Paris Agreement, Paris, 2015	19-09-2017 (Ratification)
6	International Tropical Timber Agreement (ITTA), Geneva, 1994	31-1-1996 (Rectification)
7	Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985	24-11-1993 (Rectification)
8	Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987	24-11-1993 (Rectification)
9	London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London, 1990	24-11-1993 (Rectification)
10	The Convention for the Protection of the World Culture and Natural Heritage, Paris, 1972	29-4-1994 (Acceptance)

11	Agreement on the Networks of Aquaculture Centers in Asia and the Pacific, Bangkok, 1988	22-5-1990 (Accession)
12	South East Asia nuclear weapon Free Zone Treaty, Bangkok, 1995	16-7-1996 (Rectification)
13	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)
14	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)
15	ASEAN Agreement on Transboundary Haze Pollution	13-3-2003 (Rectification)
16	Kyoto Protocol to the Convention on Climate Change, Kyoto, 1997	13-8-2003 (Accession)
17	Stockholm Convention on Persistent Organic Pollutants (POPs), 2001	18-4-2004 (Accession)

2.4 NATIONAL ENVIRONMENTAL QUALITY (EMISSION) GUIDELINES (2015)

MONREC formulated the National Environmental Quality (Emission) Guidelines (NEQEG) in coordination with ADB in December 2015. The NEQEG 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 NEQEG, 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.

2.4.1 Air Emission

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that:

a. emissions do not result in concentrations that reach or exceed national ambient quality guidelines and standards, or in their absence current World Health Organization (WHO) Air Quality Guidelines1 for the most common pollutants as summarized below; and
b. emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards (i.e., not exceeding 25 percent of the applicable air quality standards) to allow additional, future sustainable development in the same air shed.

1 Air quality guidelines global update. 2005. World Health Organization.

Industry-specific guidelines summarized hereinafter shall be applied by all projects to ensure that air emissions conform to good industry practice.

Table 2.3 Air Emissions (General Guidelines)

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

Table 2.4 Air Emission Levels (for nickel, copper, lead, zinc and aluminium smelting and refining varying by metal type / smelting process)

Parameter	Unit	Guideline Value
Acid mists/gases	mg/Nm^{3a}	50
Ammonia	mg/Nm^3	5
Arsine	mg/Nm^3	0.5
Carbon monoxide and carbonyls	mg/Nm^3	5
Chlorine	mg/Nm^3	0.5
Dioxins	$ng\ TEQ^b/m^3$	0.1-0.5
Dust	mg/Nm^3	1-5
Hydrogen chloride	mg/Nm^3	5
Hydrogen fluoride	mg/Nm^3	0.5
Mercury	mg/Nm^3	0.02
Nitrogen oxides	mg/Nm^3	100-300
Polyfluorinated hydrocarbons	anode effects/ cell /day	0.1
Sulfur dioxide	mg/Nm^3	< 50-200
Total fluoride	mg/Nm^3	0.8
Total organic carbon	mg/Nm^3	5-50
Volatile organic compounds/solvents	mg/Nm^3	5-15

[a] Milligrams per normal cubic meter at specified temperature and pressure
[b] Toxicity equivalence factor

2.4.2 Water Quality

2.4.3 Industrial Specific Guidelines for Base Metal Smelting and Refining

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 2.5 Effluent Levels for nickel, copper, lead, zinc and aluminium 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

2.4.4 National Drinking Water Quality Standards, Ministry of Health (MOH), 2019

The project will comply with the National Drinking Water Quality Standards, as stated below. Drinking water standards include a wide range of parameters that involve microbiological, physical, and chemical factors.

Table 2.6 National Drinking Water Quality Standards

Parameters	Units of Measurement	Value
Color	TCU (True Color Unit)	15
Turbidity	NTU Nephelometric Turbidity Units	5
Cadmium	mg/L	0.003
Chromium	mg/L	0.05

Cyanide	mg/L	0.07
Fluoride	mg/L	1.5
Lead	mg/L	0.01
Nickel	mg/L	0.07
Nitrate	mg/L	50
Nitrite	mg/L	3
Copper	mg/L	2
Manganese	mg/L	0.4
Ammonia Nitrogen	mg/L	1.5
Chloride	mg/L	250
Hardness	mg/L as $CaCO_3$	500
Iron	mg/L	1
pH		6.5 to 8.5
Sulphate	mg/L	250
Total Dissolved Solid (TDS)	mg/L	1000
Zinc	mg/L	3

2.4.5 Noise Level

In NEQEG, the noise level is set as shown in below table 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 2.7 Target Noise Level Set in NEQEG

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

Source: NEQG (December 2015)

2.5 IFC EHS GUIDELINES

The EHS Guidelines by International Finance Cooperation (IFC)2 are technical reference

2 IFC, Environmental, Health, and Safety (EHS) Guidelines, General EHS Guidelines: Community Health and Safety (April 30.20070)

documents with general and industry–specific examples of Good International Industry practice (GIIP), as defined in IFC's Performance Standard 3: Resources Efficiency and Pollution Prevention. The EHS Guidelines contain the performance levels and measures that are normally acceptable to IFC, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology.

There are two kinds of guidelines, General EHS Guidelines and Industry Sector Guidelines. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors in the following section: (1) Environment, (2) Occupational Health and Safety, (3) Community Health and Safety and (4) Construction and Decommissioning. The contents of the Community Health and Safety section is described below.

Contents	Brief Description
Water Quality and Availability	Drinking water sources should at all times be protected so that they meet or exceed applicable national acceptability standards or in their absence the current edition of WHO Guidelines for Drinking-Water Quality. Project activities should not compromise the availability of water for personal hygiene needs and should take account of potential future increases in demand. The overall target should be the availability of 100 liters per person per day.
Structural Safety of Project Infrastructure	Reduction of potential hazards is best accomplished during the design phase when the structural design, layout and site modifications can be adapted more easily. The following issues should be considered and incorporated as appropriate into the planning, siting, and design phases of a project (1) inclusion of buffer strips or other methods of physical separation around project sites to protect the public from major hazards associated with hazardous materials incidents or process failure (2) incorporation of siting and safety engineering criteria to prevent failures due to natural risks posed by earthquakes, tsunamis, wind, flooding, landslides and fire, and (3) application of locally regulated or internationally recognized building codes, standards and regulations, and mitigation measures.
Traffic Safety	Traffic safety should be promoted by all project personnel during displacement to and from the workplace, and during operation of project equipment on private or public roads. Prevention and control of traffic related injuries and fatalities should include the adoption of safety measures that are protective of project workers and of road users, including those who are most vulnerable to road traffic accidents.
Transport of Hazardous Materials	Projects should have procedures in place that ensure compliance with local laws and international requirements applicable to the transport of hazardous materials.
Disease Prevention	Recommended interventions against the communicable diseases at the

	project level include (1) providing surveillance and active screening and treatment of workers, (2) preventing illness among workers in local communities by undertaking health awareness and education initiatives, training health workers in disease treatment and conducting immunization programs for workers, and (3) providing treatment through standard case management in on-site or community health care facilities.
Emergency preparedness and Response	All projects should have an Emergency preparedness and Response Plan that is commensurate with the risks of the facility and that includes the following basic elements: (1) Administration (policy, purpose, distribution, definitions, etc.) (2) Organization of emergency areas (command centers, medical stations, etc. (3) Roles and responsibilities, (4) Communication systems, (5) Emergency response procedures, (6) Emergency resources, (7) Training and updating, (8) Checklists (role and action list and equipment checklist), and (9) Business Continuity and Contingency.

2.6 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:

- Occupational safety and health, compensation, hours or work and benefits
- Regional development
- Benefits for workers
- 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.

2.6.1 Environmental Protection

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 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 odor, dust and other toxic gas.

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.

2.7 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.

2.7.1 Our Products

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.

2.7.2 Our Packaging

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.

2.7.3 Our Facilities

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.

2.7.4 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.

2.8 INSTITUTIONAL FRAMEWORKS

A number of institutions will have a regulatory and monitoring mandate directly or indirectly under their respective pieces of legislation. However, the following will be the key institutions whose requirements will need to be complied with.

- Ministry of Natural Resources and Environmental Conservation
- Ministry of Industry
- Directorate of Industrial Supervision and Inspection
- Environmental Conservation Department
- General Administration Department

Yangon Metal Industry Company Limited (YMI) takes on the responsibility for developing, reviewing, updating, and properly implementing the environmental management plan during construction, operation and decommissioning phases.

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 Hmawbi 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-1**) 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 smelters which sets an example of sustainable lead recycling, YMI Co., Ltd. sets the following objectives.

- To deliver greater value through sustainable practices, maintaining operations that are in accordance with international standards for lead recovery and minimizing environmental impacts;
- 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
- 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 3-1.**

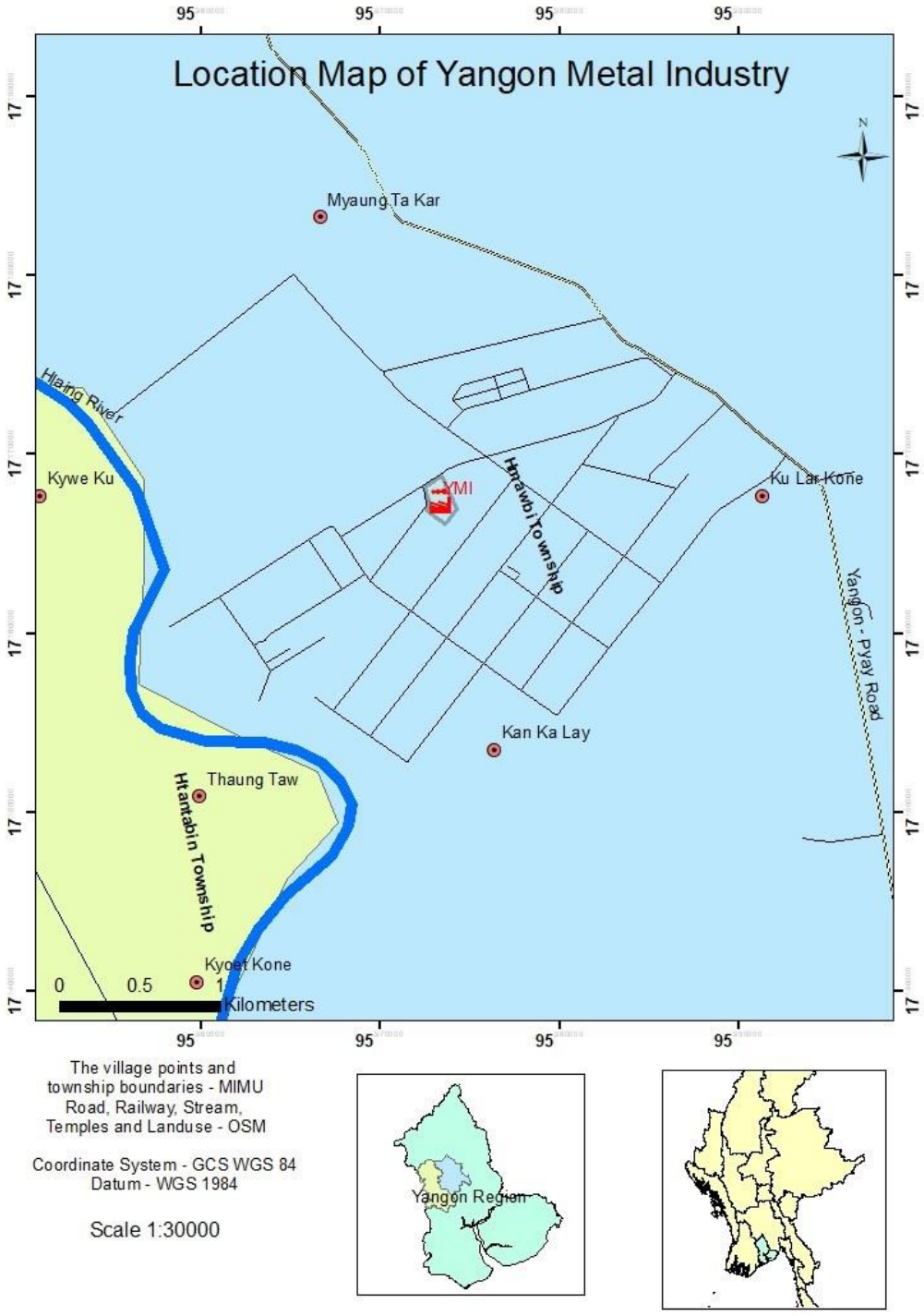


Figure 3-1 Location of Myaung Ta Kar Industrial Zone in Hmawbi Township

3.4 PROJECT LAYOUT

The buildings are constructed in the project area. Each building area is described in **Figure 3-2**.

Table 3.1 Project Building List

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 3-2 Lead Smelting and Refinery Factory, Yangon Metal Industry Co., Ltd.

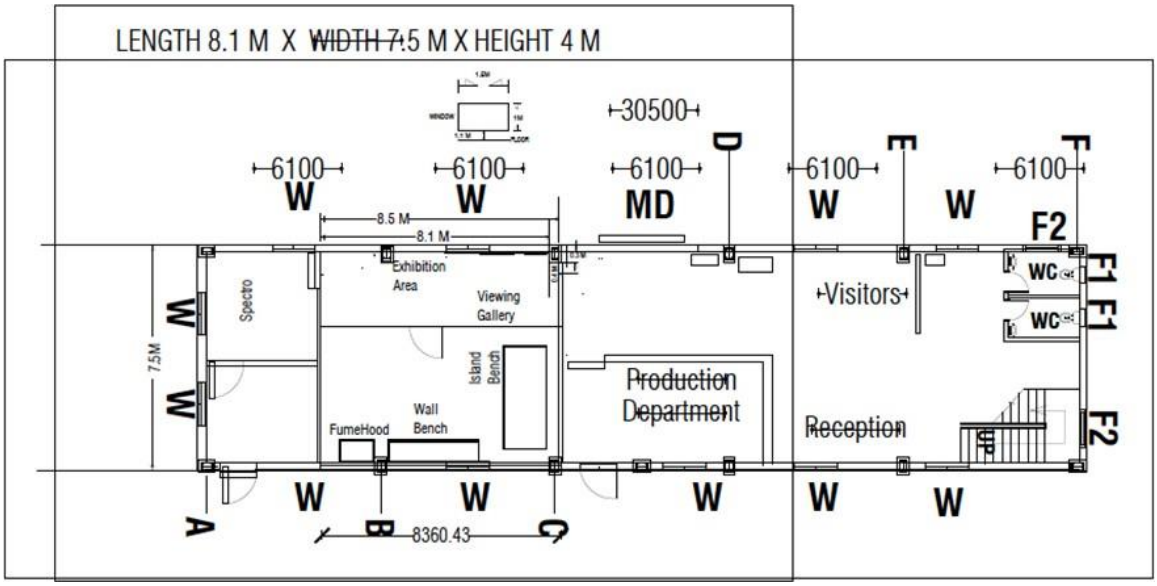


Figure 3-3 Layout Plan

3.5 MACHINERY FACILITIES

The following images describe used machines for lead recycling process.

Figure 3-4 Breaking Machine (B75 Breaker) (Country of Origin: French)

Figure 3-5 Chain Scrap Conveyor

Figure 3-6 Rotary Smelting Furnace (Front View) (Country of Origin: Korea)

Figure 3-7 Locomotive Cart & 60 Tons Kettle

Figure 3-8 50 Tons Kettles

Figure 3-9 Casting Machine

Figure 3-10 Packing Machine

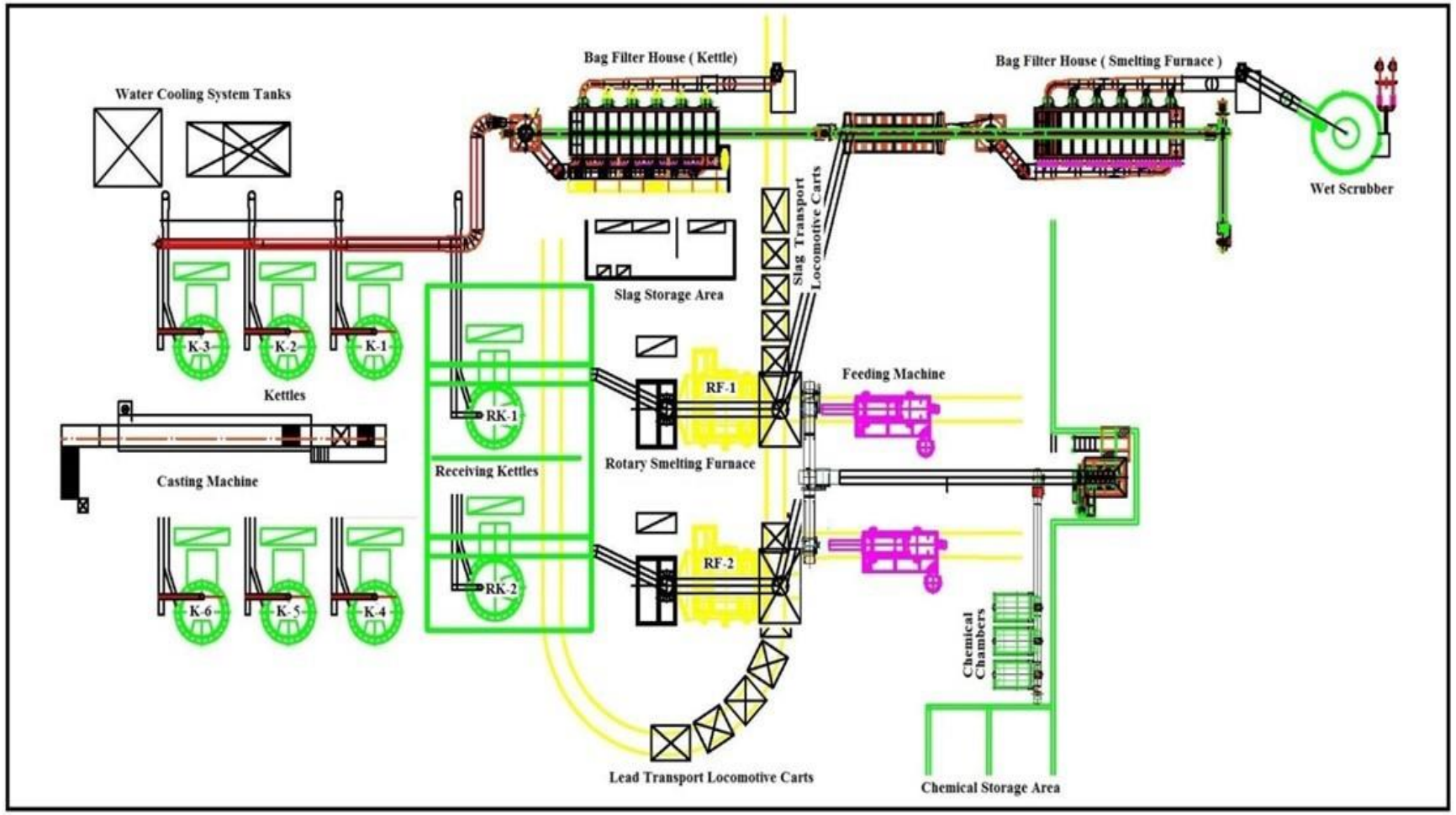


Figure 3-11 Machinery Layout Plan

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 3-12 Raw Materials (Heavy Metallic, Fine Metallic and Lead Plates)

Figure 3-13 Raw Materials from the Local Market

Figure 3-14 Battery Materials Collection and Battery Breaking Section at the Factory Compound

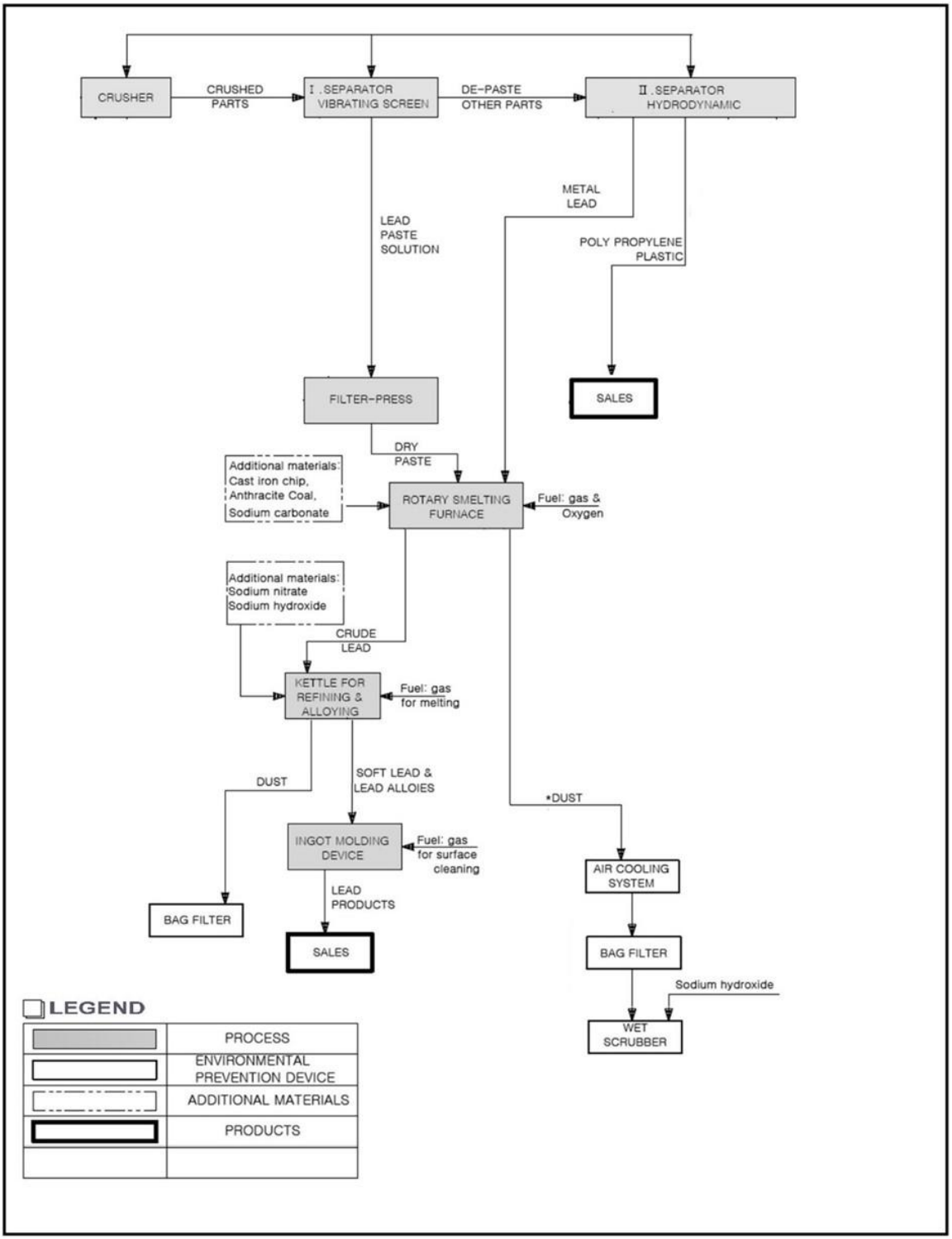


Figure 3-15 Process Flow Chart (Source: YMI Co., Ltd.)

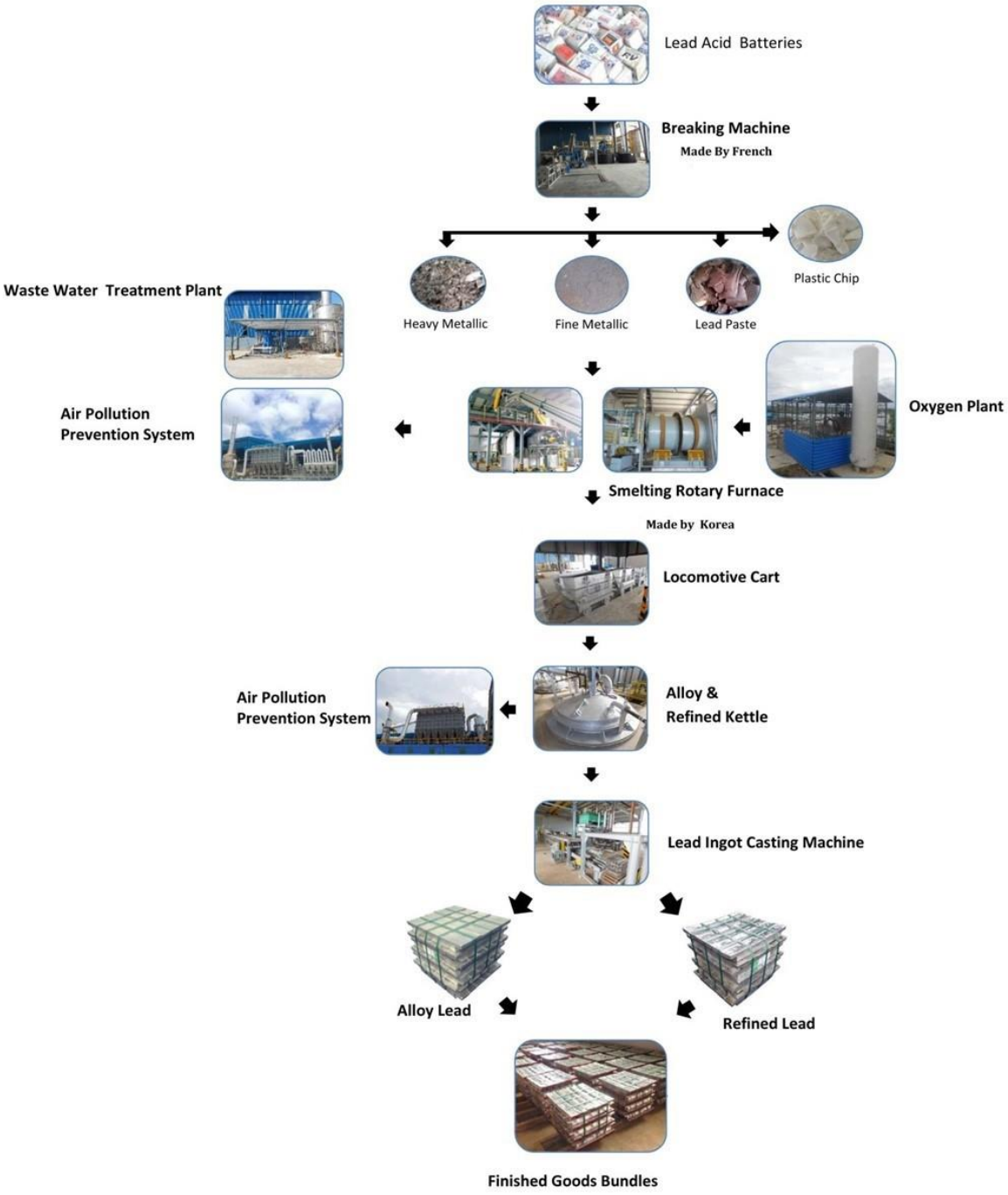


Figure 3-16 Overall Process Chart (Source: YMI Co., Ltd.)

Figure 3-17 Pure Lead Ingot, Antimony Lead Ingot and Calcium Lead Ingot

Table 3.2 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 3-18 Packing Process

Figure 3-19 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 3.3 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 (5) forklifts in project site with the following details.

Table 3.4 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.
- Anthracite 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 3-20**.

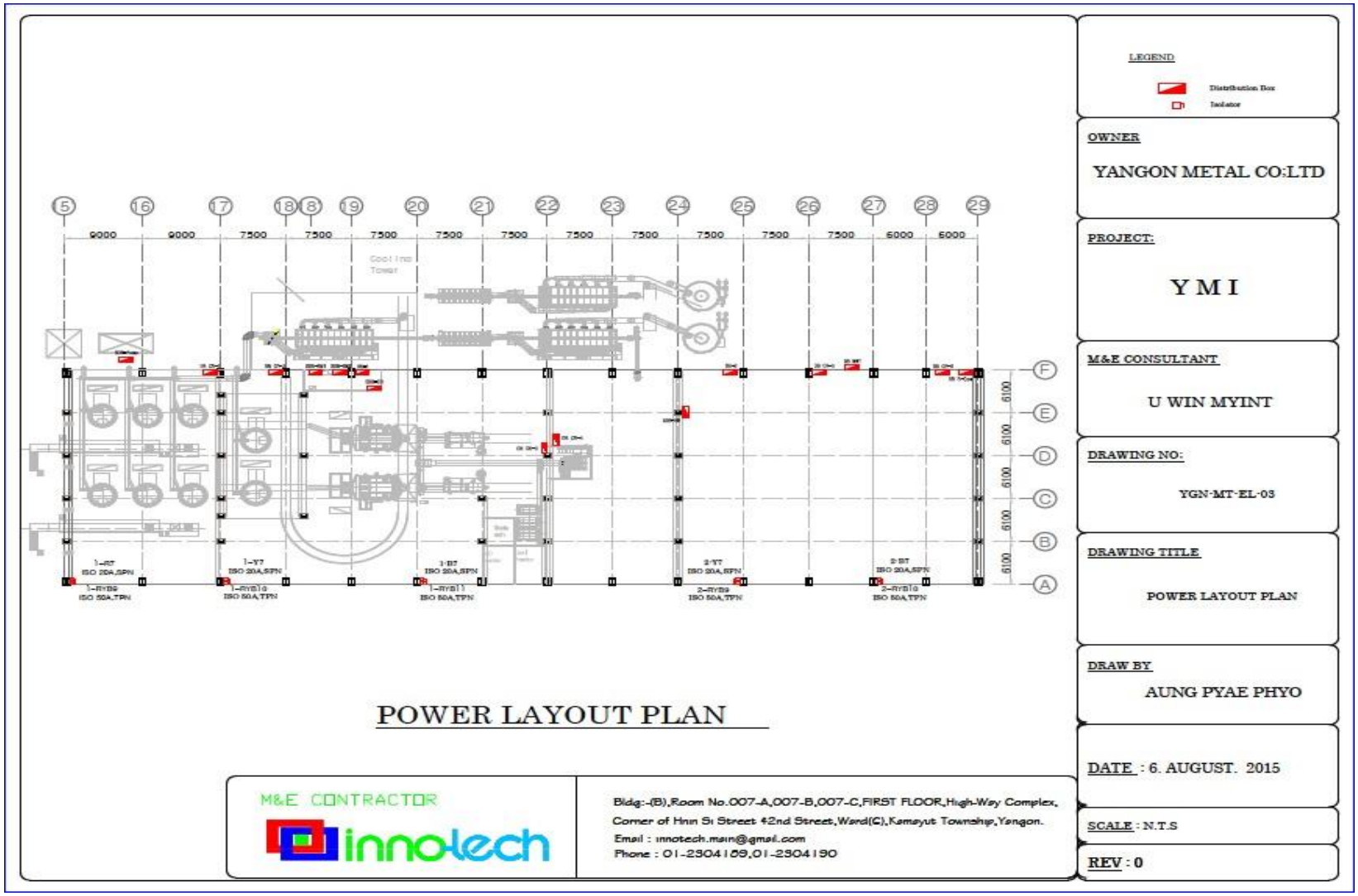


Figure 3-20 Power Layout Plan

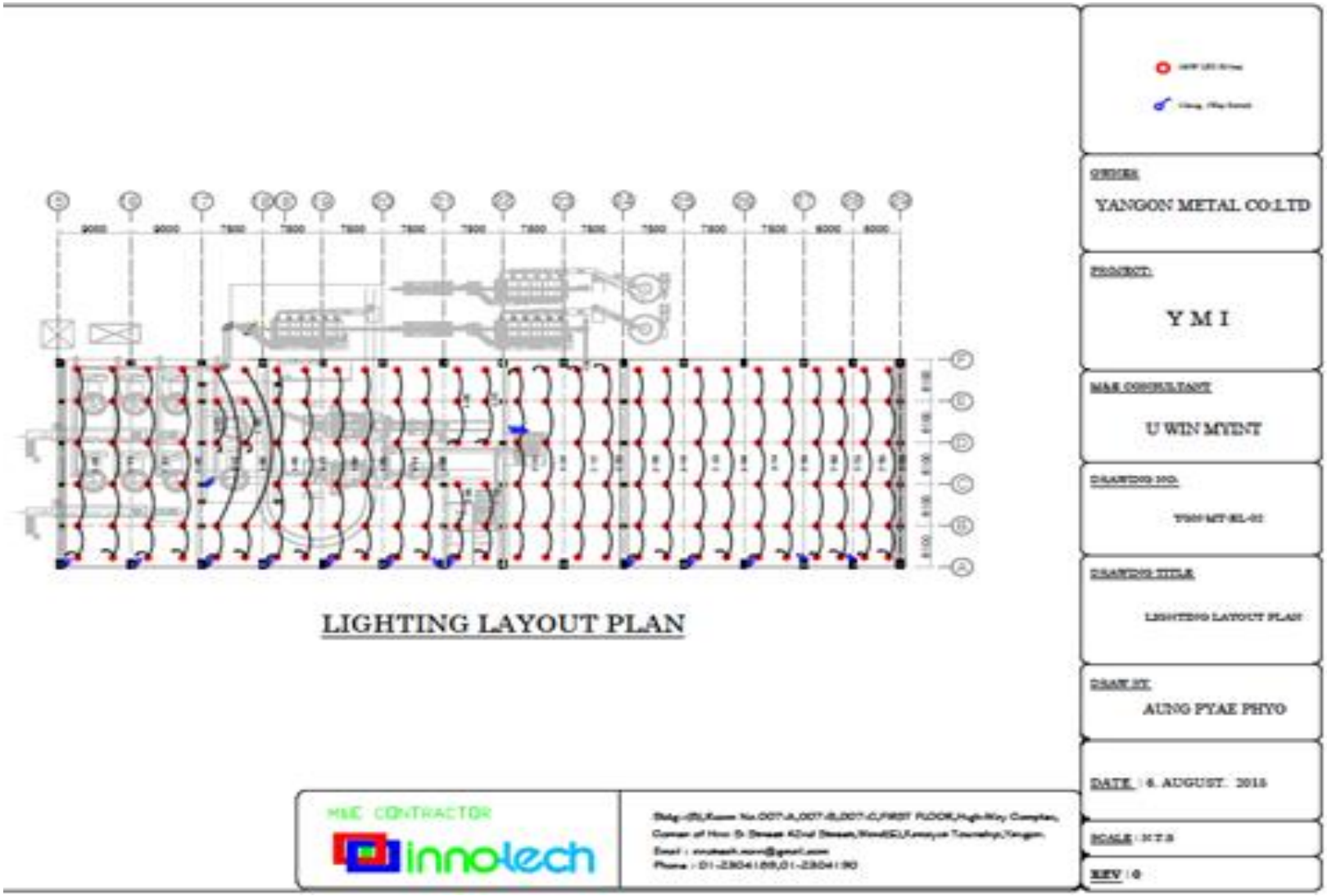
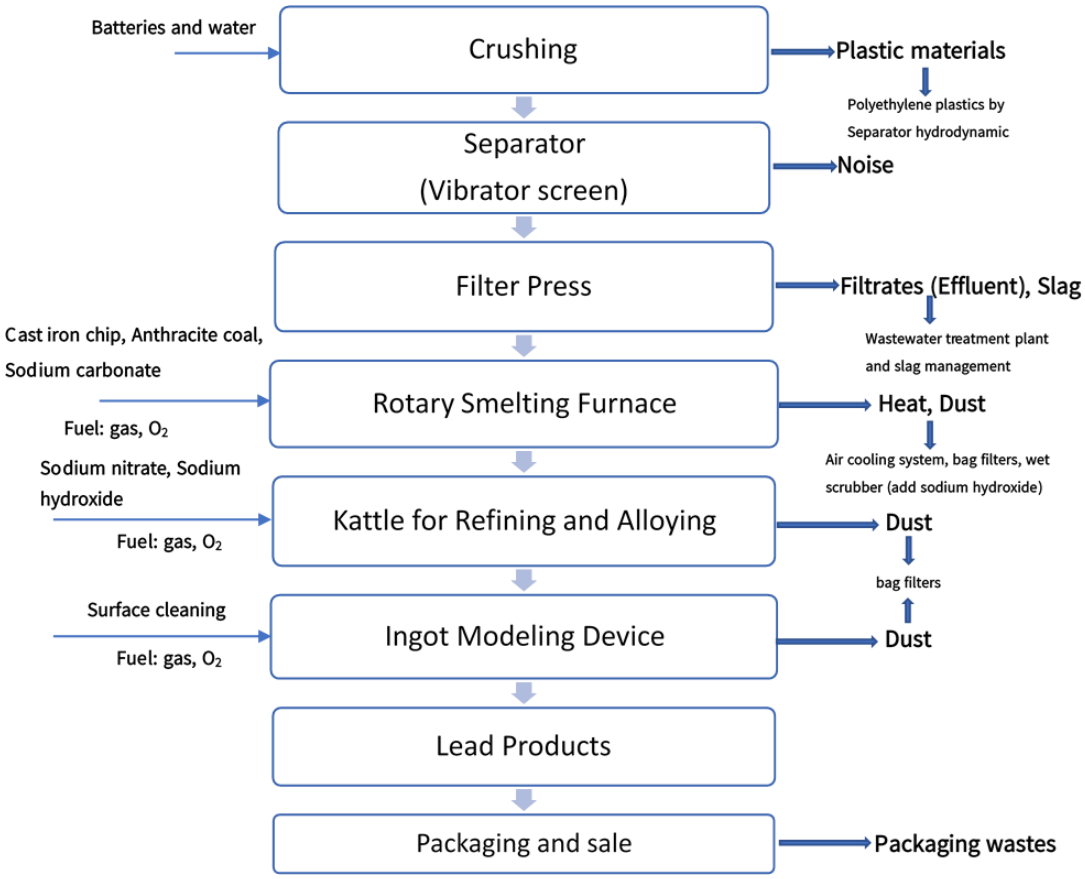


Figure 3-21 Lighting Layout Plan

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 3-22 Rotary Furnace & Dust Line

Figure 3-23 Air Pollution Preventing System

Figure 3-24 Exhausted (Dust & Gas) Setting & Cooling Chamber

Figure 3-25 Filtering Bag House for Lead Dust of Rotary Smelter

Figure 3-26 Blowing Fan and Wet Scrubber

Figure 3-27 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. Noise level of the Cooling Tower is maximum 90 dB (A) at 1.5 m, 55 dB (A) at 15 m.

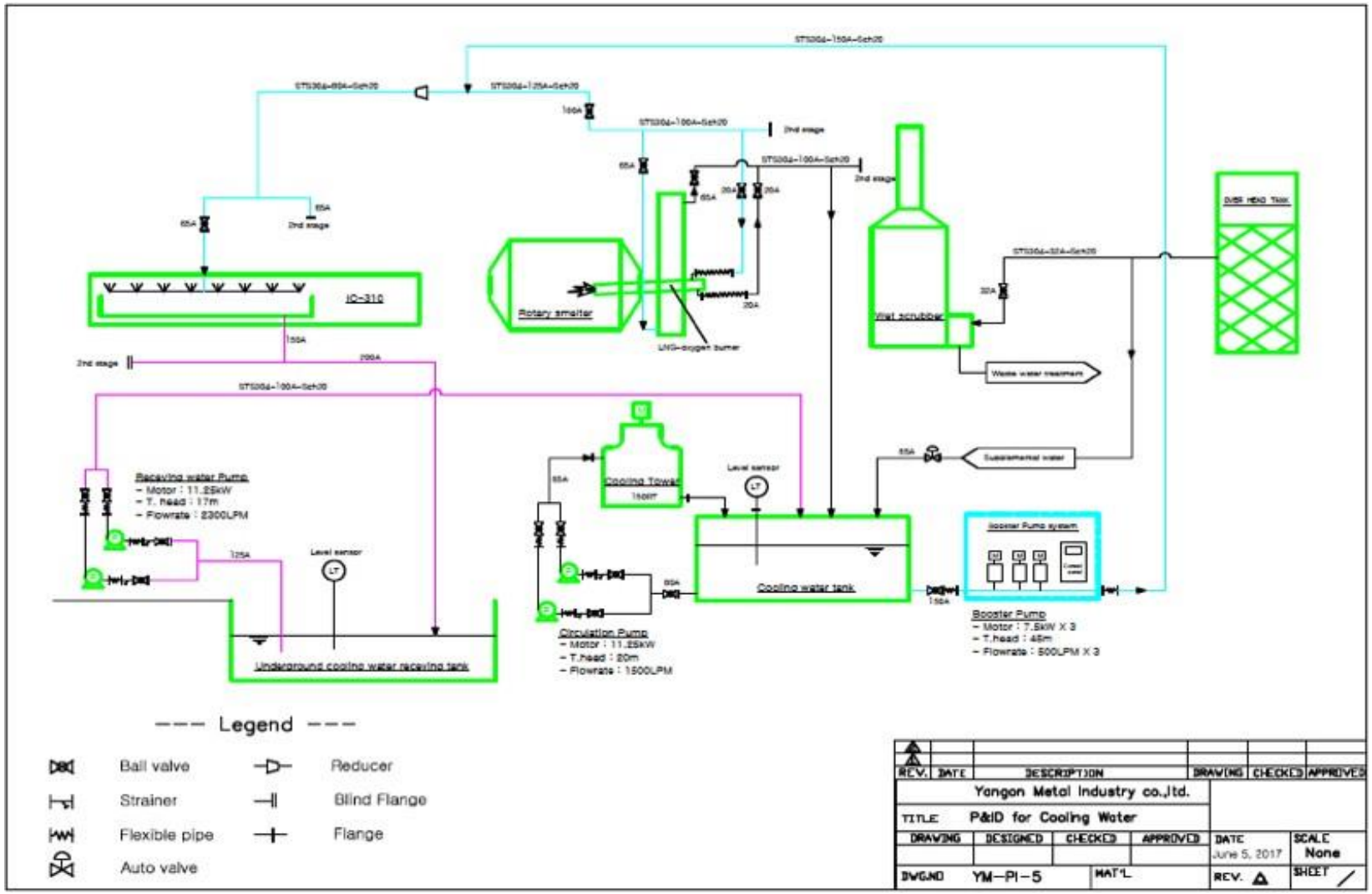


Figure 3-28 Cooling Tower

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 pond.

- 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 is pumped into the Tank No.3 through the filter press.
- Step 5: The filtrated water from Tank No.3 is 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 is reused in the Breaking Section and some are evaporated through the Evaporator.

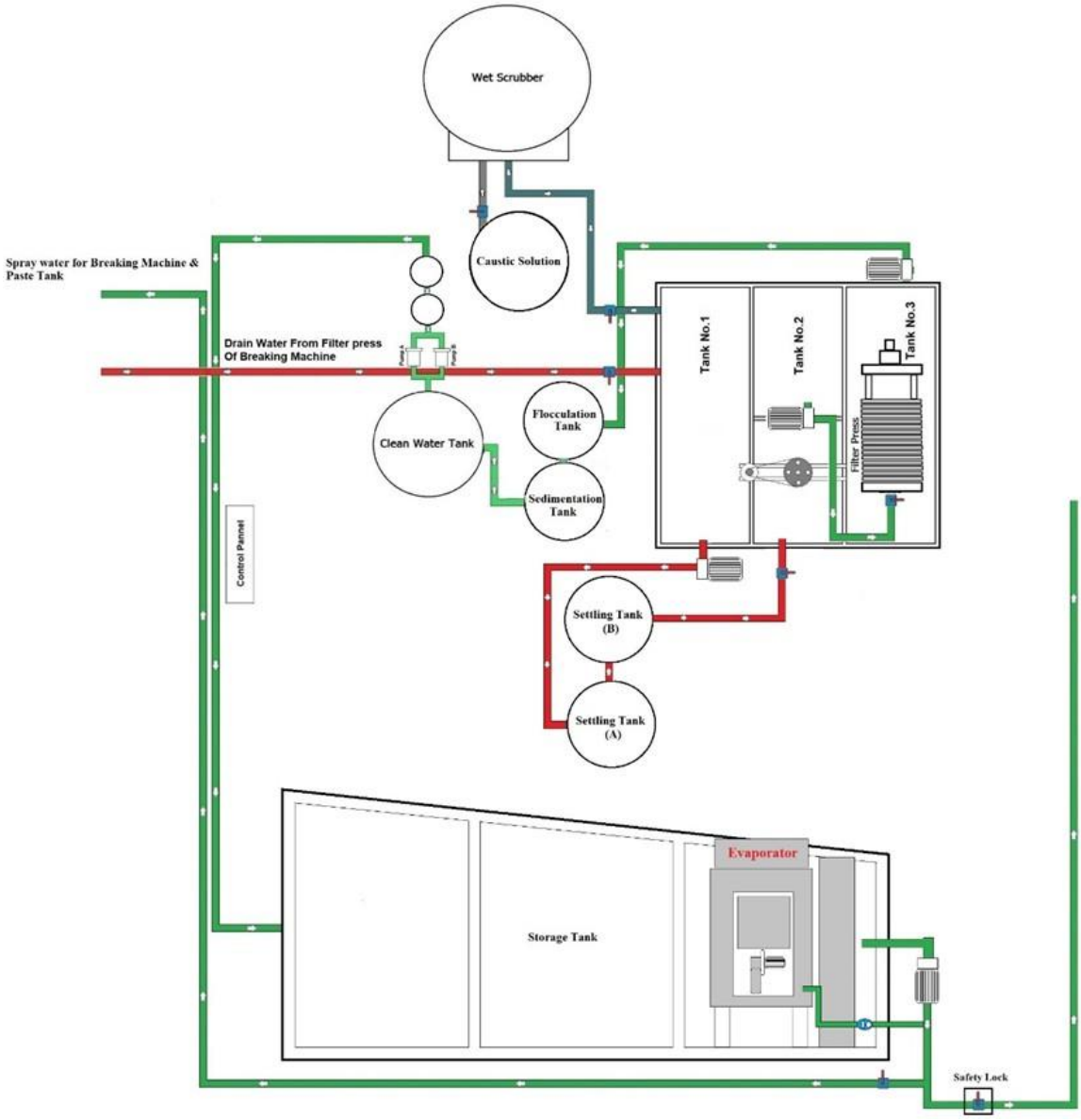


Figure 3-29 Industrial Wastewater Treatment (Wastewater Treatment Plant)

Figure 3-30 Thermal Evaporator

List of chemicals used in wastewater treatment process are shown in below Table.

Table 3.5 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 3-31 Waste Bins

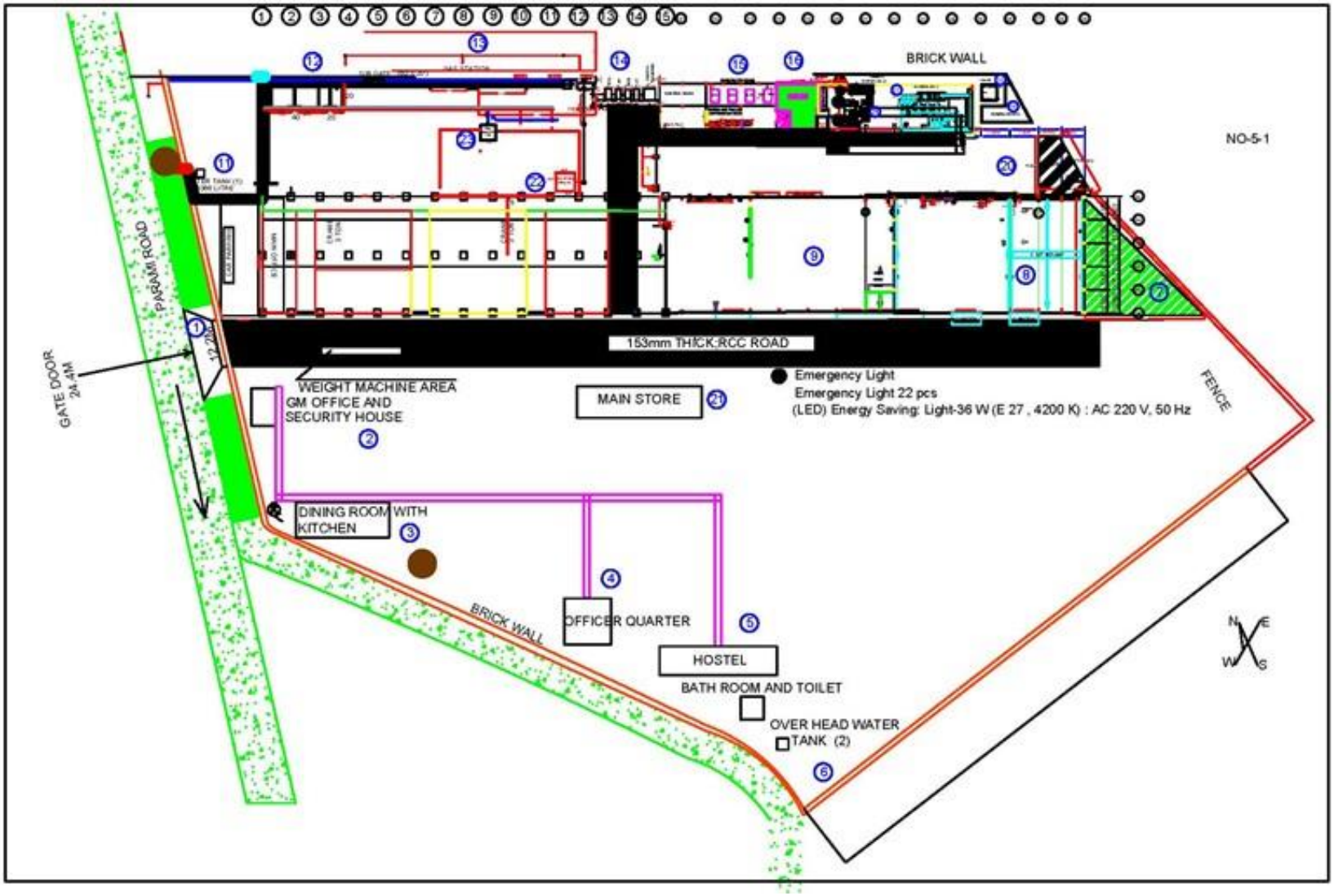


Figure 3-32 Factory Drainage Pipe Plan of Yangon Metal Industry Co., Ltd.

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 3.6 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 3.7**.

Table 3.7 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 Project Schedule is shown in **Table 3.8**.

Table 3.8 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 3.9 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 3.10.**

Table 3.10 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

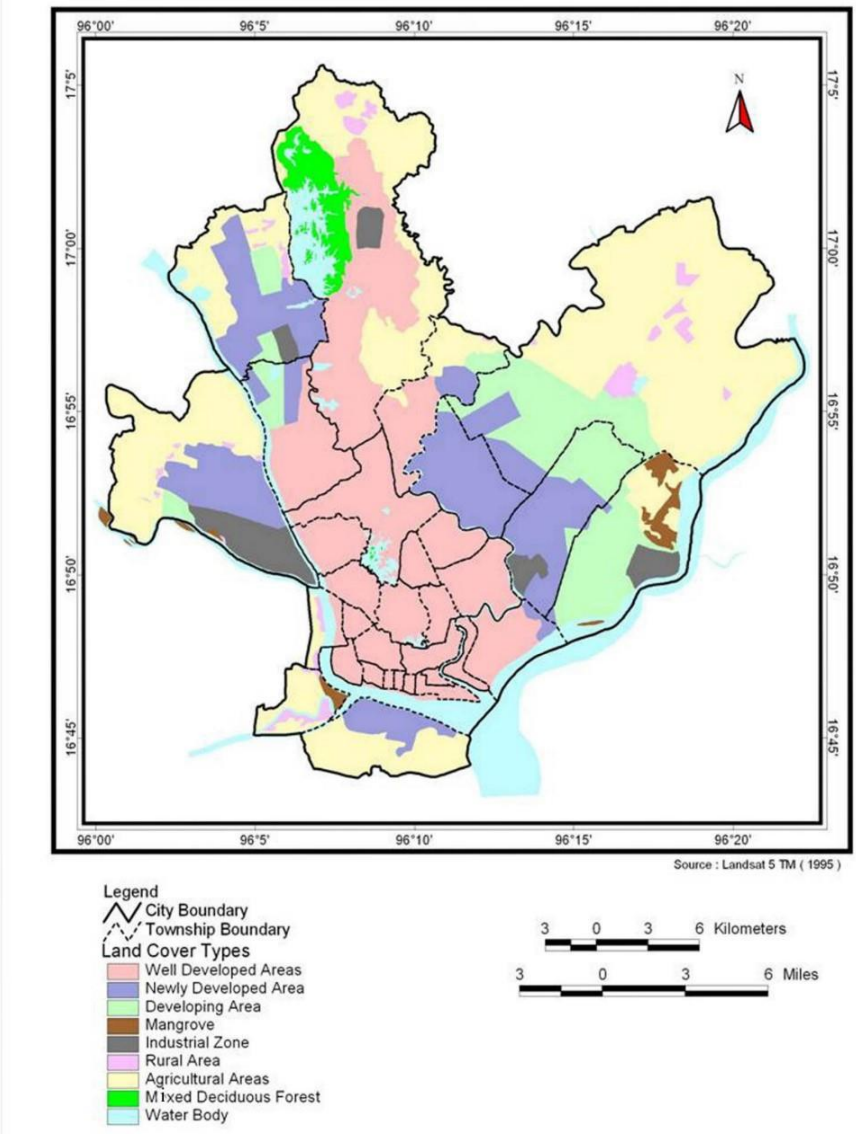
From the above comparison, this project contributes to more positive impact on social, environmental and economic points.

CHAPTER 4 DESCRIPTION OF THE SURROUNDING ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 SETTING THE STUDY LIMITS

Myaung Ta Kar Industrial Zone is located in Hmawbi 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 Land Cover Map of Yangon Region

4.1.1 Setting the Area of Influence (AoI)

The proposed project area, Yangon Metal Industry (YMI) is within Myaung Ta Kar Industrial Zone in Hmawbi township, a township located northwest of the city of Yangon. Hmawbi Township is home to the Myaung Takar 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.

4.1.2 Spatial Boundary

The AoI for a particular resource or receptor may vary depending on the nature of the change caused by the project activities and the type of effect being considered, but in each case, it is defined to include all the areas within which it is likely the impacts could result. With the AoI established, environmental and social components will be studied in the potential affected area by the project and the area within 1 km radius of the project. Depend on the expected significant impacts, if necessary, study area will be expanded including environmental and social components which can be affected significantly by the project.

4.1.3 Temporal Boundary

In the operation and decommissioning phase, the environmental impacts are expected to occur on the air quality, water quality, noise, waste and biodiversity due to construction and operation of the project. The socio-economic positive changes are expected to occur during the construction and operational period. Thus, the temporal boundaries will be considered into the operation and decommissioning phases to examine their impact on the environment.

4.2 GEOGRAPHIC AND TOPOGRAPHIC CONDITIONS

Myaung Ta Kar Industrial Zone is located western part of Hmawbi 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 Ayeyarwady Delta Area and contact with foot hill of Bago Yoma. Hlaing River is a part of Ayeyarwady 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 Hmawbi, 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 Ayeyarwady Delta, the topographic feature is relatively flat. However, there is some low relief highs are consisted in east part of Industry Zone. Especially, Hmawbi 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 Hmawbi 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 degrees.

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 illustrate the topographic map of Hmawbi and Htantabin Township and the slope gradient map is shown in **Figure 4-3**. These maps are generated from the Digital Elevation Model of GMTED – DEM.

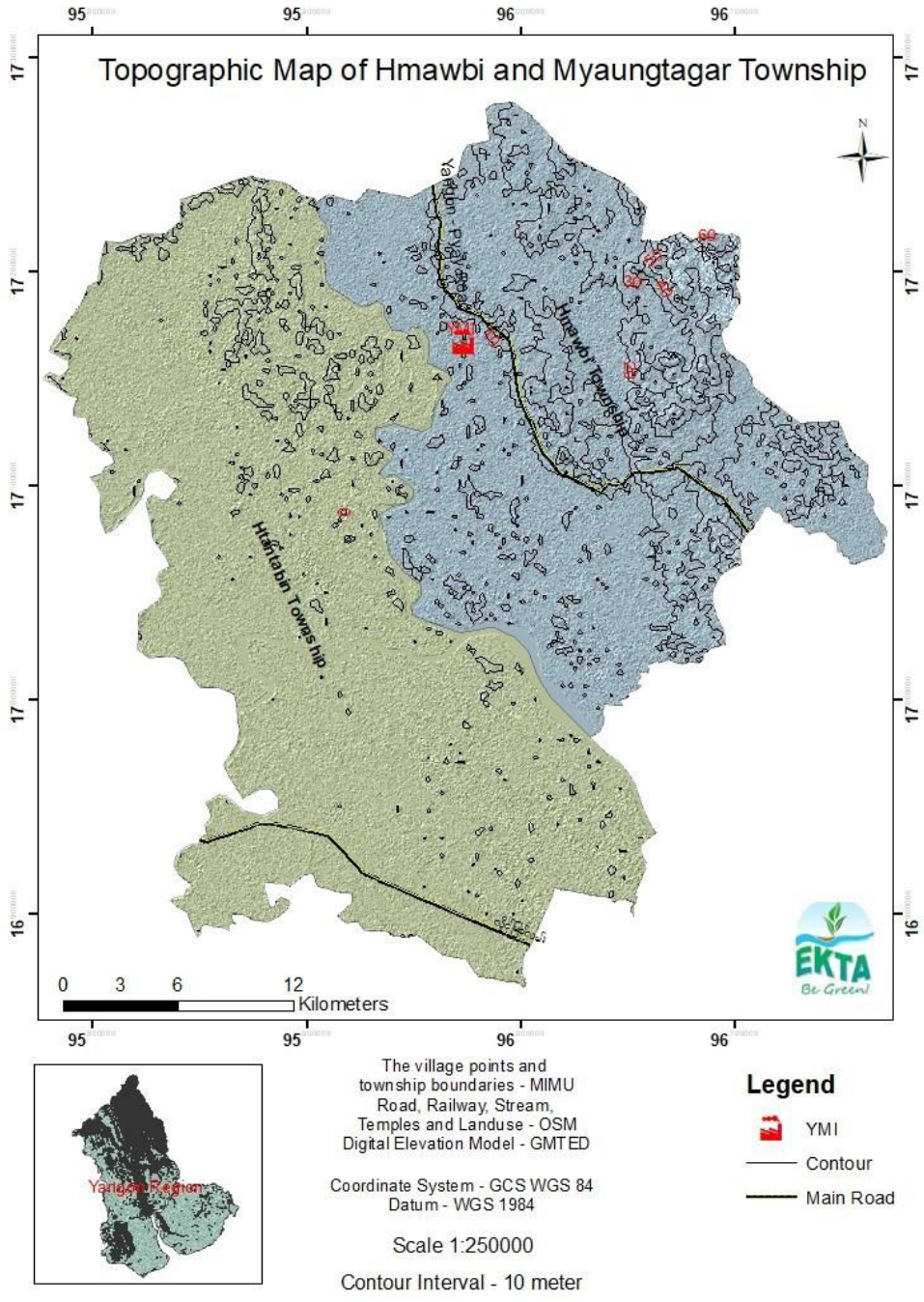


Figure 4-2 Topographic Map of Myaung Ta Kar Industrial Zone and its surrounding

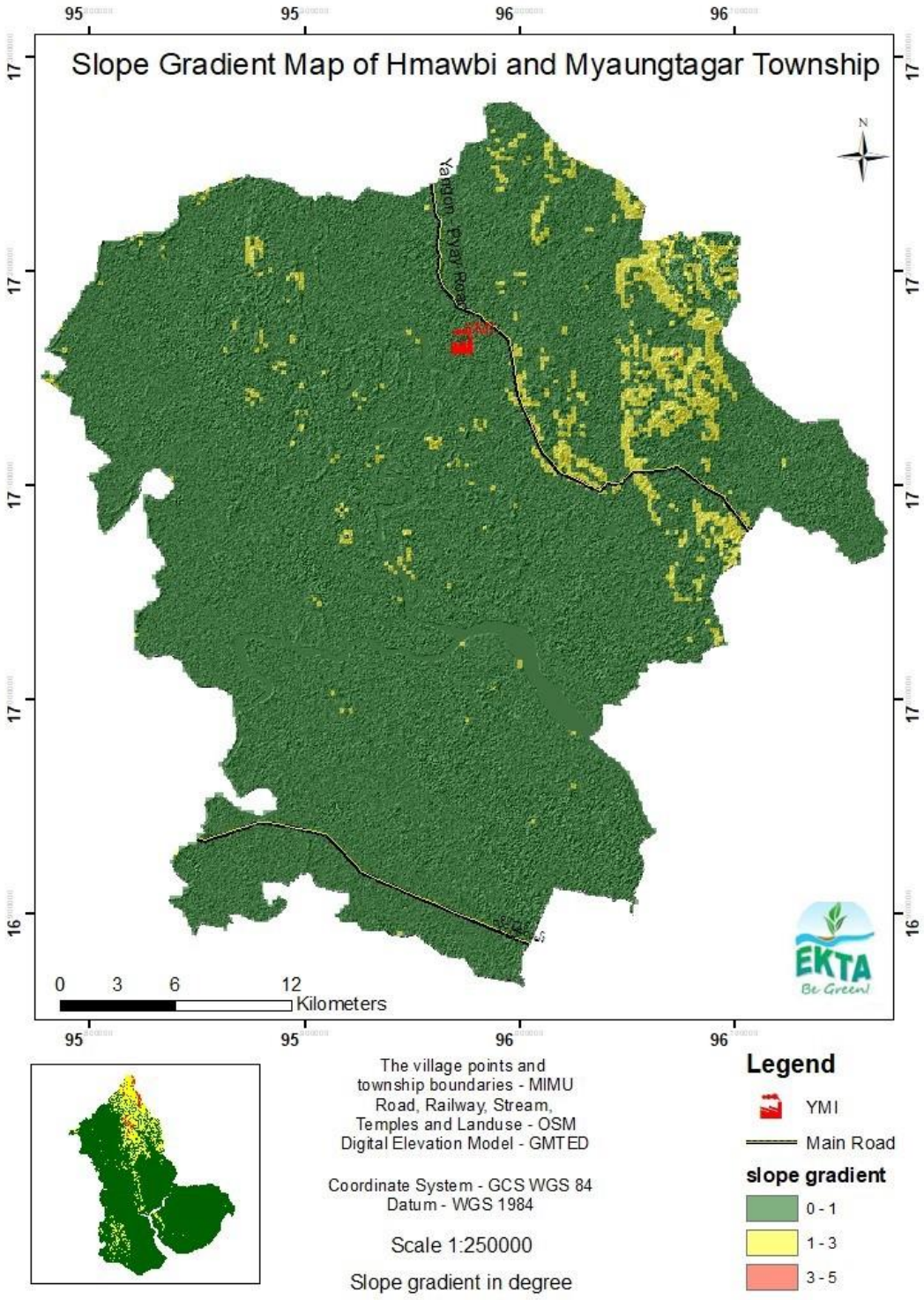


Figure 4-3 Slope Gradient Map of Myaung Ta Kar Industrial Zone and its surrounding

4.3 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 Ayeyarwady Basin at the west. Myaung Ta Kar Industrial Zone is located at the eastern part of Ayeyarwady Basin and foot of

Bago Yoma. The succession of soil and rock formation of the area is shown in **Table 4.1** and regional geological map is shown in **Figure 4-4.**

Table 4.1 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.

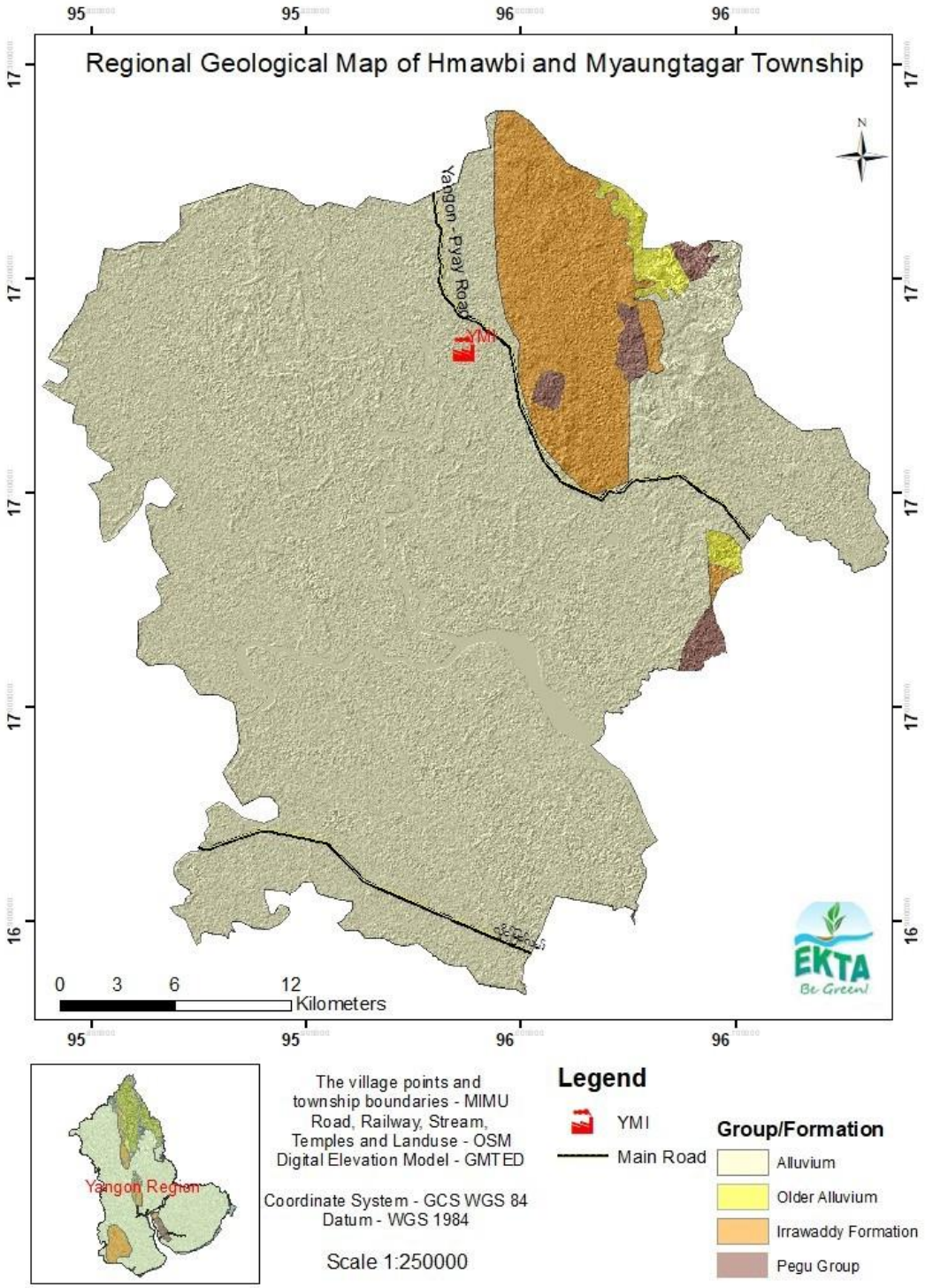


Figure 4-4 Regional geological Map of Myang Ta Kar Industrial zone and its surrounding

4.4 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.

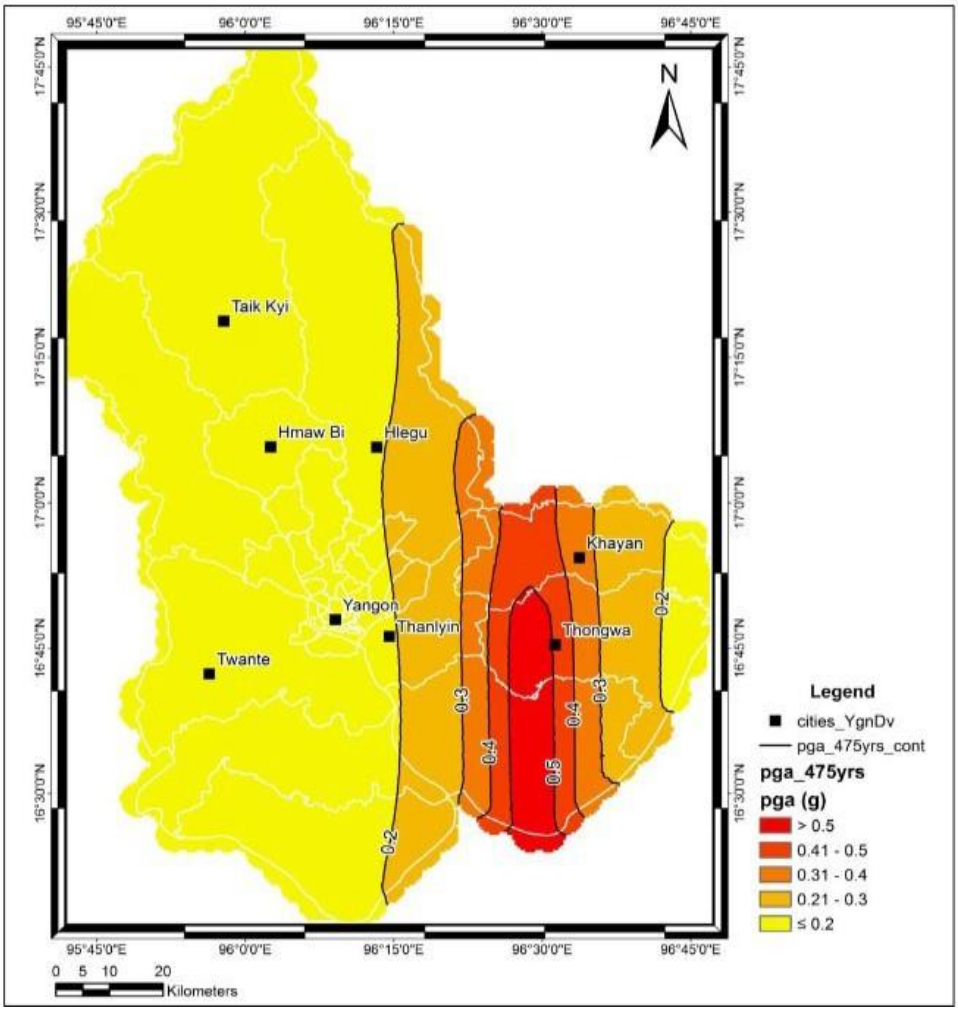
Although less in frequency, the magnitude in fairly large of another disaster is earthquake. The major earthquake distribution source, the Sagaing Fault is located 55 km east of project area. In accordance with seismic hazard map, published by Myanmar Earthquake Committee, the project area is in zone 5 and its peak ground acceleration is less than 0.2 g (see **Figure 4-5**). 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.

4.4.1 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.



Source: Myanmar Earthquake Committee

Figure 4-5 Seismic Hazard Map of Yangon Region with 10% probability of exceedance in 50 years

4.5 CLIMATE AND METEOROLOGY

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 4.2**.

Table 4.2 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 4.3** and **Table 4.4**.

Table 4.3 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 4.4 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

4.6 HYDROLOGY

Hlaing River is the main river of this region and located at west end of Myaung 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 4-6** illustrates drainage pattern of Hmawbi and Htantabin Township.

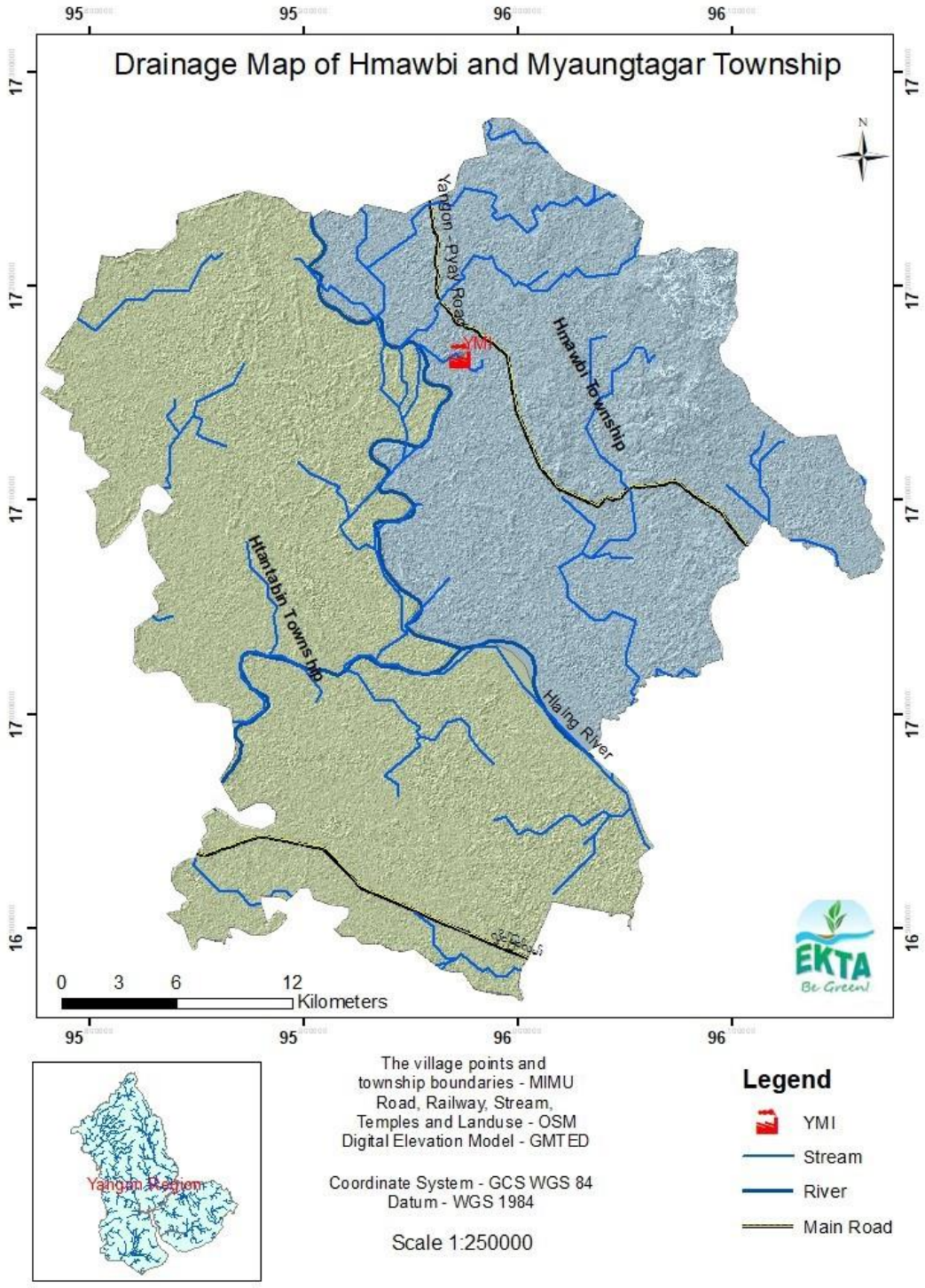


Figure 4-6 Drainage Pattern Map of Myaung Ta Kar Industry Zone and its surrounding

4.7 PROTECTED AREAS

4.7.1 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.

4.7.2 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.

4.7.2.1 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 4-7**). 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.

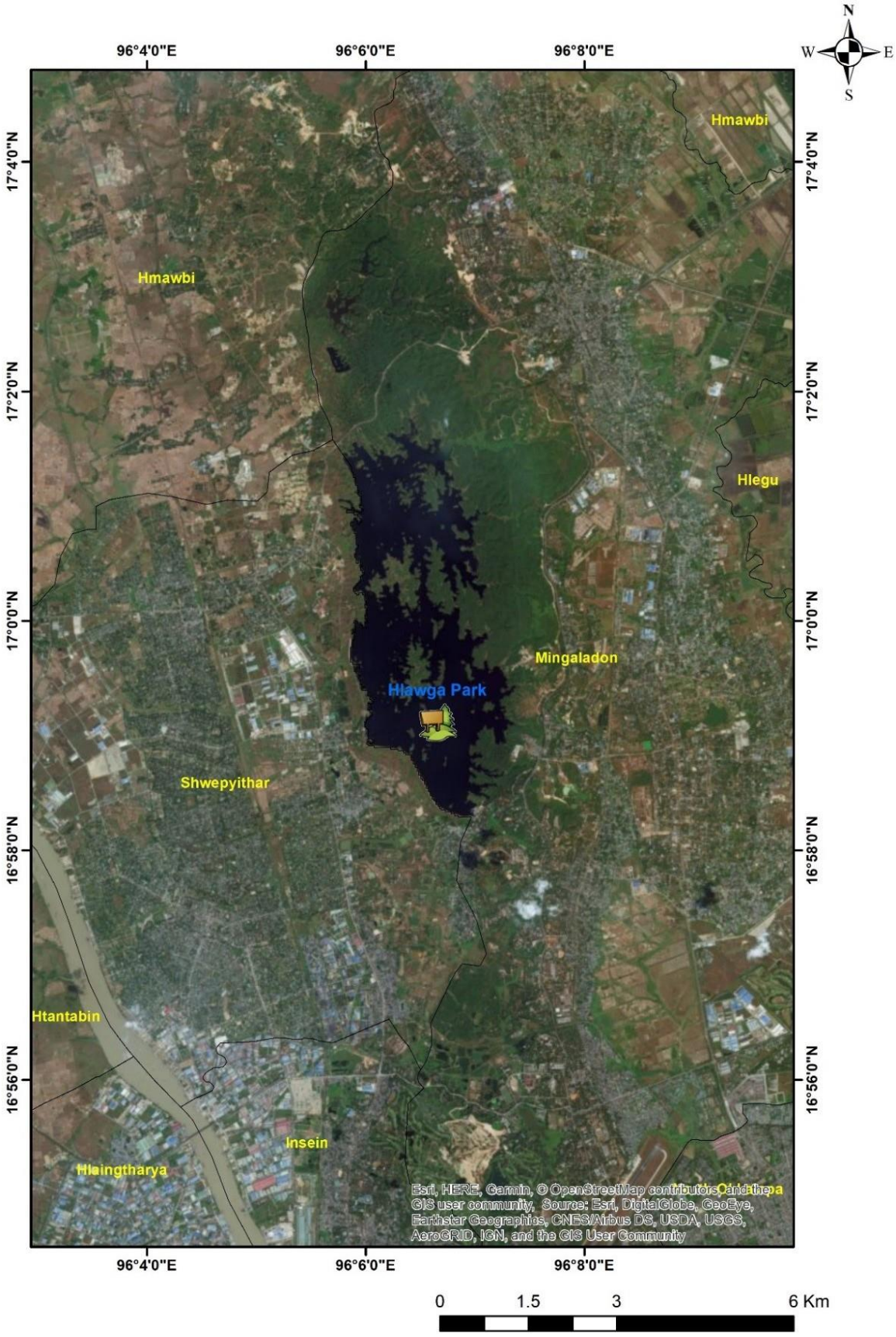


Figure 4-7 The Closest Protected Area nearby the Proposed Project

4.8 ENVIRONMENTAL BASELINE SURVEY

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 is located at the Latitude of 17°10'6.76"N and Longitude of 95°58'22.65"E.

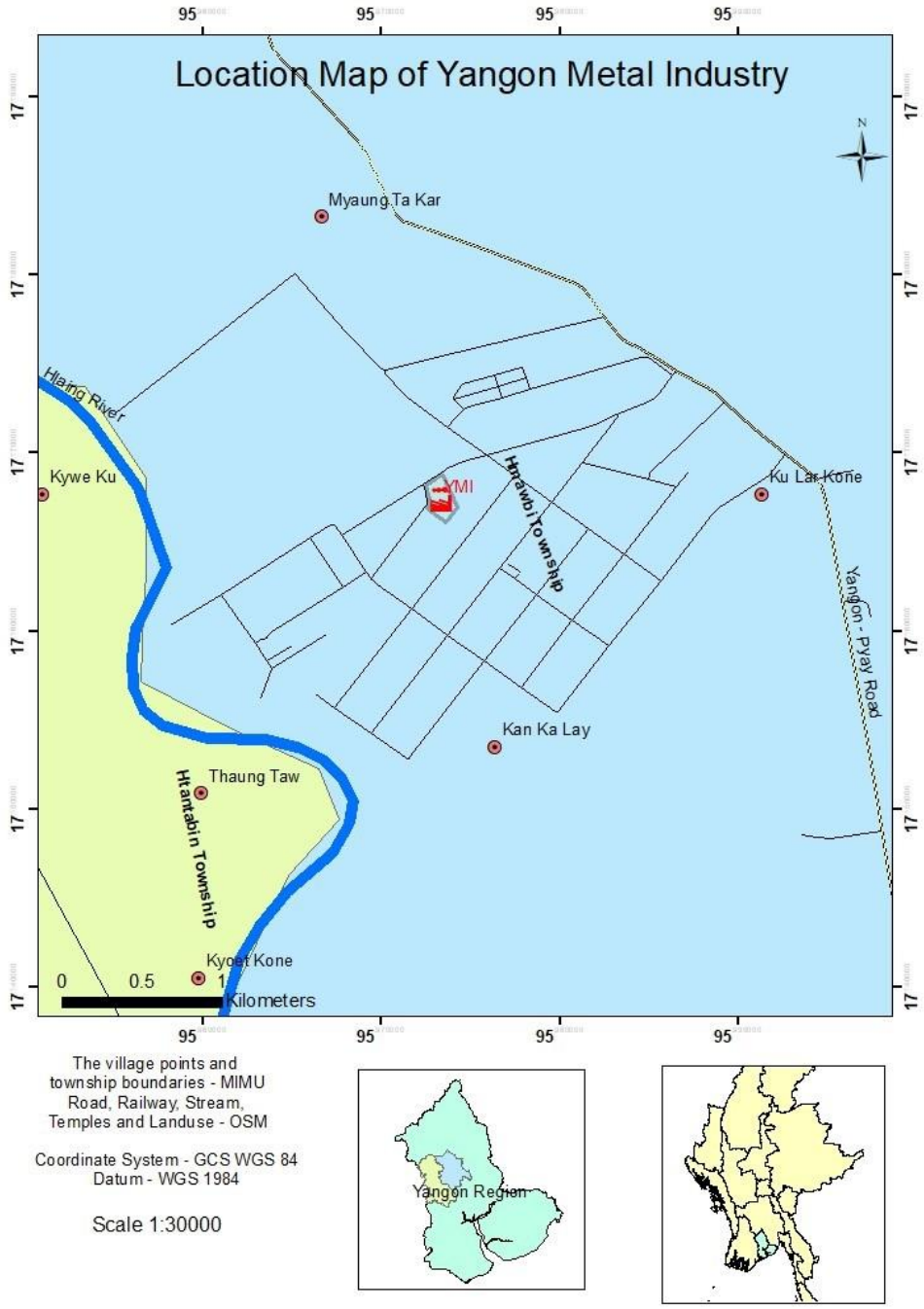


Figure 4-8 Location Map of Yangon Metal Industry

The physical environment is comprised of:

- Air Environment
- Noise & Vibration

- Water Environment
- Soil

Table 4.5 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

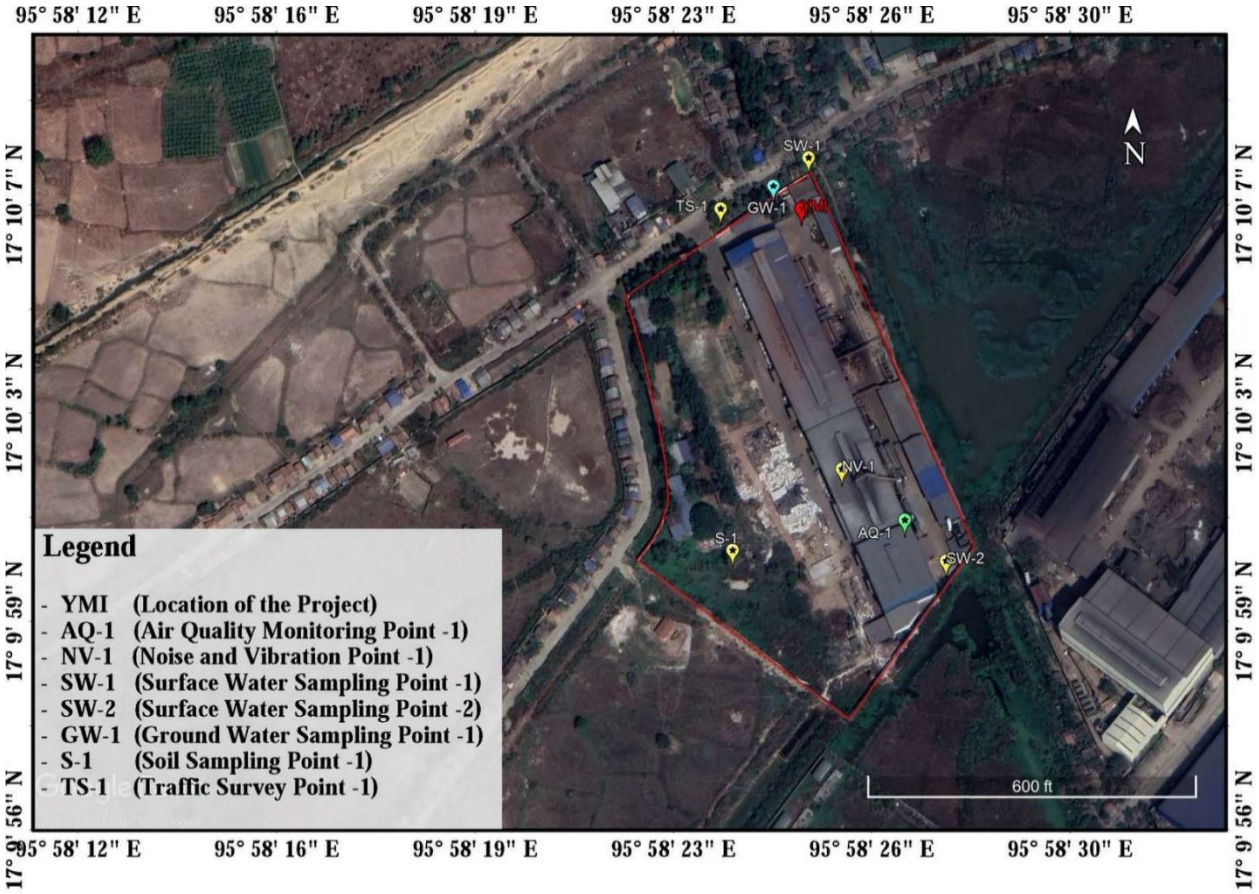


Figure 4-9 Sampling Points of Physical Environment Surveys

4.8.1 Air Quality Baseline Survey

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.

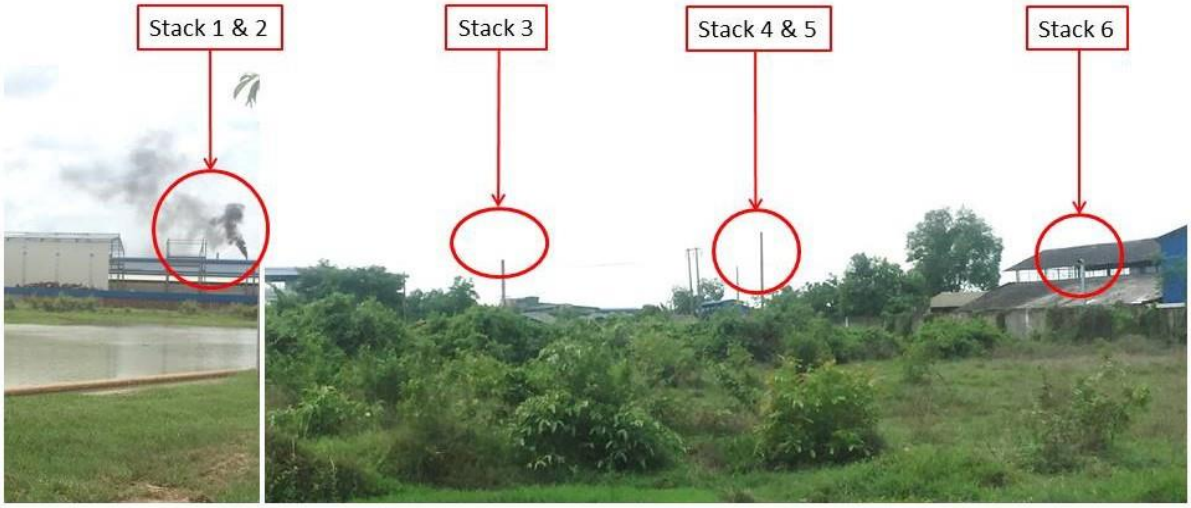


Figure 4-10 Stack Emission Sources at the South of the YMI Factory

4.8.1.1 Air Quality Survey Method

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 $PM_{2.5}$, PM_{10}, 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 4.6 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 PM_{10}	24-hour	$\mu g/m^3$	On site reading
Particulate Matter $PM_{2.5}$	24-hour	$\mu g/m^3$	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: Baseline Survey, 2020

Table 4.7 Monitoring Instrument for Air Quality

No.	Instrument	Brand & Model		
1.	Environmental Perimeter Air Monitoring System	HAZ- SCANNER EPAS		

4.8.1.2 Air Quality Survey Location

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.

Table 4.8 Air Quality Survey Locations

Survey/Sample Type	Sample ID	Coordinate	Location
Air Quality	AQ-1	Lat: 17°10'1.18"N Long: 95°58'26.11"E	Near Production Area, YMI Factory
Air Quality	AQ-2	Lat: 17°09'19.138"N Long: 95°58'43.386"E	Dhama Yayaye Monastery

4.8.1.3 Air Quality Survey Results

The results obtained from the air quality measurements are compared with the National Environmental Quality (Emission) Guidelines (NEQEG). According to the survey results, the average 24-hour period for $PM_{2.5}$, PM_{10} and SO_2 concentrations are within the National Environmental Quality (emission) Guideline. The daily 8-hour maximum ozone level is within the guideline (100 µg/m^3). The concentration of NO_2 was referred to the one-hour value in NEQEG and the concentration of NO_2 is lower than the guideline value.

Table 4.9 Air Quality Survey Results

Parameter	Averaging Period	Unit	AQ-1	AQ-2	NEQEG Guideline
Nitrogen Dioxide	1-year	µg/m^3	-	-	40
	1-hour	µg/m^3	44.823	80.730	200
Particulate Matter PM_{10}	1-year	µg/m^3	-	-	20
	24-hour	µg/m^3	27.28	23.66	50
Particulate Matter $PM_{2.5}$	1-year	µg/m^3	-	-	10
	24-hour	µg/m^3	18.70	12.42	25
Sulfur Dioxide	24-hour	µg/m^3	4.531	7.753	20

	10-minute	µg/m^3	-	-	500
Ozone	8-hour Daily Maximum	µg/m^3	5.691	1.766	100
Volatile Organic Compounds	24-hour	ppm	0.44	1.57	-
Carbon Dioxide	24-hour	ppm	240.14	153.05	-
Carbon Monoxide	24-hour	ppb	1.37	0.00007	-
Relative Humidity	24-hour	%	40.42	45.61	-

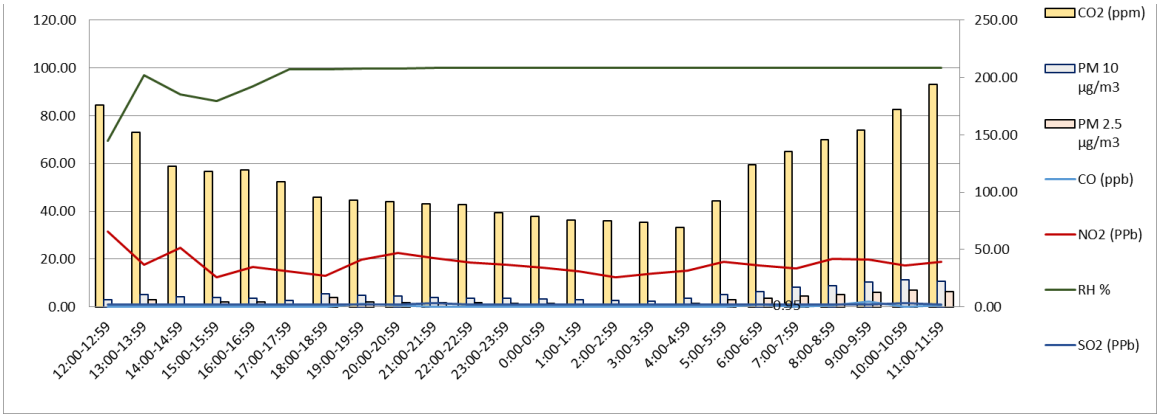


Figure 4-11 AQ-1 Air Quality Monitoring Results

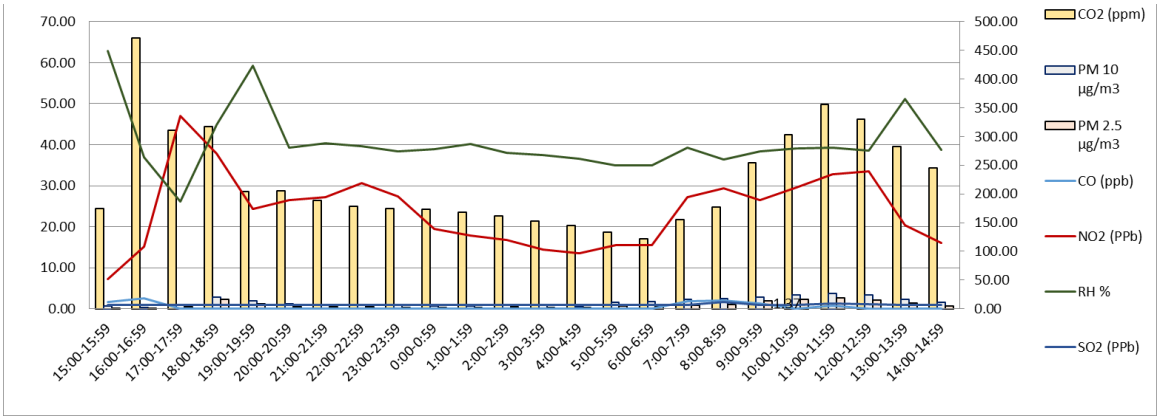


Figure 4-12 AQ-2 Air Quality Monitoring Results

4.8.2 Noise and Vibration Baseline Survey

4.8.2.1 Noise and Vibration Survey Method

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

Table 4.10 Instrumentation for Noise Survey

No.	Instrument	Brand & Model		
1.	Sound Level Meter	Lutron Sound level meter with SD Card, Model SL-4023SD		

Table 4.11 Instrumentation for Vibration Survey

No.	Instrument	Brand & Model	
1.	Vibration meter	Rion VM55 with SD Card	

4.8.2.2 Noise and Vibration Survey Location

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.

Table 4.12 Noise and Vibration Survey Points

Survey/Sample Type	Sample ID	Coordinate	Location
Noise and Vibration	NV-1 (source)	Lat: 17°10'2.09"N Long: 95°58'24.92"E	Near Production Area, YMI Factory
Noise and Vibration	NV-2 (receptor)	Lat: 17°09'19.138"N Long: 95°58'43.386"E	Dhama Yayaye Monastery

4.8.2.3 Noise Level 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 backup generators.

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.

Table 4.13 Noise Level Results (A-Weighted Loudness Equivalent)

Monitoring Point	Noise Level Results (dBA)		NEQEG (Industrial, Commercial)	
	Day	Night	Day	Night
NV-1	65.43	59.51	70	70
NV-2	59.26	55.72	70	70

Source: Baseline survey, May 2021

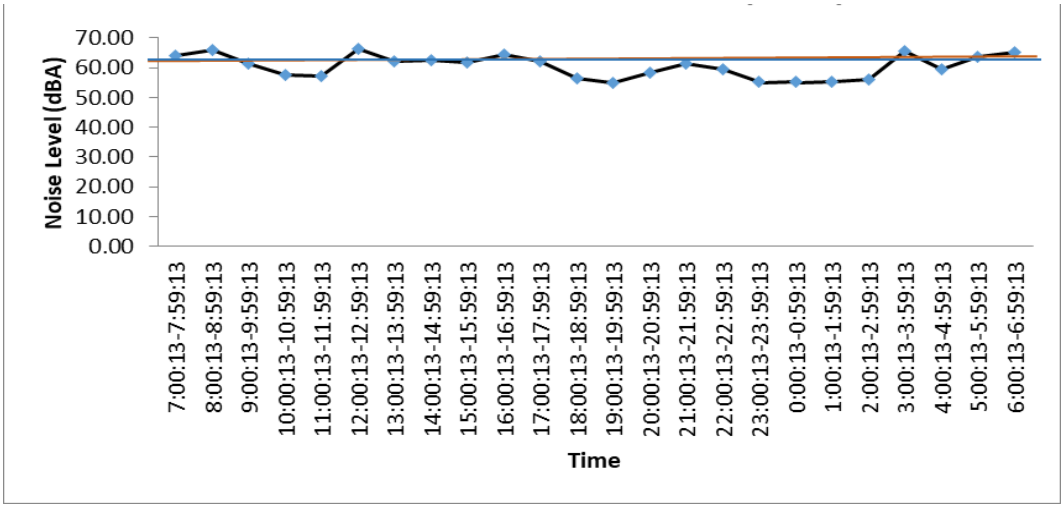


Figure 4-13 Observed Noise Level Value at NV-1

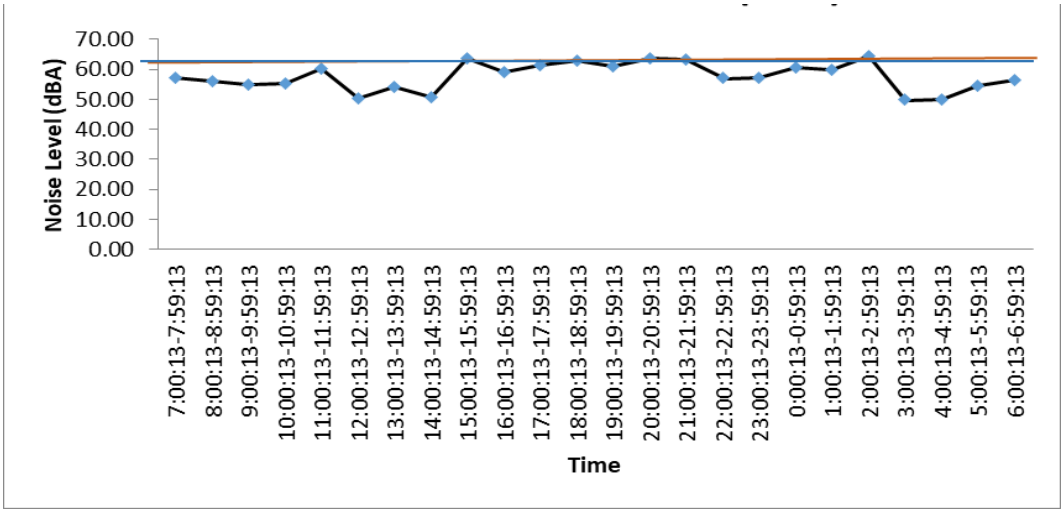


Figure 4-14 Observed Noise Level Value at NV-2

4.8.2.4 Vibration Level Survey Results

The vibration level measurements were evaluated in comparison with the Japan Standards for Vibration Emitted from Specified Factories. Upon analysis, the recorded vibration levels were significantly lower than the regulatory thresholds established for commercial and industrial zones.

Table 4.14 Daily Average Vibration Level Results

Monitoring Point	Vibration Level Results (dBA)		Vibration Standards, Area II3, Ministry of Environment, Japan	
	Day	Night	Day	Night
NV-1	45	36	65-70	60-65
NV-2	42	31	65-70	60-65

Source: Baseline Survey, May 2021

4.8.3 Water Quality Baseline Survey

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. The processed water from the lead processing operation is treated with Wastewater Treatment Plant and reused in its operation.

4.8.3.1 Water Quality Sampling Locations

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 4.15 Water Sampling Location

Sample ID	Sample Type	Coordinate	Locations
GW-1	Groundwater	Lat: 17°10'7.17"N Long: 95°58'23.64"E	Tube well within factory compound
SW-1	Drainage Water	Lat: 17°10'7.68"N Long: 95°58'24.30"E	Drainage channel of the factory
SW-2	Wastewater	Lat: 17°10'0.45"N Long: 95°58'26.88"E	Final wastewater treatment pond

3 Area II: Areas used for commercial and industrial as well as residential purposes where there is a need to preserve the living environment of local residents and areas mainly serving industrial purposes which are in need of measures to prevent the living environment of local residents from deteriorating.

Figure 4-15 Water Sampling Points

4.8.3.2 Groundwater Quality Results

The results from the laboratory analysis are compared with National Drinking Water Quality Standards and presented in the table. The turbidity, the concentration of Iron and Manganese of the groundwater 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 groundwater is used for the office facilities and however, the water is pretreated with filters for drinking purpose. The YMI factory is not intended to use the groundwater for drinking purpose.

Table 4.16 Analysis Results of Ground Water Quality

No	Parameter	Unit	Result GW-1	National Drinking Water Quality Standards, MOH
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	1
7	Manganese	mg/l	5.7	0.4
8	Hardness ($CaCO_3$)	mg/L as $CaCO_3$	36	500
9	Sulfate	mg/l	120	250
10	Arsenic	mg/l	Nil	0.05

[a] Standard unit

4.8.3.3 Drainage Water and Wastewater Quality Results

The results of surface water quality from the laboratory analysis were compared with the Industrial Specific Guideline (Effluent Levels for nickel, copper, lead, zinc, and aluminum smelting and refining), as outlined by the NEQEG. These findings are presented in the table below.

The Total Suspended Solids (TSS) of SW-1 (drainage water) significantly exceeded the guideline value. This deviation is likely due to the timing of the water sample collection, which occurred while water was actively flowing through the drainage channel. Additionally, the Chemical Oxygen Demand (COD) concentration in SW-1 was found to be above the permissible limit. This elevation is likely attributable to residual food and beverage waste from the kitchen, as well as runoff from excess stormwater entering the drainage system.

Similarly, the TSS concentration in SW-2 (wastewater) was marginally higher than the guideline limit. Notably, the concentrations of nickel in both SW-1 and SW-2, and cadmium in SW-2, also exceeded the specified limits. However, all other parameters studied remained within the acceptable range set by the guidelines.

Table 4.17 Analysis Results of Drainage Water and Wastewater Quality

No	Parameter	Unit	SW-1	SW-2	NEQEG Guideline
1	Total Suspended Solids	mg/l	148	30	20
2	Zinc	mg/l	Nil	Nil	0.2
3	Temperature increase	°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

[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

4.8.4 Soil Quality Baseline Survey

4.8.4.1 Soil Quality Survey Method

For soil sampling, the standard environmental sampler (soil auger) was applied. The sampler is a stainless-steel tube that is sharpened on one end and fitted with a long, T-shaped handle. This tube is approximately three inches inside diameter. In order to refrain from contamination, about 00-30

cm of top soil was removed by the sampler before sampling. Most of samples were taken and collected from 30-50 cm depth. During sample collection, wear the glove, rinse glove and soil auger with clean water. Then sample was taken and collected in cleaned plastic bag.

4.8.4.2 Soil Sampling Location

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.

Table 4.18 Soil Sampling Location

Sample ID	Sample Type	Coordinate	Locations
SQ-1	Soil	17°10'0.64"N 95°58'22.87"E	Bare soil near the raw materials store area

Figure 4-16 Soil Sampling Point

4.8.4.3 Soil Quality Survey Results

Chemical analysis for soil quality was tested in the local laboratory named Department of Agriculture (Land Use Branch) of Yangon Region. The soil results were compared with available international guidelines.

According to the analysis results from the laboratory, the results of studied parameters are compared with available international guidelines and found that the concentration of Lead (Pb) in soil exceeds the maximum permissible limit (MPL) while the other parameters Chromium (Cr), Zinc (Zn) and Copper (Cu) 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.

Table 4.19 Analysis Results of Soil Quality

Parameter	Unit	Results	Guidelines

		SQ-1	Japan	Thailand	Vietnam
pH		9.76	-	-	-
Moisture	%	15.75	-	-	-
Zinc (Zn)	ppm	4.46	150	-	300
Copper (Cu)	ppm	8.59	125	-	100
Manganese (Mn)	ppm	-	-	-	-
Iron (Fe)	ppm	24.22	-	-	-
Lead (Pb)	ppm	1692.00	150	750	300
Cadmium (Cd)	ppm	-	-	-	-
Nickel (Ni)	ppm	-	-	-	-
Chromium (Cr)	ppm	0.004	-	-	-
Arsenic (As)	ppm	-	150	27	12
Mercury (Hg)	ppm	0.03	-	-	-

[a] Standard unit

4.9 TRAFFIC SURVEY

Traffic Survey (hereinafter as TS) was conducted in two locations, TS-1 and TS-2 presented in **Figure 4-17.** 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 4.20 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	Yangon-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 4-17 Traffic Survey Locations

Table 4.21 Vehicle Class

No.	Class*	Description
1	Motorcycle	All type of vehicles with two wheels
2	3-Wheeler	All type of vehicles with 3-wheels (e.g., 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

4.9.1 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 4.22** and **Figure 4-18**.

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 4.22** and **Figure 4-19**.

Table 4.22 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**	**Total**	**3296**	**3529**	**6825**	**100**

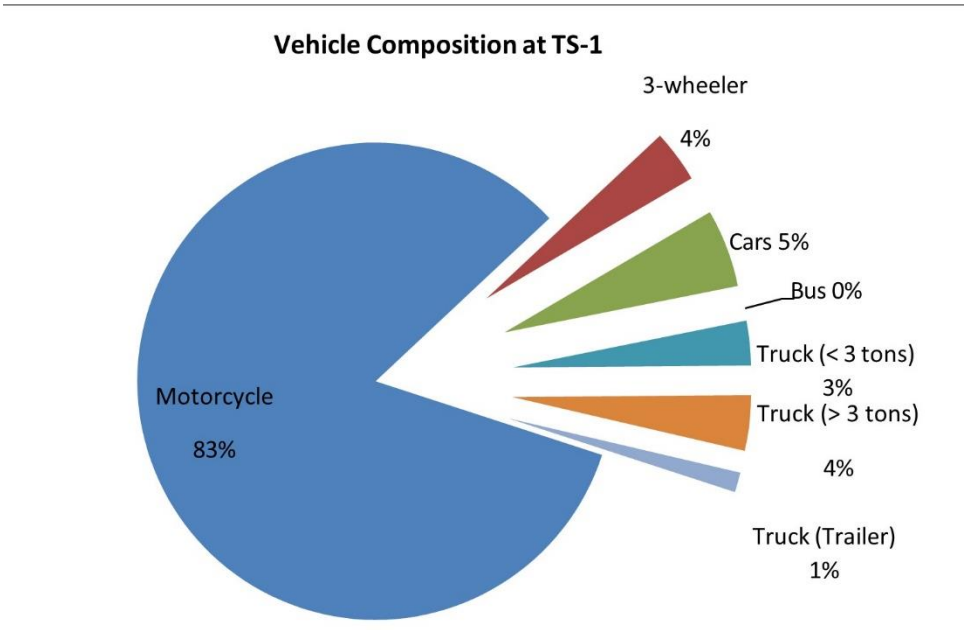


Figure 4-18 Vehicle Composition at TS-1

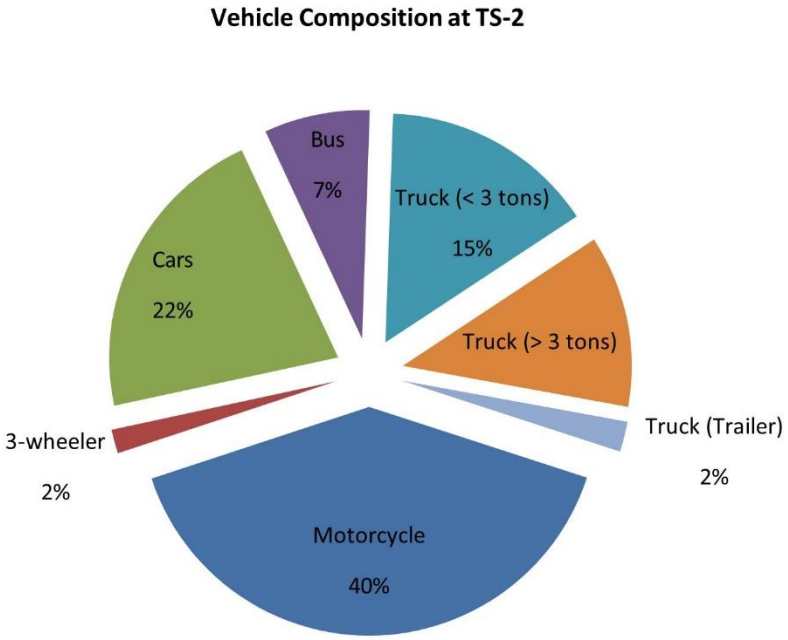


Figure 4-19 Vehicle Composition at TS-2

4.9.2 Flow Fluctuation

4.9.2.1 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 4-20, Figure 4-21,** and **Table 4.23.**

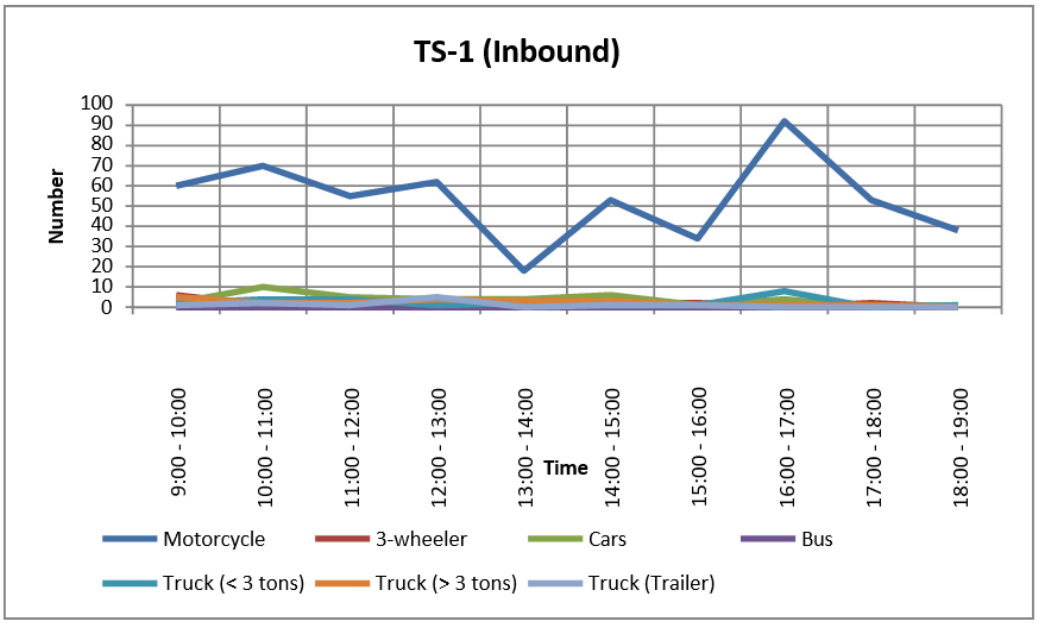


Figure 4-20 Hourly Flow Fluctuation at TS-1 (Inbound)

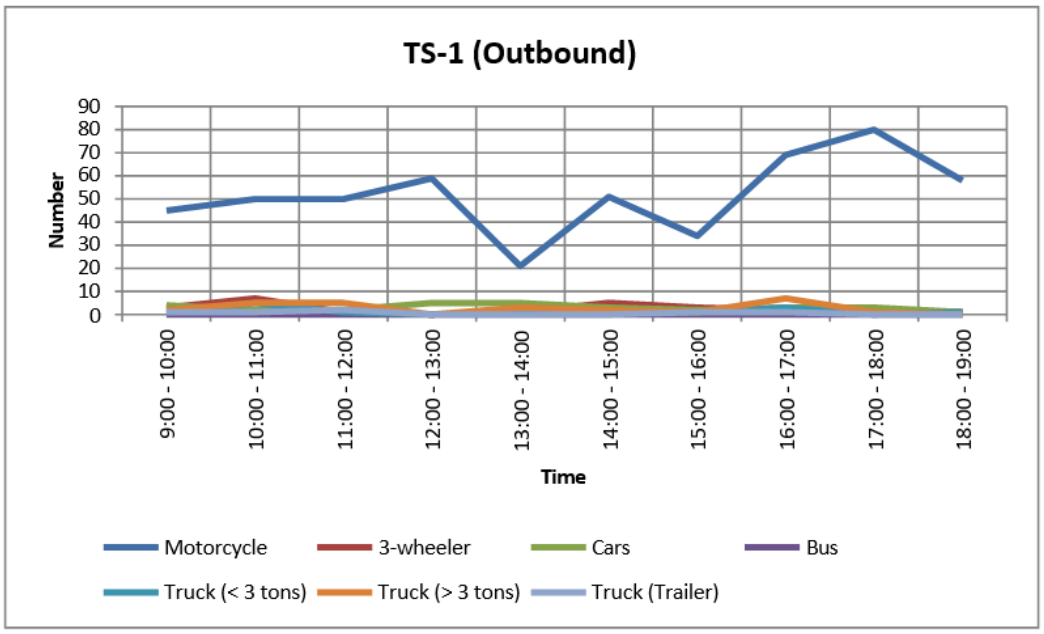


Figure 4-21 Hourly Flow Fluctuation at TS-1 (Outbound)

4.9.2.2 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 4-22, Figure 4-23,** and **Table 4.24.**

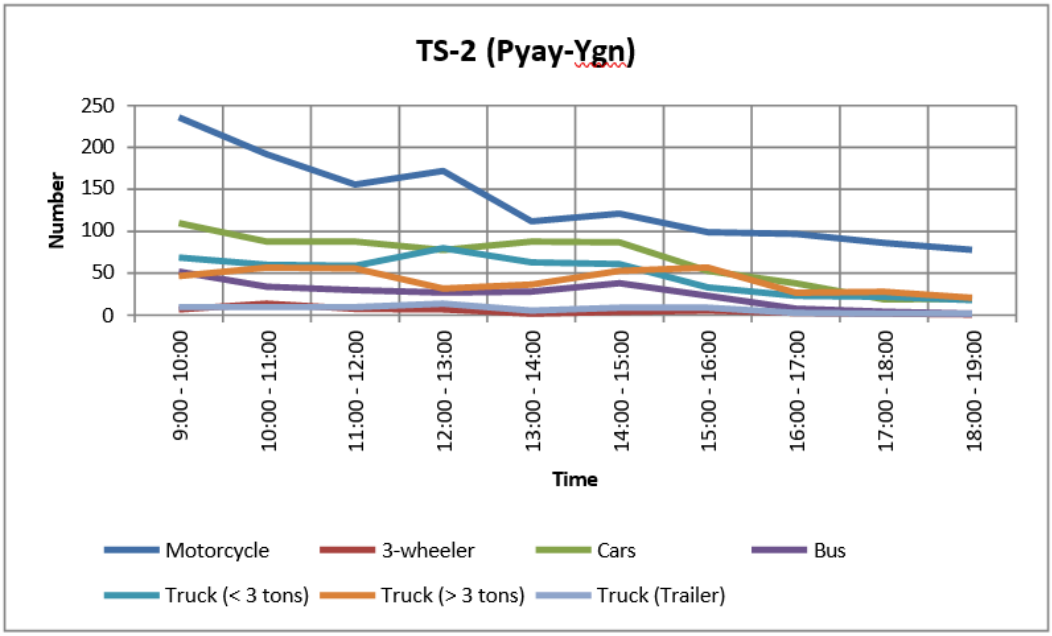


Figure 4-22 Hourly Flow Fluctuation at TS-2 (Pyay-Ygn)

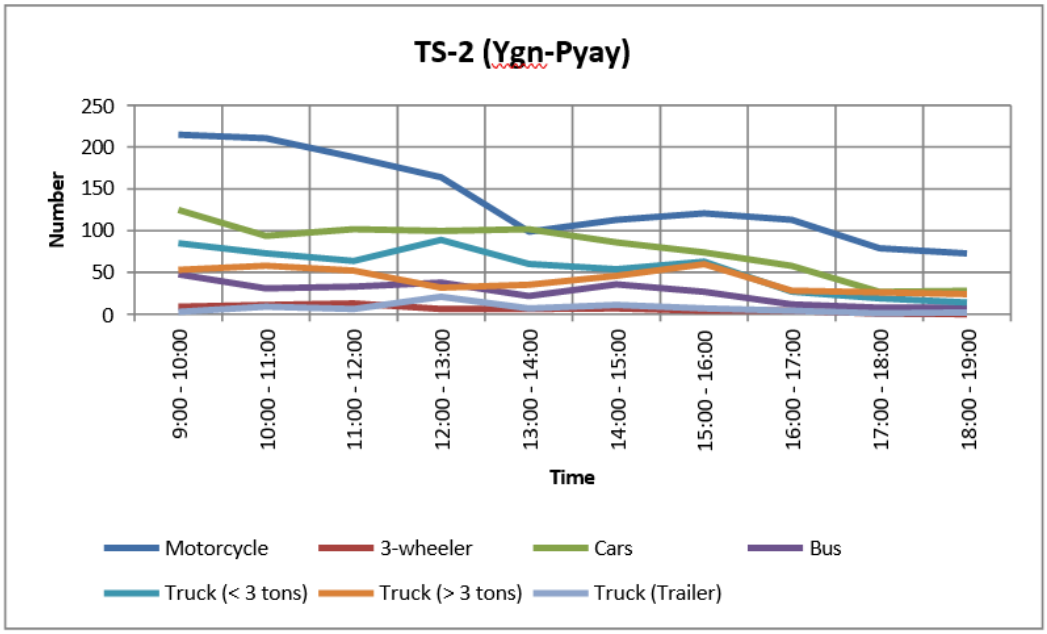


Figure 4-23 Hourly Flow Fluctuation at TS-2 (Ygn-Pyay)

4.9.3 Traffic Flow Survey Records

Traffic Survey at TS-1

Traffic Survey at TS-2

Figure 4-24 Traffic Survey at TS-1 and TS-2

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

Motorcycle

3-wheeler

Car

Bus

Truck (< 3 tons)

Truck (> 3 tons)

Trailer Truck

Trailer Truck

Figure 4-25 Typical Classes of Vehicles

Table 4.23 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 4.24 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

4.10 BIODIVERSITY

4.10.1 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 4-26 Visual View of Ecological Environment around the Factory Area

4.10.2 Survey Area

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

Table 4.25 Representative GPS Points of The Study Sites

GPS Points	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

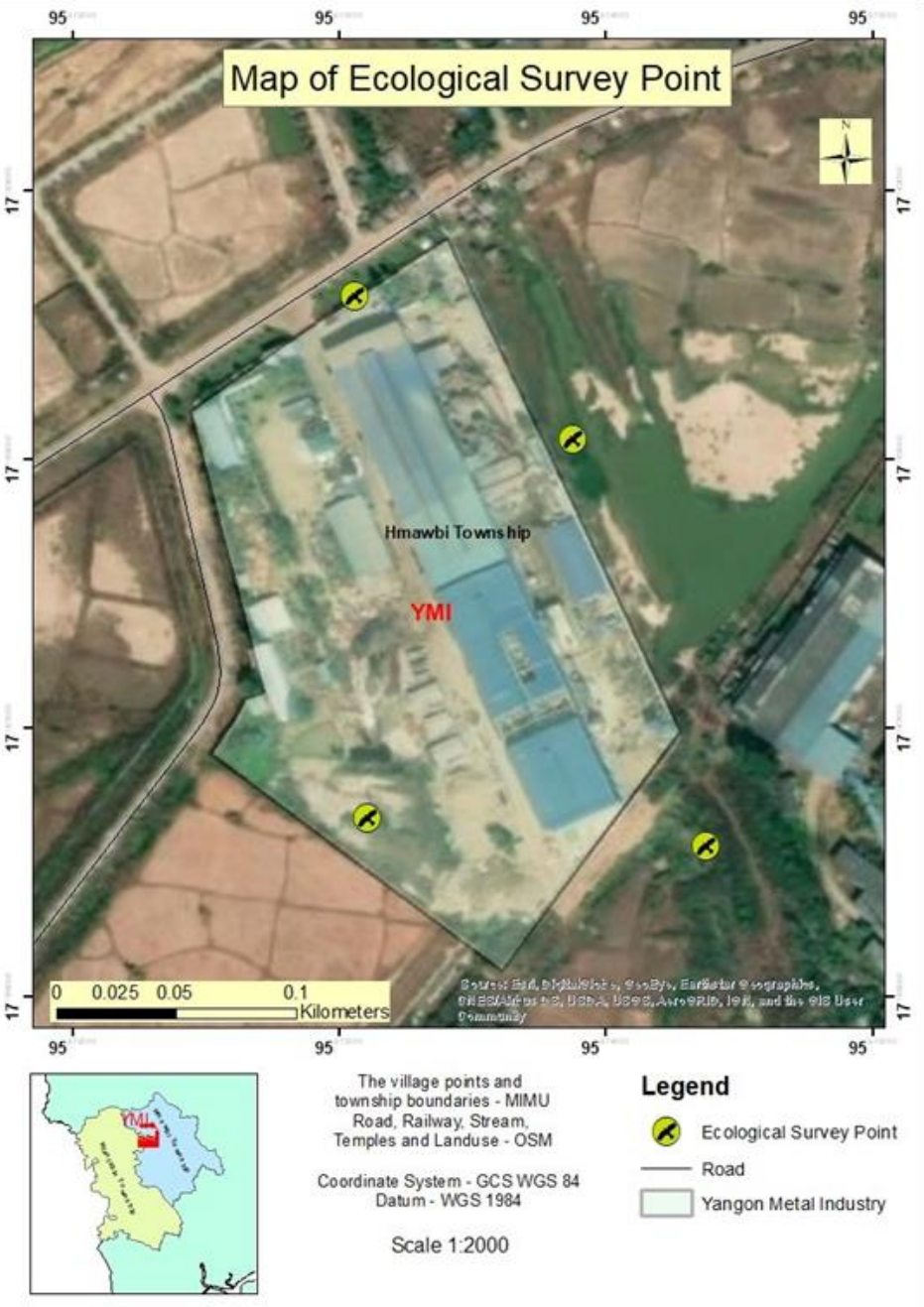


Figure 4-27 Ecological Survey Map

4.10.3 Methodology

The methodologies used in the baseline study were discussed below.

4.10.3.1 Desktop Survey

Publicly available sources of information were analysed 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.

4.10.3.2 Field Observation

4.10.3.2.1 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.

4.10.3.2.2 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 areas 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 colour 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. Butterfly 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.

4.10.3.3 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.

Figure 4-28 Interview Survey

4.10.4 Biodiversity Survey Results

4.10.4.1 Floral Species

4.10.4.1.1 Habitat

In and around the Area of proposed project area, three major habitat types were observed namely (1) Plantation (2) bare land, (3) shrub land as shown in **Figure 4-29**.

4.10.4.1.2 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.

4.10.4.1.3 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 4.26 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
23	Rubiaceae	Morinda angustifolia	Yeyo	ST	Wide	NE
24	Boraginaceae	Heliotropium indium	Sin-hna-maung	H	Yangon	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 4-29 Some Plant Species around the Survey Area

4.10.4.2 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.

4.10.4.2.1 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.

4.10.4.2.2 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 4.27 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

4.10.4.2.3 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 4.28 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 4-30 Some Herpetofauna Species around the Survey Area

4.10.4.2.4 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 4.29 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 Egret	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 4-31 Some Bird Species around the Survey Area

4.10.4.2.5 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 4.30 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

Figure 4-32 Mottled Emigrant (*Catopsilia pyranthe*)

4.10.4.2.6 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 4.31 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
3	Libellulidae	*Libellua fulva*	Scarce Chaser	LC

Scarce Chaser (Libellua fulva)

Blue Dasher (Panchydiplax longipennis)

Figure 4-33 Some Dragonfly Species around the Survey Area

4.10.4.2.7 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 was 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 4.32 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 4-34 Some Fish Species around the Survey Area

4.10.4.2.8 Invasive Species

Table 4.33 Plant Species

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

Figure 4-35 Hti-ka-yone (*Mimosa pudica*)

Table 4.34 Fish Species

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

Figure 4-36 Oreochromis niloticus (*Tilapia*)

4.11 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 4-37.**

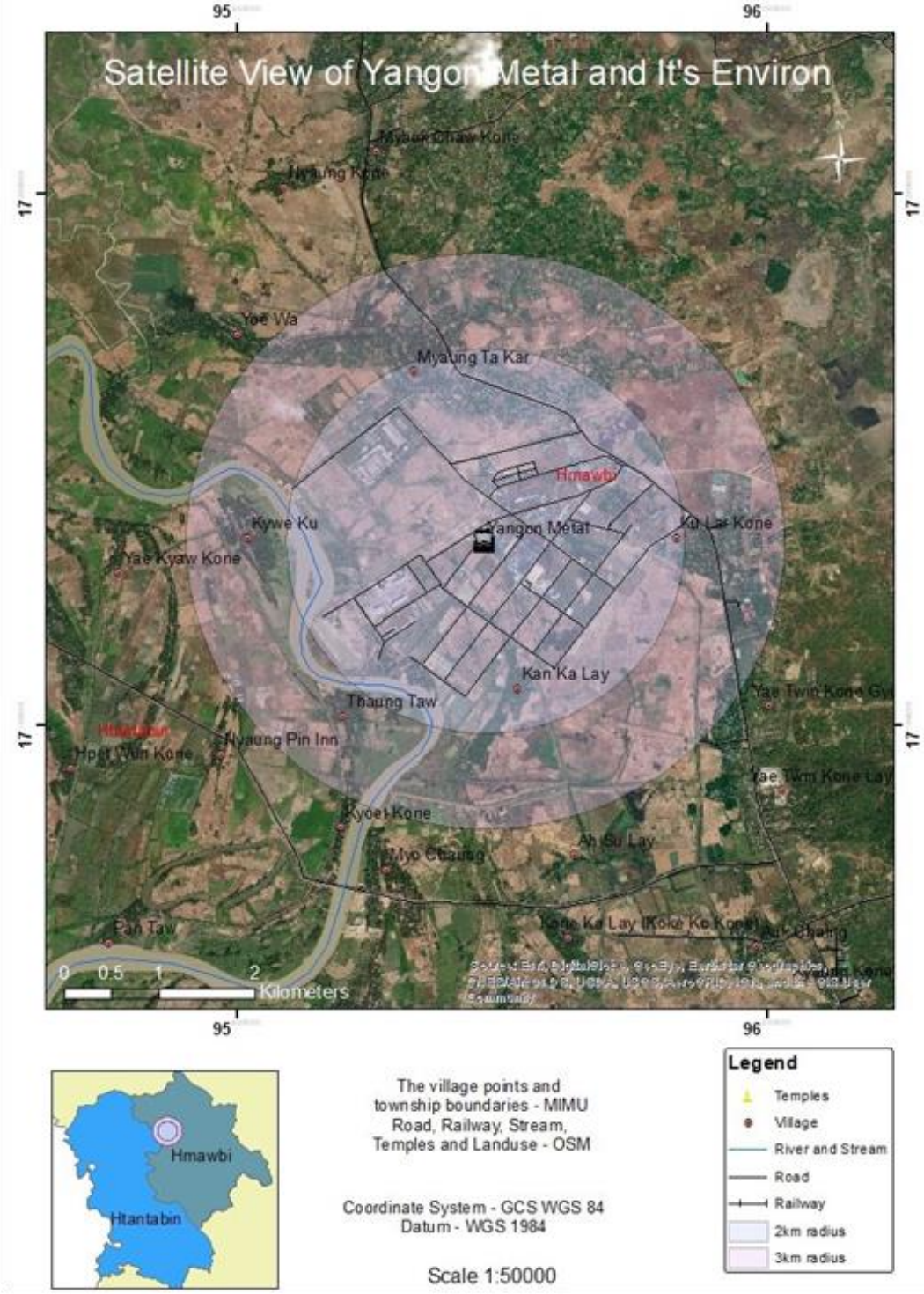


Figure 4-37 Satellite View of YMI Project Study Area

4.11.1 Hmawbi Township Profile[4]

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

4.11.1.1 Literacy Rate

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

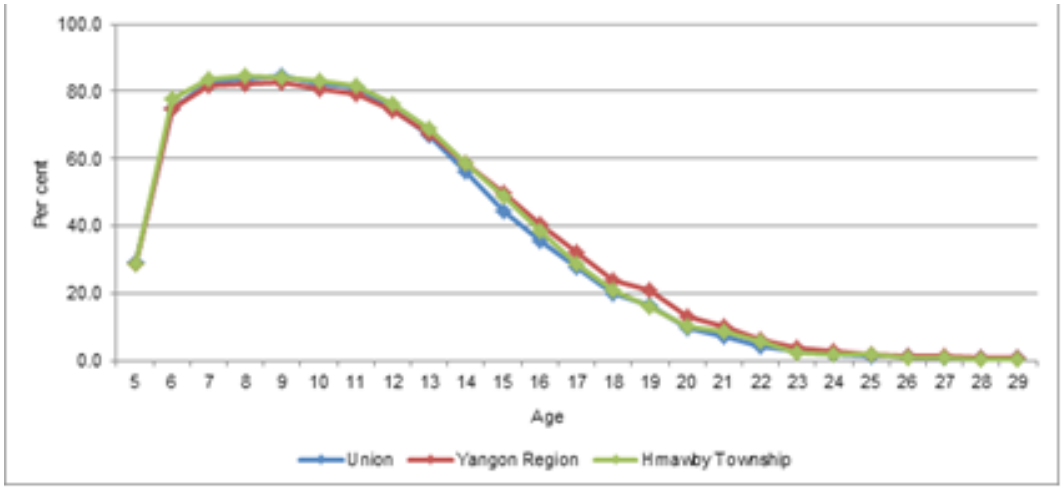


Figure 4-38 School Attendance by Age (Union, Yangon Region and Hmawbi Township)
Religious Status

4.11.1.2 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.

4.11.1.3 Work Opportunities

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

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

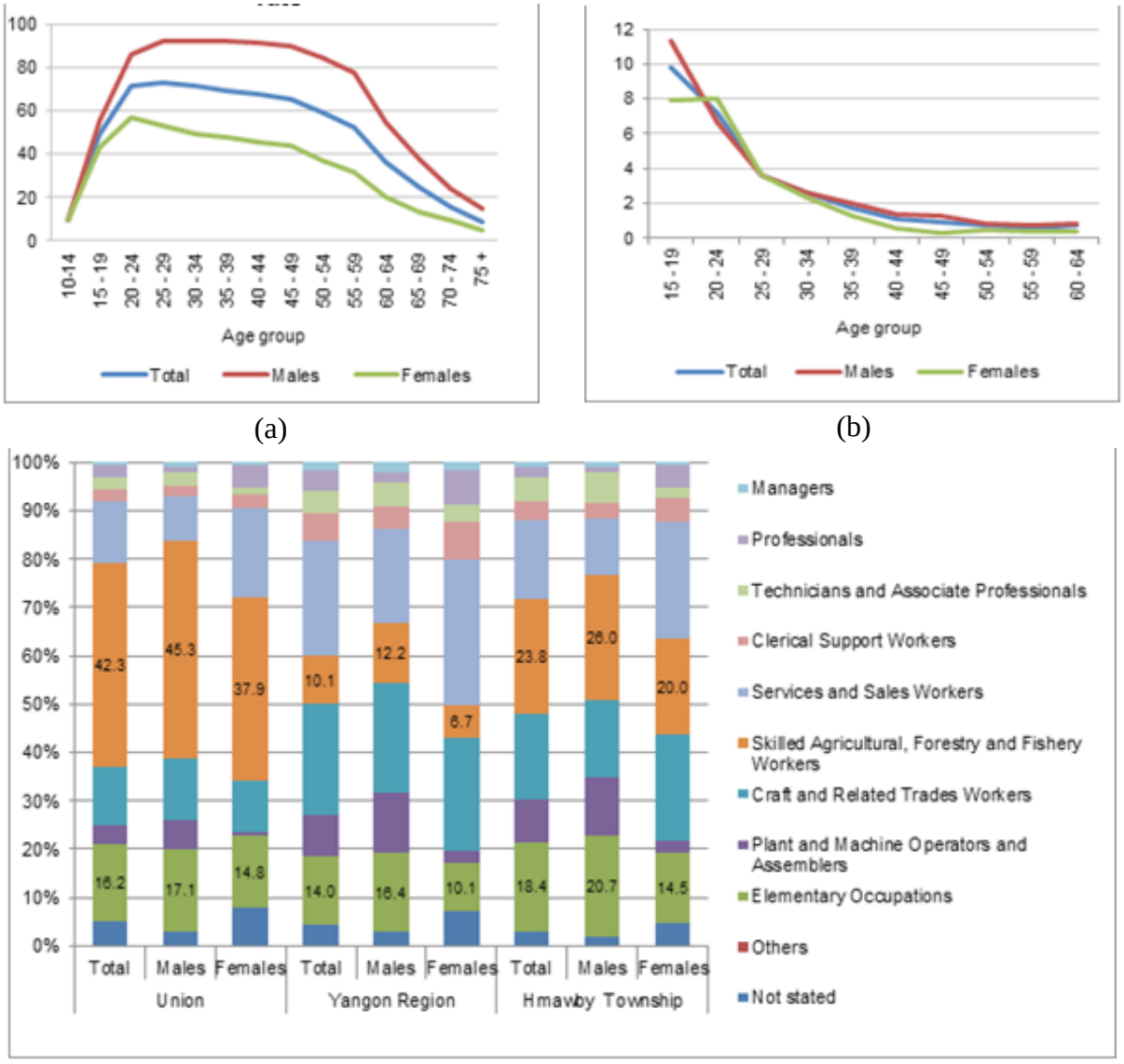


Figure 4-39 (a) Labour Force Participation Rate and (b) Unemployment rate (%)

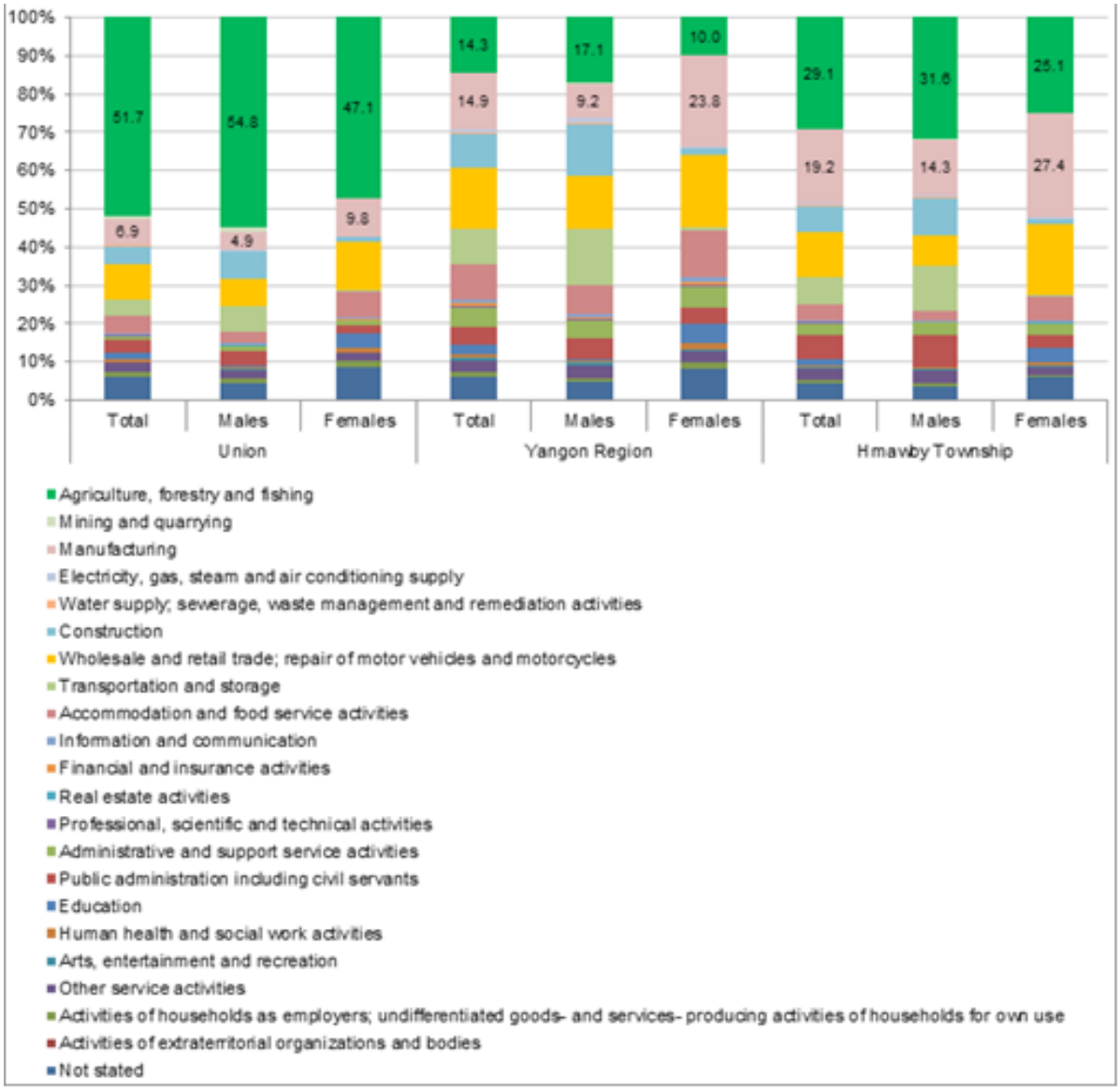


Figure 4-40 Employment Populations by Industry (%)

4.11.1.4 Source of Drinking Water

Drinking water sources in Hmawbi 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 Hmawbi 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).

4.11.1.5 Source of Lighting

Source of lighting includes Electricity, Kerosene, Candle, Battery, Generator (Private), Watermill and Solar. In Hmawbi 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.

4.11.1.6 Transportation Items

They include Car, Truck, Van, Motorcycle, Moped, Bicycle, 4-Wheel tractor, Canoe, Boat, Motorboat and Cart (bullock). In Hmawbi 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.

4.11.1.7 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.

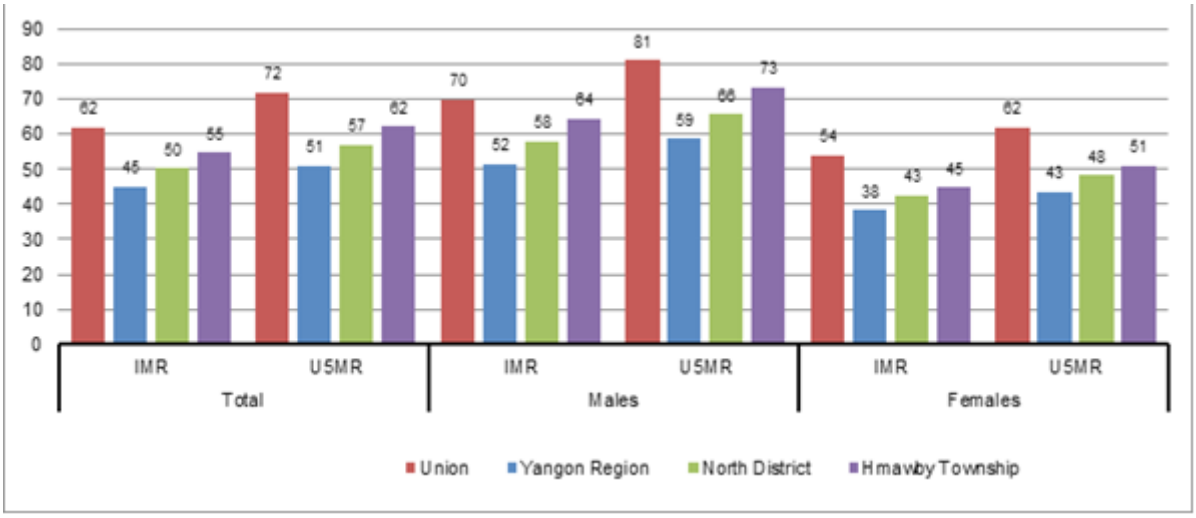


Figure 4-41 Infant and under 5 Mortality Rates (%)

4.11.2 Socioeconomic Baseline Survey

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 points and distance from YIM is illustrated in **Table 4.35.**

Table 4.35 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

4.11.2.1 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.

4.11.2.2 Site Inspection

The site inspection survey will be conducted as necessary where the project activities are seriously concerned with the community health and safety. The EIA study 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 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 4-42 Photographic Records of Site Inspection

4.11.2.3 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 4-43 Survey Results on Administrative Area

Table 4.36 KII Survey Results

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%	

4.11.2.4 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. 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.

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 and 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

4.11.2.5 Socioeconomic Survey Plan of the Affected Area

The 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.

Table 4.37 Survey Activities

No.	Survey Area	Duration	Surveyor/Interviewer	Remarks
1	Myaung Ta Kar	25.8.2020	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	Social survey team + a medical doctor	
3	Kan Ka Lay	24.8.2020	Social survey team + a medical doctor	
4	Kywe Ku	24.8.2020	Social survey team + a medical doctor	
5	Industrial Zone	27.8.2020	Social survey team + a medical doctor	
6	Other Places	24.8.2020	Social survey team + a medical doctor	

Figure 4-44 Photographic Records of Socioeconomic Survey at the Factory Area and Affected Villages

4.11.2.6 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.

4.11.2.6.1 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.

Table 4.38 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

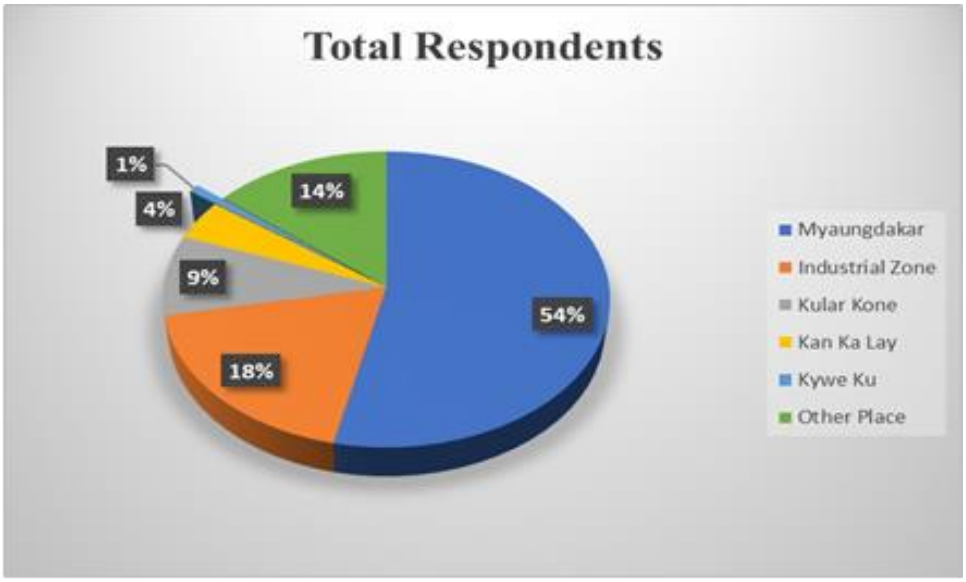


Figure 4-45 Total Respondents

4.11.2.6.2 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.

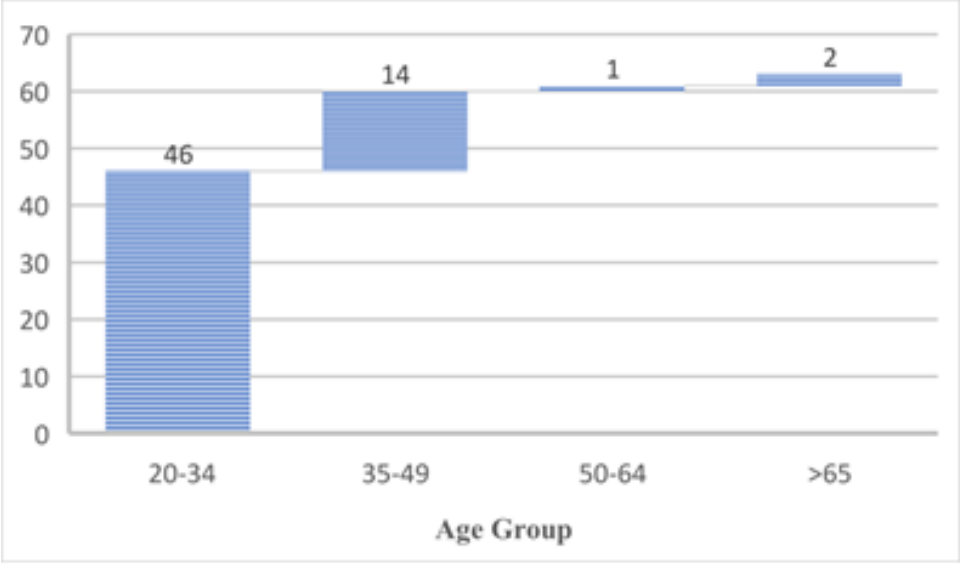


Figure 4-46 Age Group

4.11.2.6.3 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.

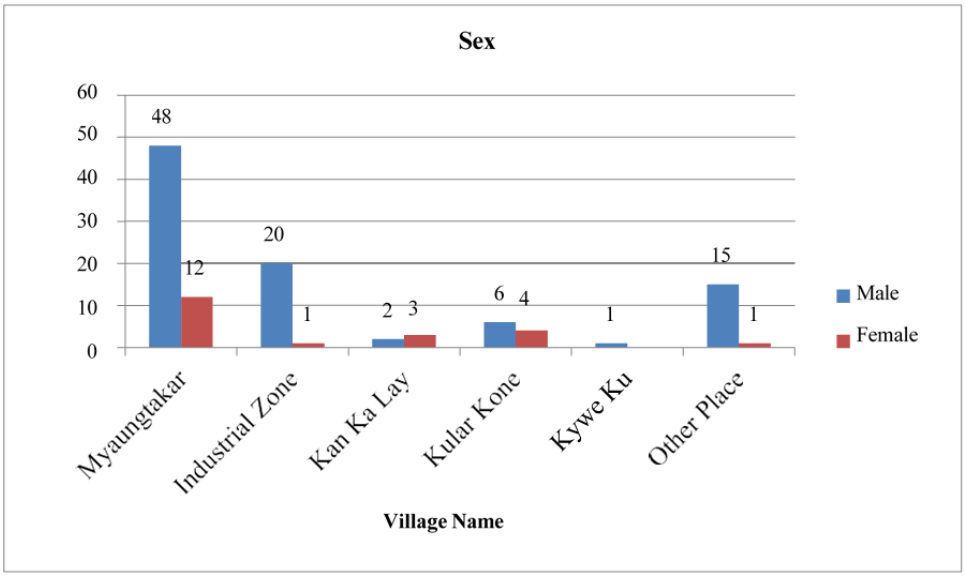


Figure 4-47 Gender

4.11.2.6.4 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.

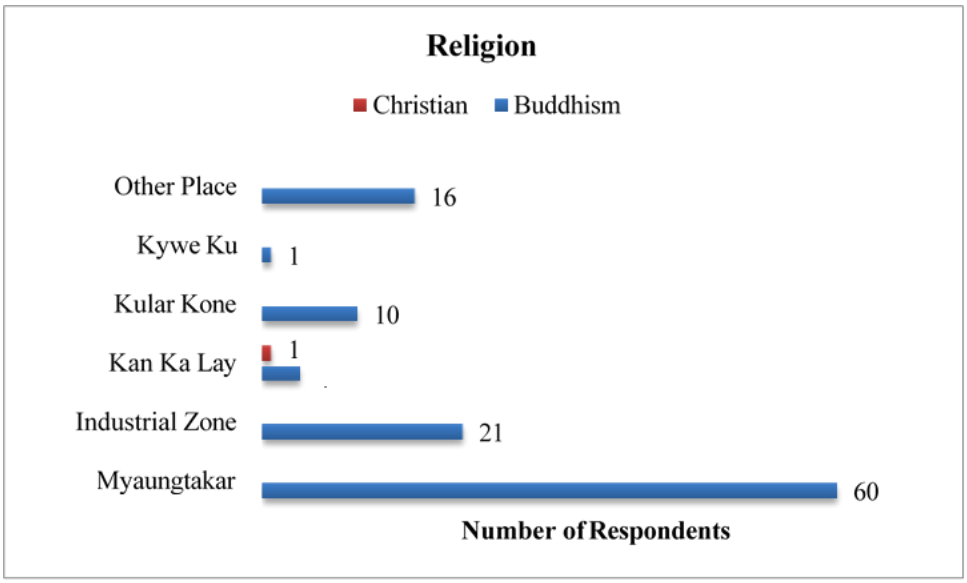


Figure 4-48 Religion

4.11.2.6.5 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.

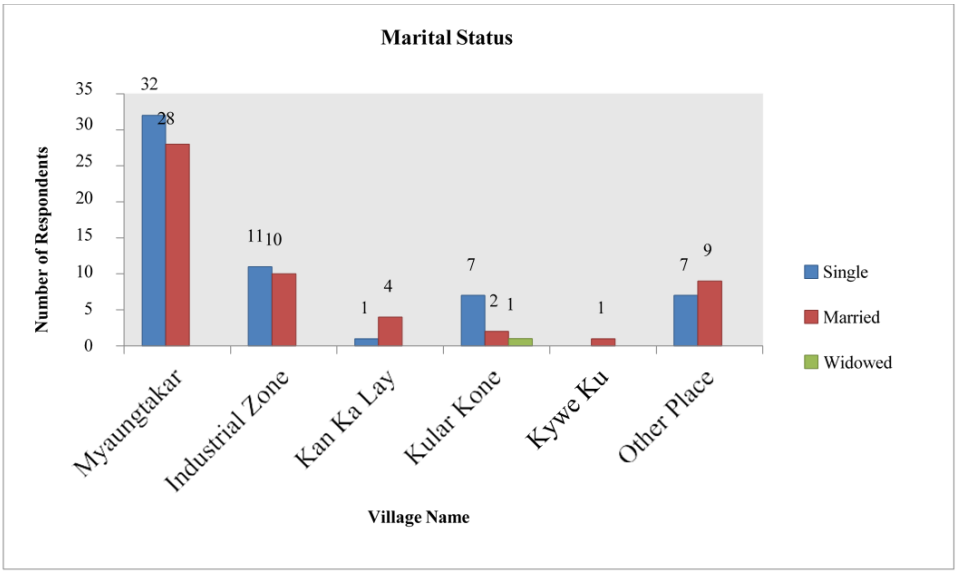


Figure 4-49 Marital Status

4.11.2.6.6 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.

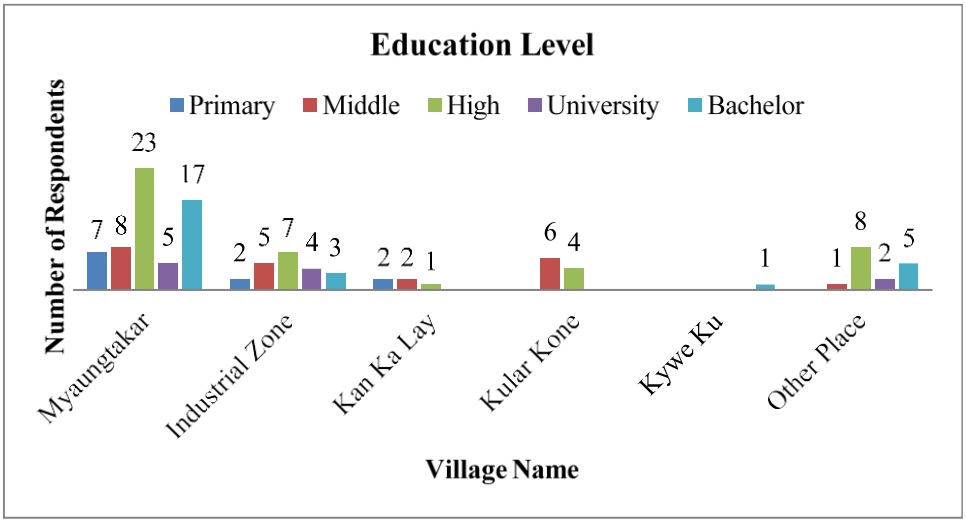


Figure 4-50 Education Level

4.11.2.6.7 Head of Household

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

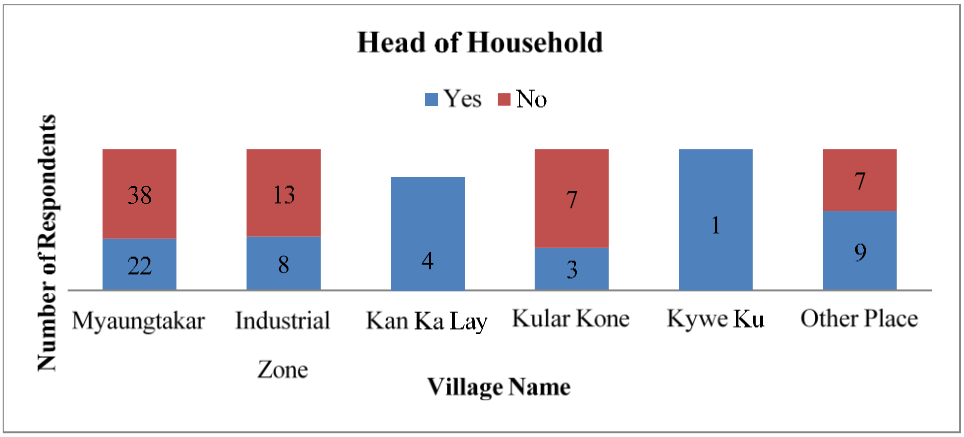


Figure 4-51 Head of Household

4.11.2.6.8 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-year feedbacks mostly from the other area and migrate to the project area due to livelihood activity.

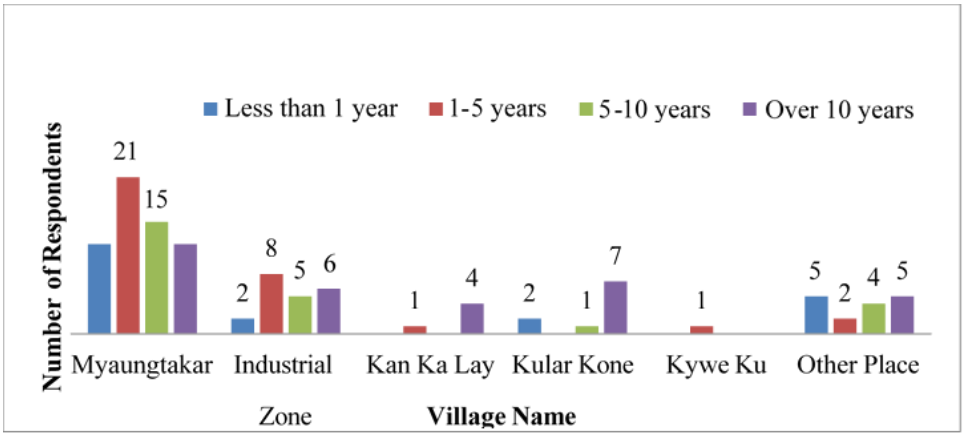


Figure 4-52 Duration of Living in the Project Area

4.11.2.7 Status of Livelihood and Assets

4.11.2.7.1 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.

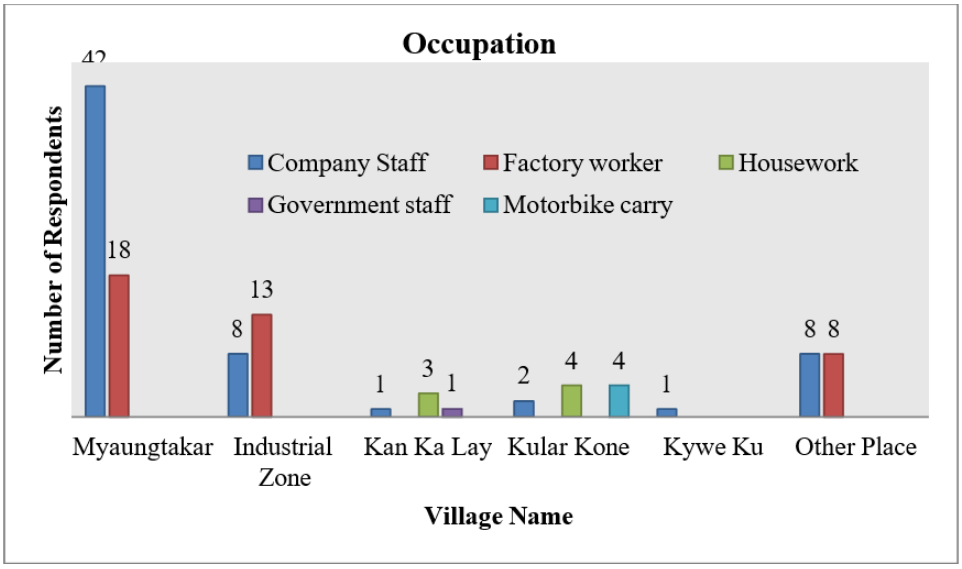


Figure 4-53 Occupation

4.11.2.7.2 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.

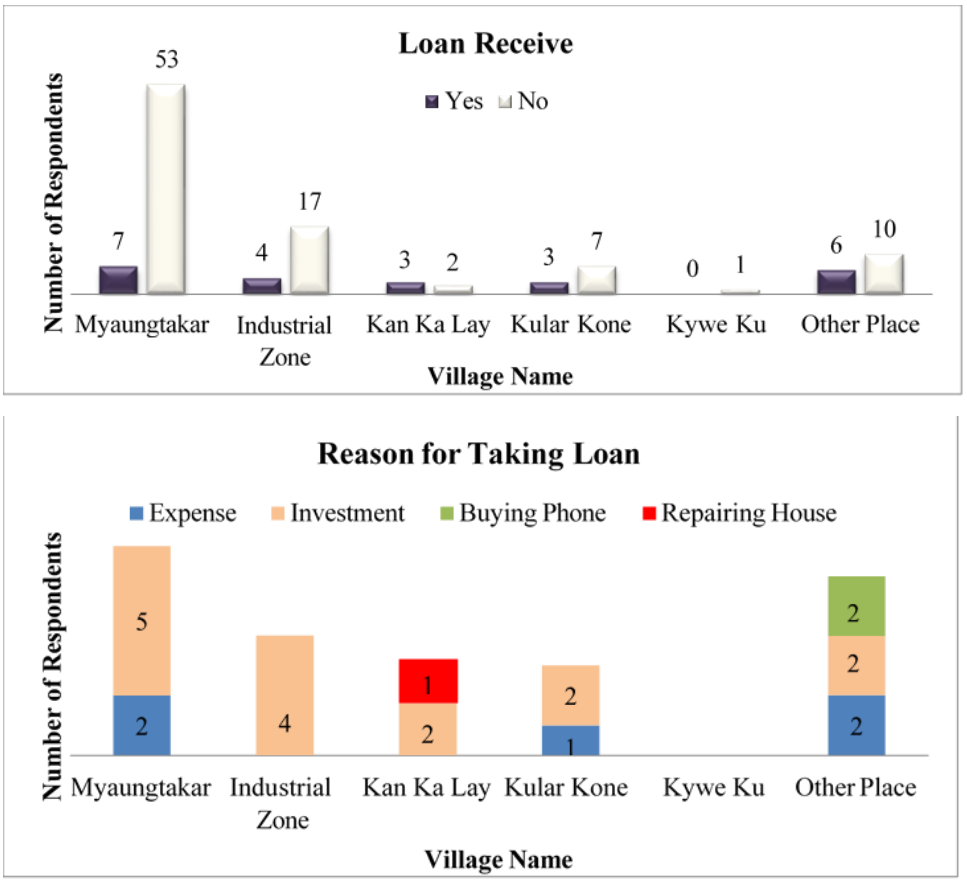


Figure 4-54 Loan Receive Status

4.11.2.7.3 Money Saving

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

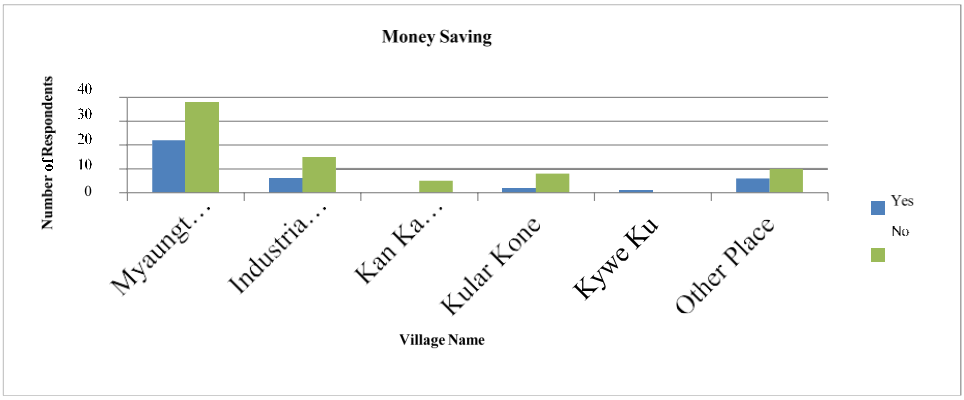


Figure 4-55 Money Saving

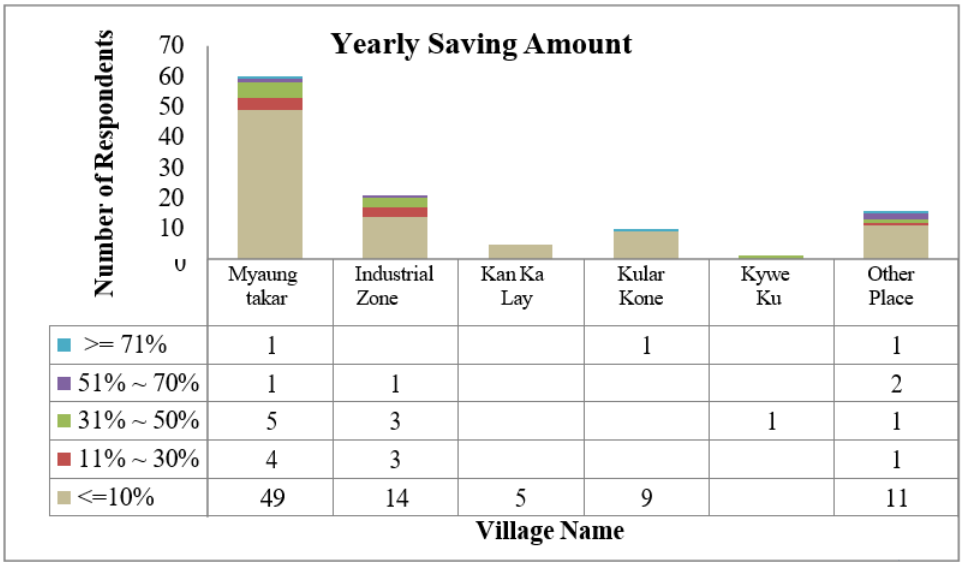


Figure 4-56 Yearly Saving Amount

4.11.2.7.4 Assets and Household Income

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.

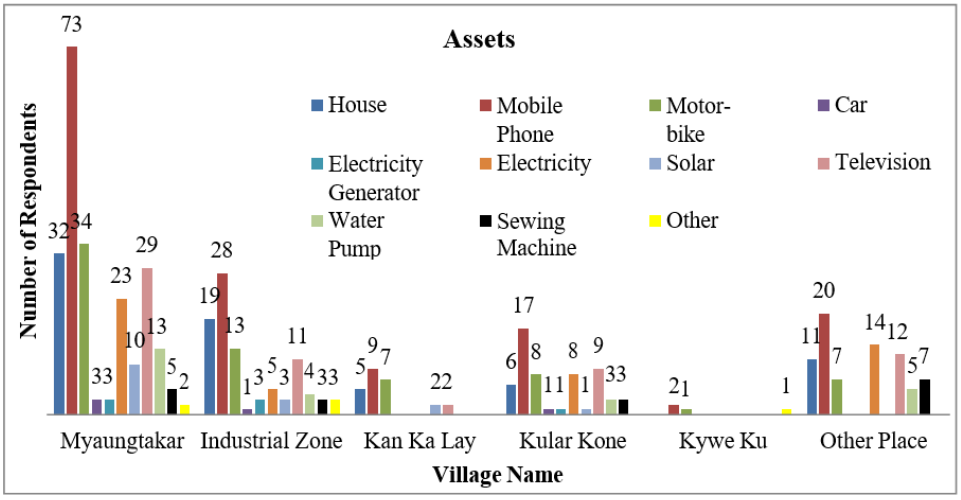


Figure 4-57 Assets

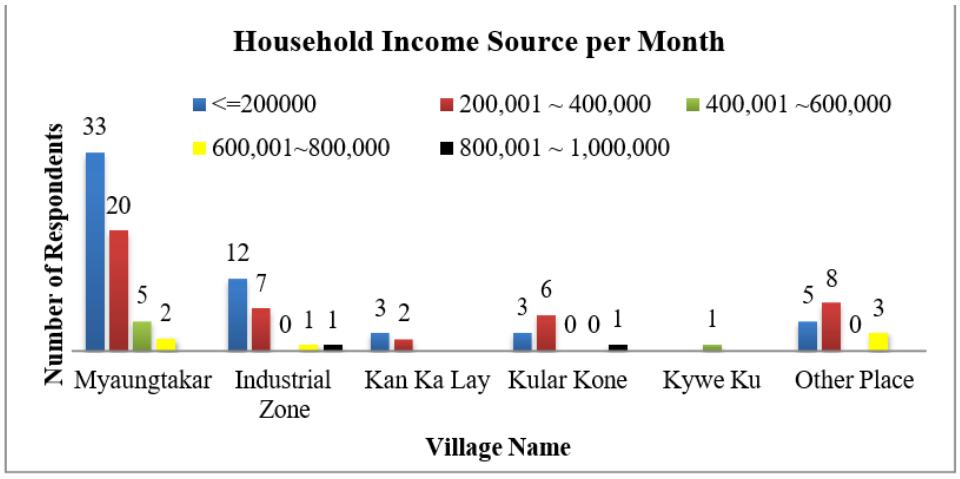


Figure 4-58 Household Income

4.11.2.7.5 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.

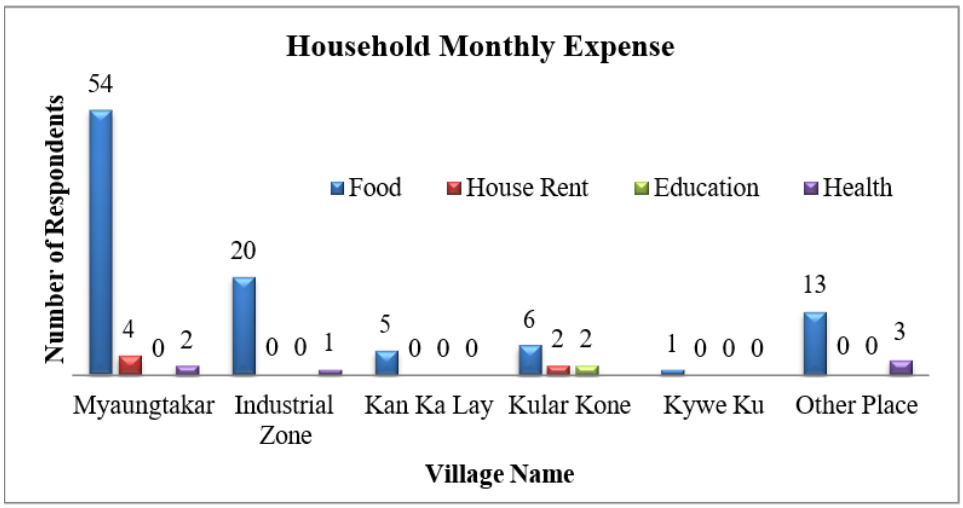


Figure 4-59 Household Monthly Expense

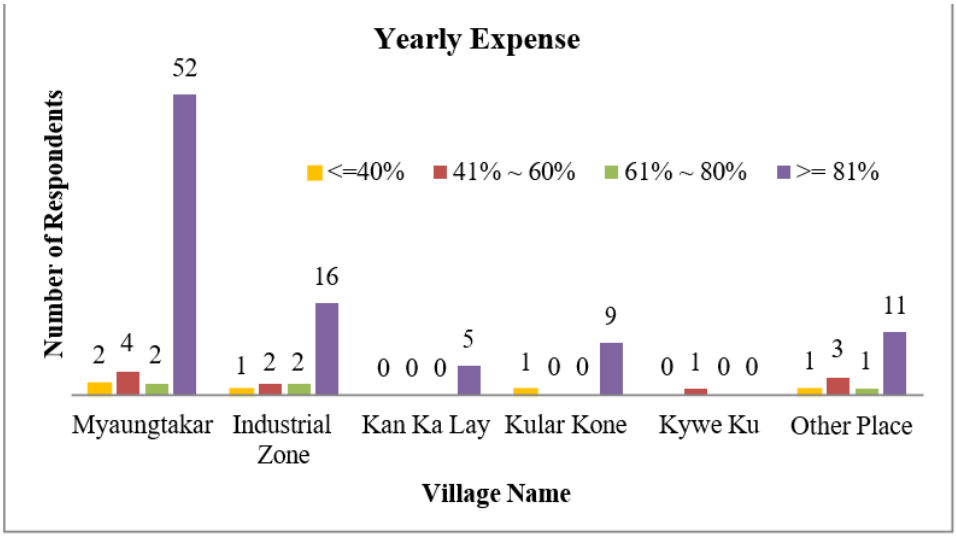


Figure 4-60 Household Yearly Expense

4.11.2.7.6 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.

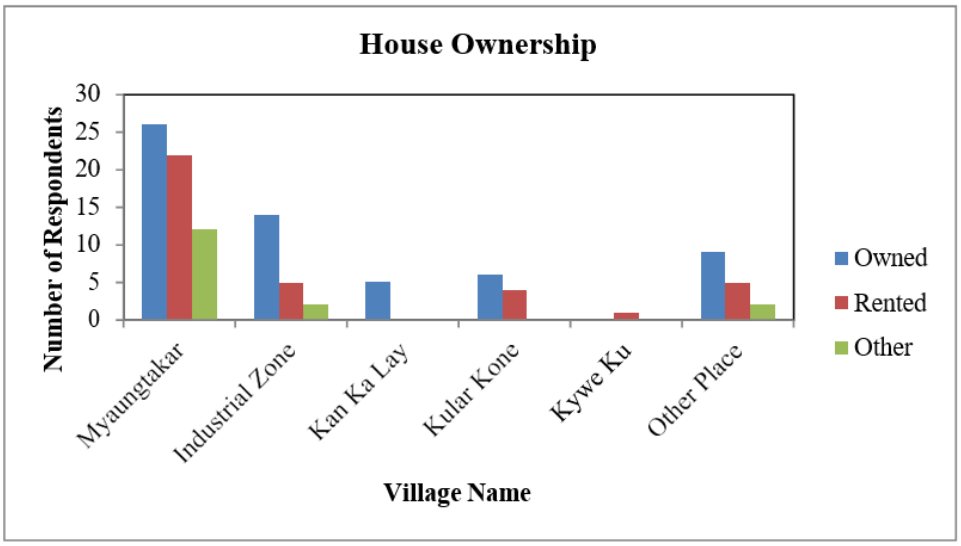


Figure 4-61 House Ownership

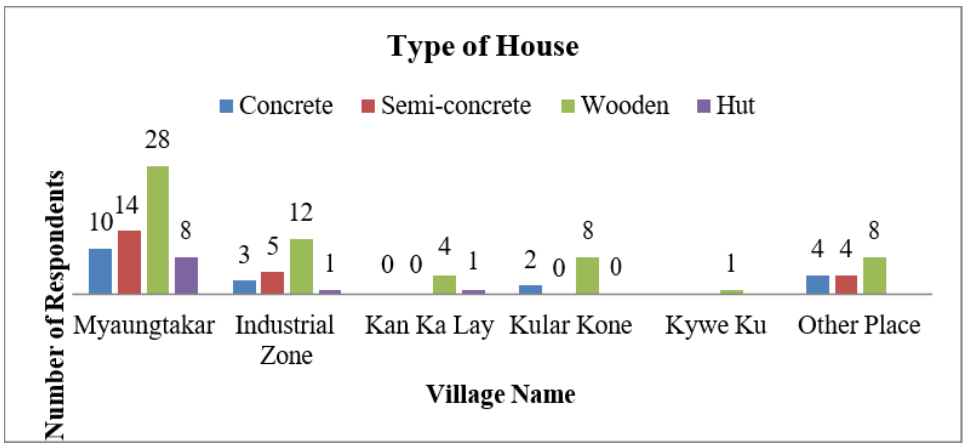


Figure 4-62 Type of House

4.11.2.7.7 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.

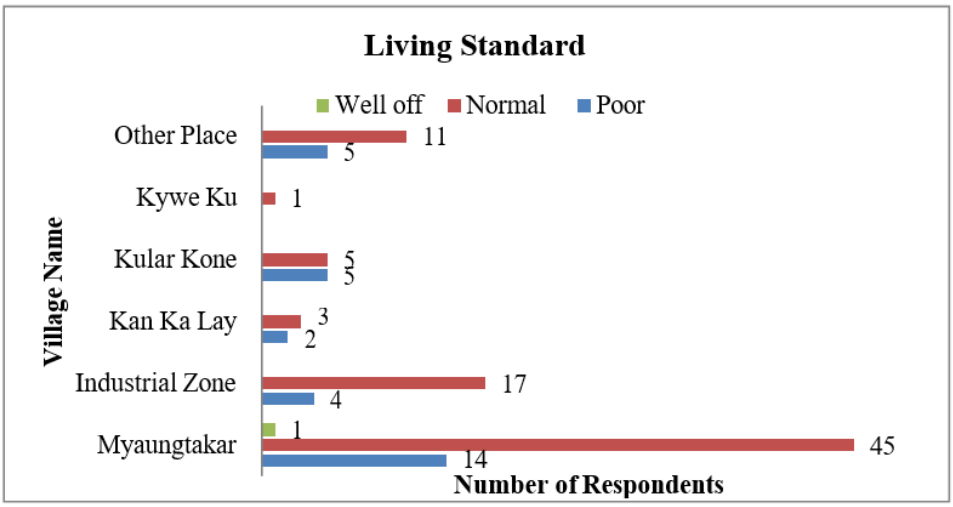


Figure 4-63 Living Standard

4.11.2.8 Transportation Status

4.11.2.8.1 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 transportation status as not meet their demand. Some think the road are bad and not enough for transportation.

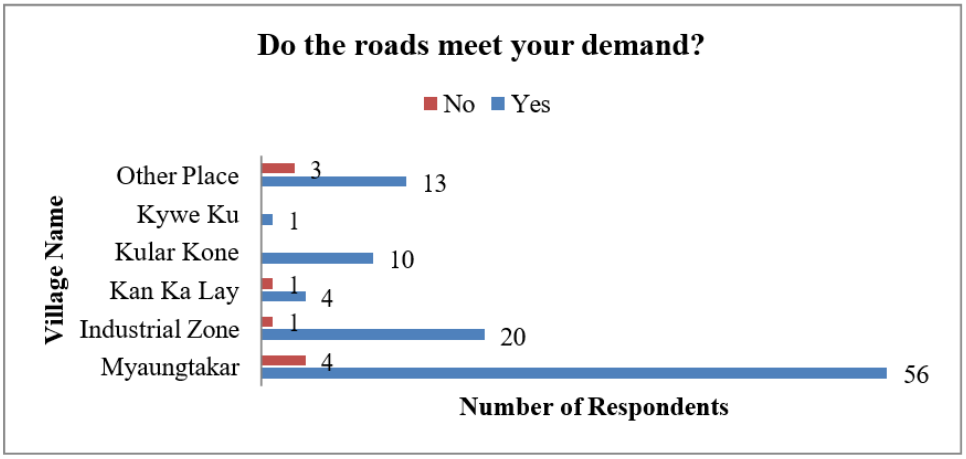


Figure 4-64 People Demand

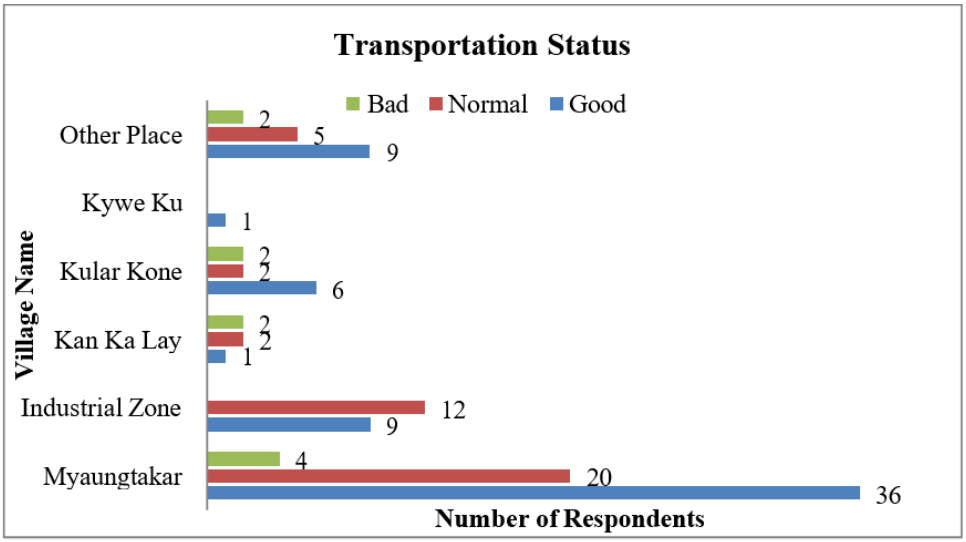


Figure 4-65 Transportation Status

4.11.2.8.2 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.

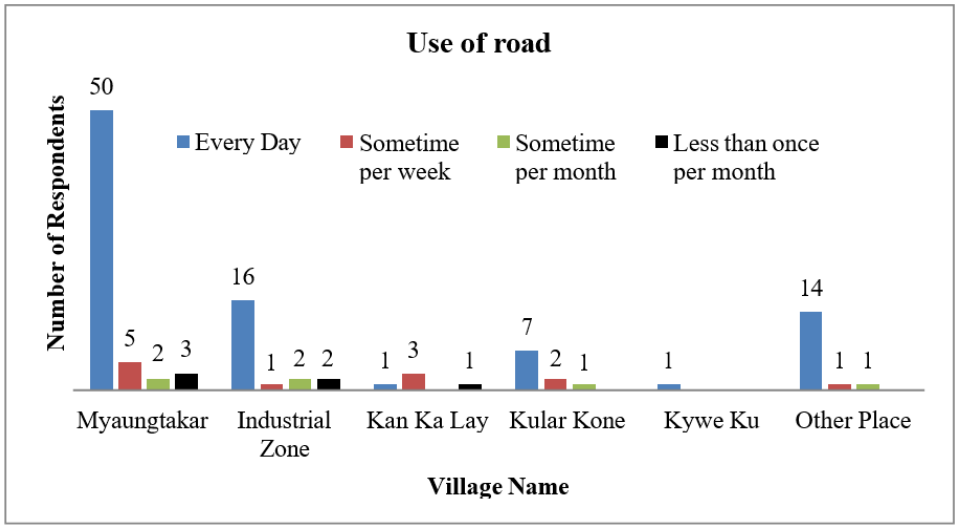


Figure 4-66 Use of Road

4.11.2.8.3 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.

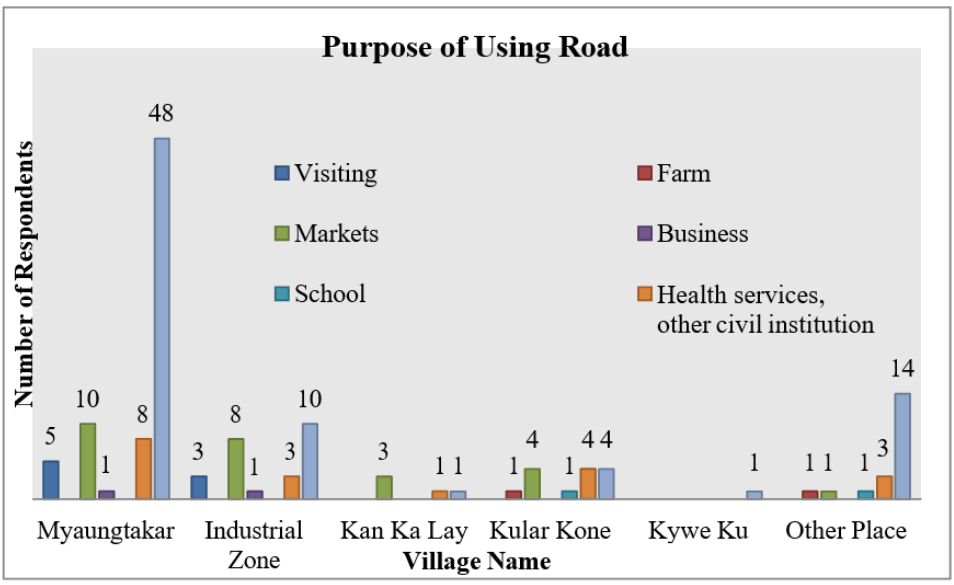


Figure 4-67 Purpose of using Road

4.11.2.9 Hazards on Natural Disasters

4.11.2.9.1 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.

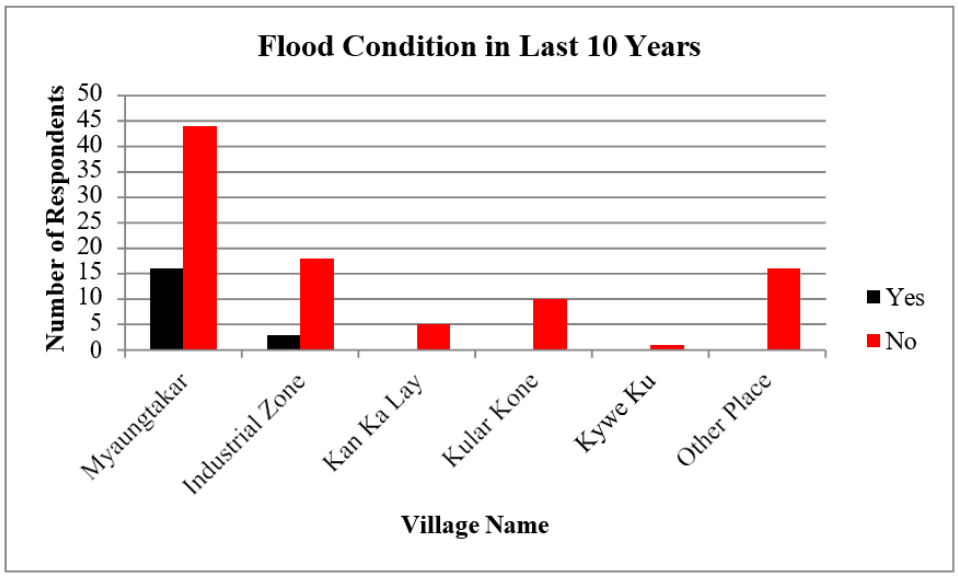


Figure 4-68 Flood Condition

4.11.2.9.2 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.

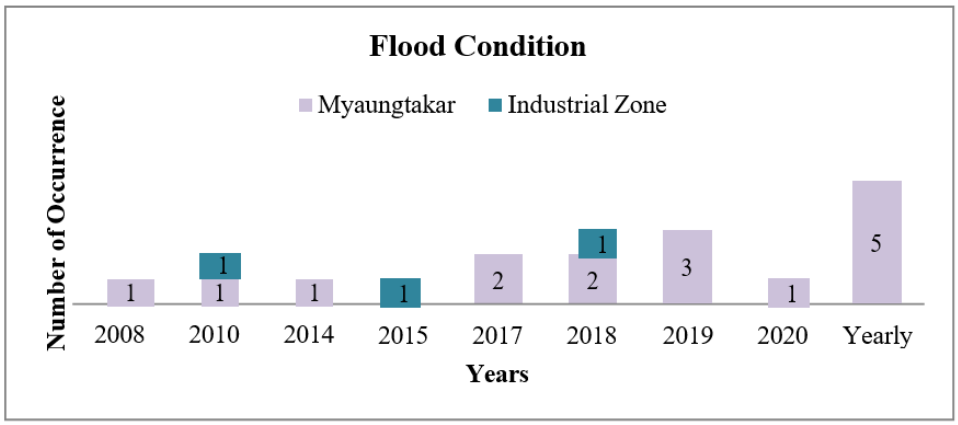


Figure 4-69 Flood Condition

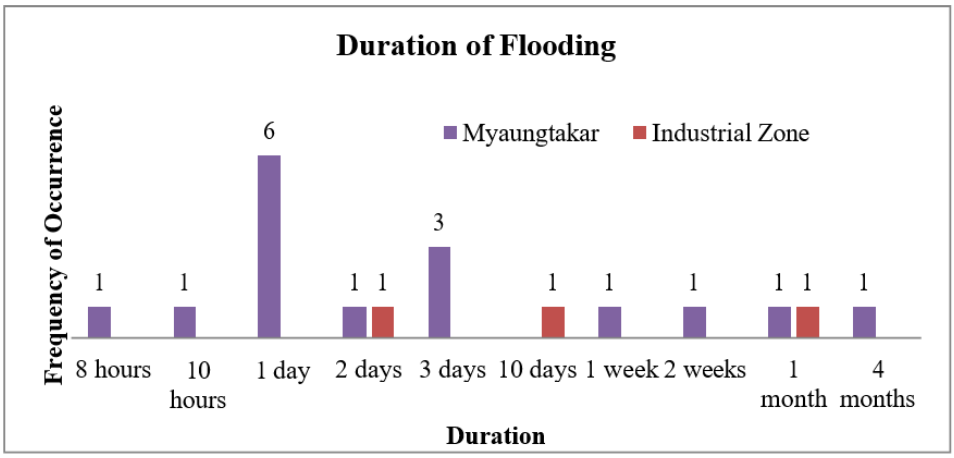


Figure 4-70 Duration of Flooding

4.11.2.9.3 Damage of Flooding

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

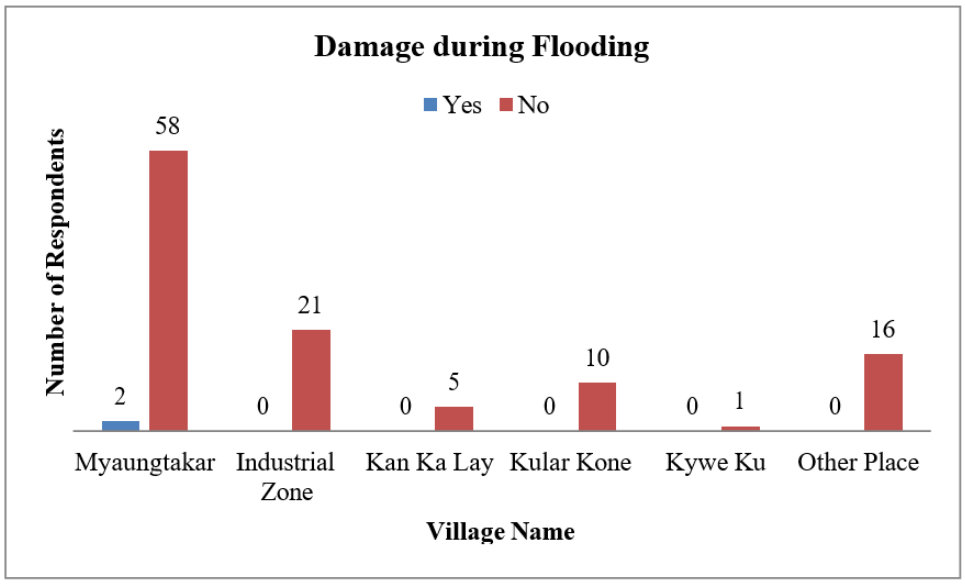


Figure 4-71 Damage during Flooding

4.11.2.9.4 Fire Hazards

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

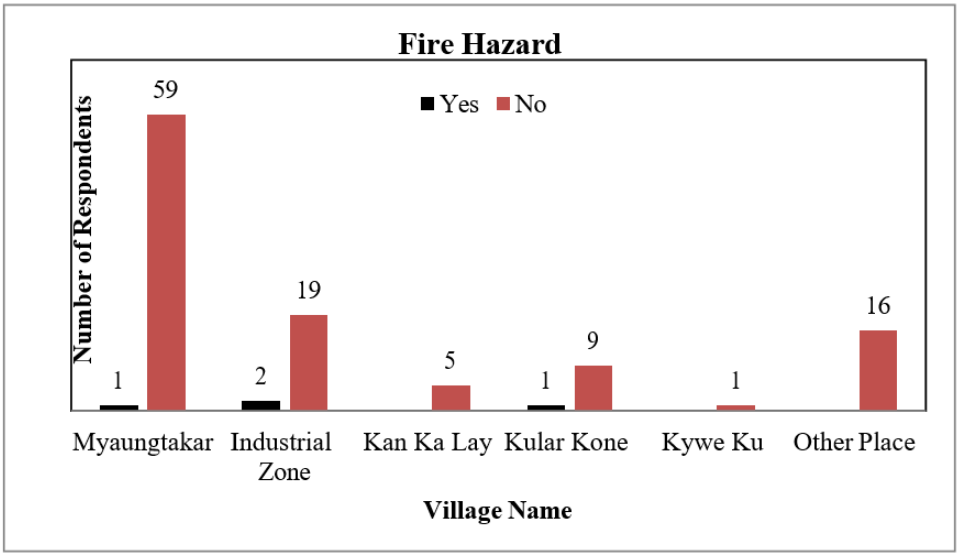


Figure 4-72 Fire Hazard

4.11.2.10 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.

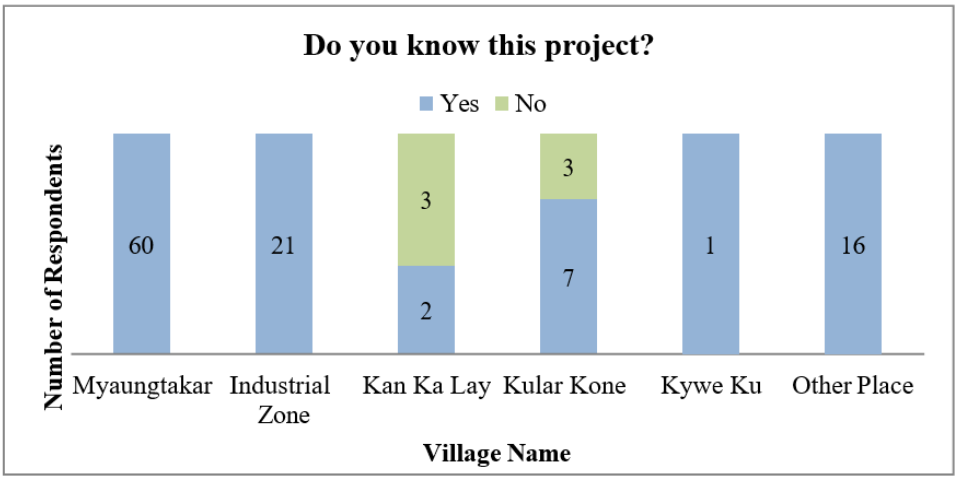


Figure 4-73 Respondents Aware of the YMI Project

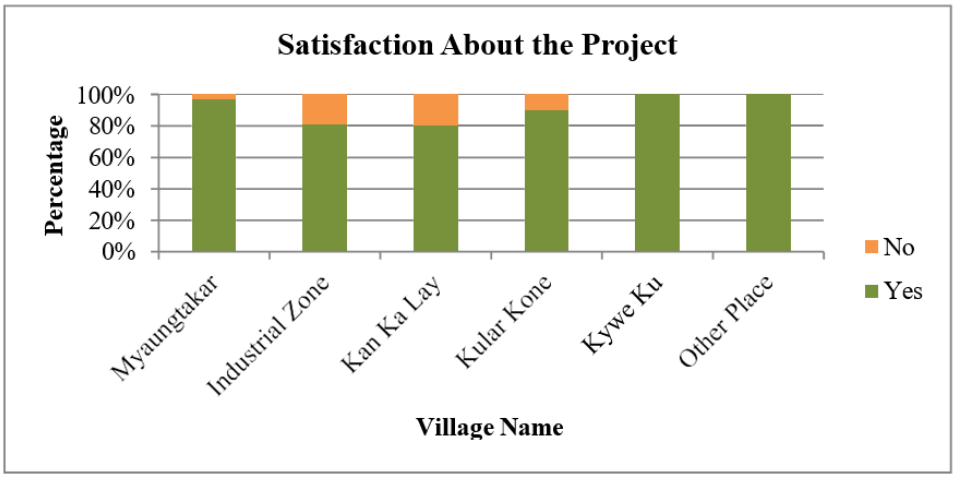


Figure 4-74 Satisfaction about the Project

4.11.2.11 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.

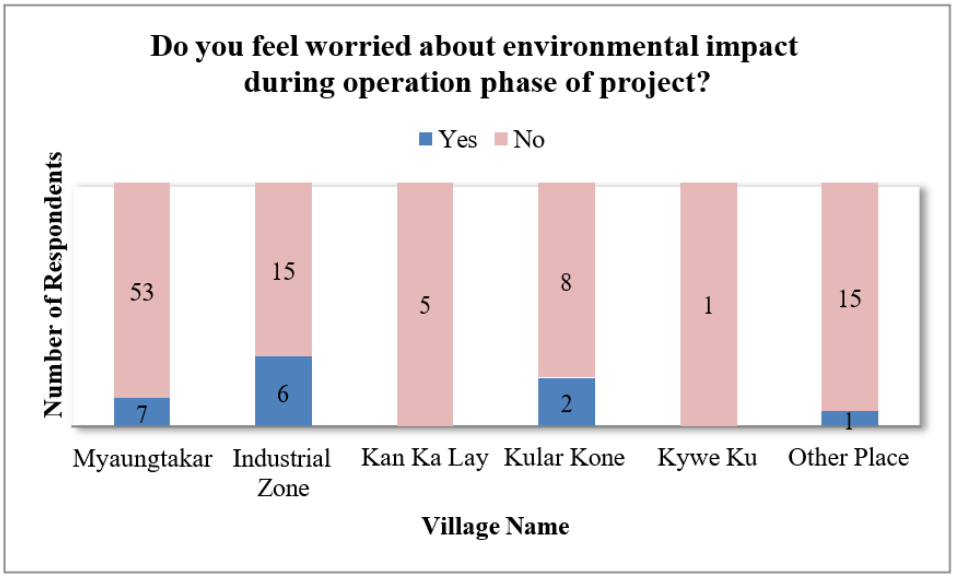


Figure 4-75 Concerns on Environmental Impacts during Project Operation Phase

4.11.2.12 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.

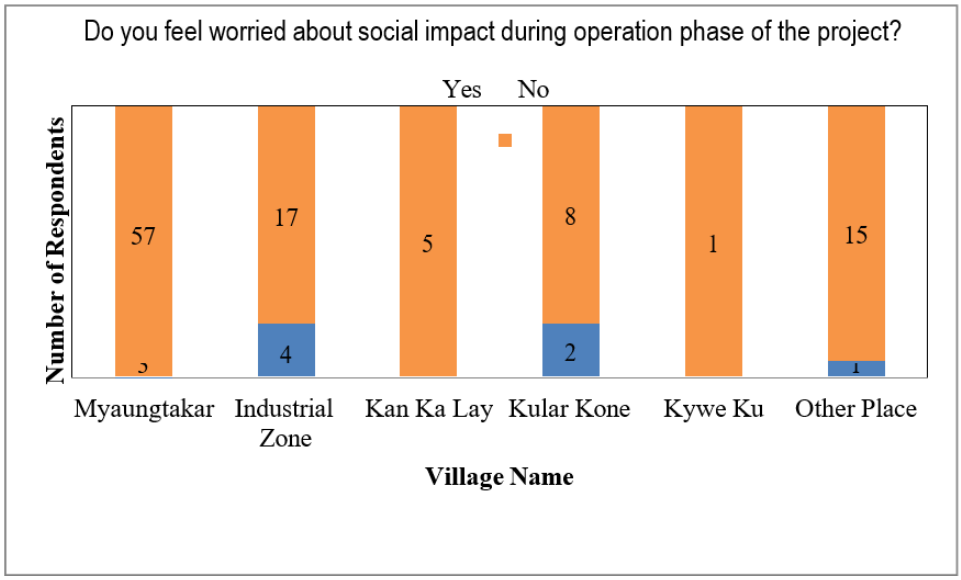


Figure 4-76 Concerns on Social Impacts during Project Operation Phase

4.11.2.13 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 areas 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.

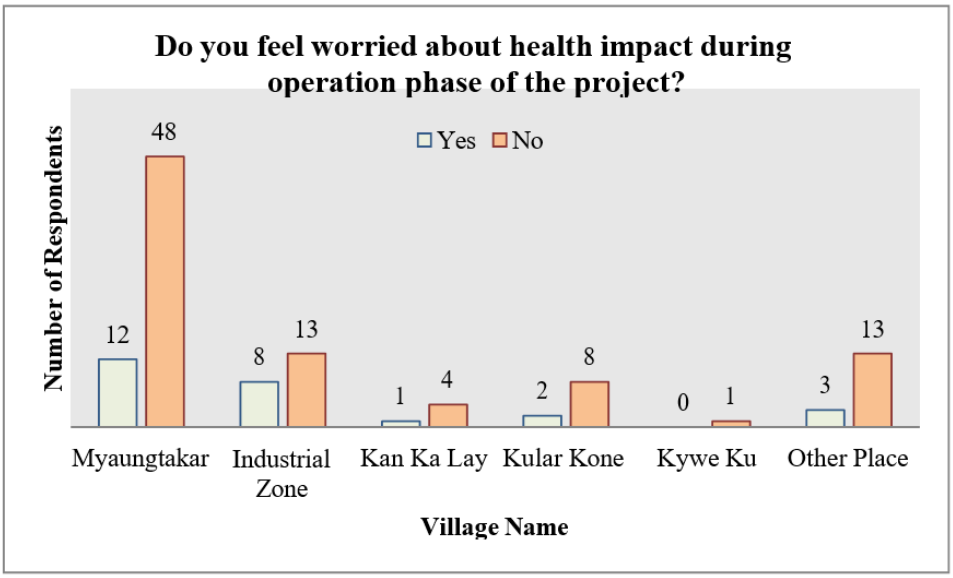


Figure 4-77 Concerns on Health Impacts during Project Operation Phase

4.11.2.14 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.

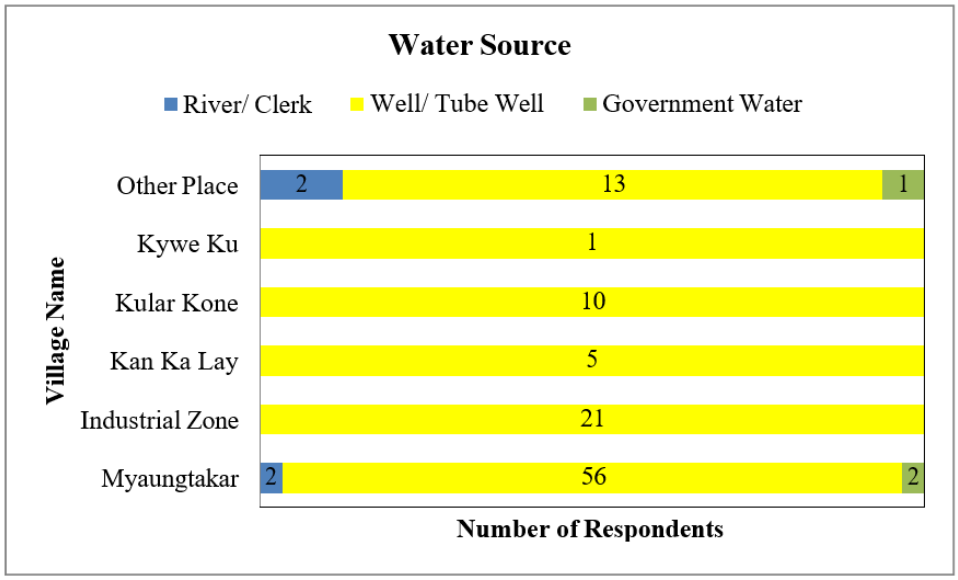


Figure 4-78 Water Source

4.12 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 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION MEASURES

5.1 INTRODUCTION

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.

5.2 PREDICTION OF IMPACTS

Prediction of impacts is essentially an objective exercise to determine what is likely to happen to the environment as a consequence of the Project and its associated activities. From the potentially significant interactions identified in Scoping, the impacts to the various resources/receptors are elaborated and evaluated. The diverse range of potential impacts considered in the EIA process typically results in a wide range of prediction methods being used, including quantitative, semiquantitative and qualitative techniques. The overall process emission and effluents are illustrated as in the flow chart.

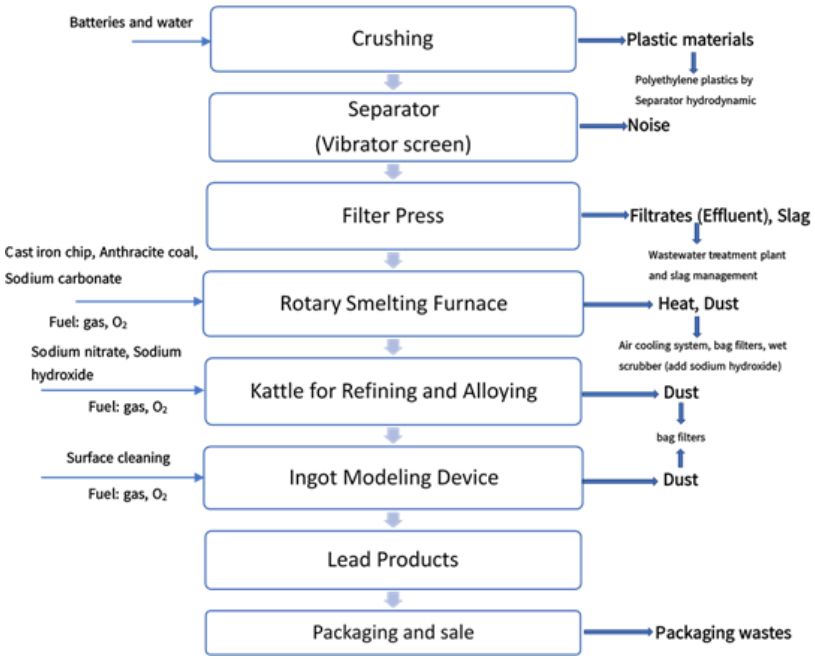


Figure 5-1 Overall Process Emission and Effluents

5.3 IMPACT ASSESSMENT METHODOLOGY

Once the prediction of potential impacts is complete, each potential impact is described in terms of its various relevant characteristics (e.g., type, scale, duration, frequency, extent). The terminology and designations used to describe impact characteristics are shown in **Table 5.1**.

Table 5.1 Impact Characteristics

Characteristics	Definition	Designations
Type	A descriptor indicating the relationship of the potential impact to the Project (in terms of cause and effect).	• Direct • Indirect • Induced
Extent	The "reach" of the potential impact (e.g., confined to a small area around the Project Footprint, projected for several kilometres, etc.).	• Local • Regional • International
Duration	The time period over which a resource / receptor is potentially affected.	• Temporary • Short Term • Long Term
Scale	The size of the potential impact (e.g., the size of the area with the potential to be damaged or impacted, the fraction of a resource that could potentially be lost or affected, etc.).	No fixed designations; intended to be a numerical value or a qualitative description of "intensity".

Frequency	A measure of the constancy or periodicity of the potential impact.	No fixed designations; intended to be a numerical value or a qualitative description.

Magnitude essentially describes the intensity of the change that is predicted to occur in the resource/receptor as a result of the potential impact. The magnitude designations are:

- Positive;
- Negligible;
- Small;
- Medium; and
- Large.

In the case of a potential positive impact, no magnitude designation (aside from 'positive') is assigned. It is considered sufficient for the purpose of the EIA to indicate that the Project is expected to result in a potential positive impact, without characterizing the exact degree of positive change likely to occur.

In addition to characterizing the magnitude of impact, the other principal impact evaluation step is definition of the sensitivity/vulnerability/importance of the impacted resource/receptor. There are a range of factors to be taken into account when defining the sensitivity/vulnerability/importance of the resource/receptor, which may be physical, biological, cultural or human. Other factors may also be considered, such as legal protection, government policy, stakeholder views and economic value. The sensitivity/vulnerability/importance designations used herein for all resources/ receptors are:

- Low;
- Medium; and
- High.

Once magnitude of impact and sensitivity/vulnerability/importance of resource/receptor have been characterized, the significance can be assigned for each impact. Impact significance is designated using the matrix shown in **Table 5.2**.

Table 5.2 Impact Significance

		Sensitivity/Vulnerability/Importance		
		Low	**Medium**	**High**
Magnitude of Impact	**Negligible**	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

5.4 CONSTRUCTION PHASE

YMI started construction in 2008 and finished in February 2018. The project is currently in the operation stage.

Table 5.3 Project Timeline

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

5.5 OPERATION PHASE

5.5.1 Air Quality

Lead recycling at YMI involves various stages, including battery breaking, smelting, refining, and casting, which collectively contribute to air emissions. YMI operates with several specialized machines and equipment, including battery-breaking machines, chain scrap conveyors, rotary smelting furnaces, and kettles, to produce approximately 12,000 tons of lead annually. The processes release different air pollutants such as sulfur oxides (SO_2), nitrogen oxides (NO_2), and particulate matter (PM), which have the potential to impact air quality. This assessment evaluates the emissions from each stage, identifies control measures in place, and examines compliance with National Environmental Quality (Emission) Guidelines (NEQEG) based on air quality monitoring data.

The initial stage of the lead recycling process, battery breaking, generates dust emissions as batteries are crushed and separated into lead and non-metallic components. Following the battery breaking, lead plates, and metallic components are fed into a smelting rotary furnace, a major source of particulate matter and sulfur dioxide (SO_2) emissions due to the high-temperature smelting of lead-containing materials. Nitrogen oxides (NO_2) are also emitted, resulting from the combustion processes within the rotary furnace.

Subsequent refining and alloying activities utilize kettle furnaces, which emit minor amounts of particulate and fumes, including fine lead particles. Though emissions from kettle furnaces are comparatively low, they still contribute to the overall pollutant load. These kettles are equipped with hoods, and the exhaust from the smelting and refining stages is directed to baghouse filters, designed to capture particulates and prevent their release into the atmosphere.

YMI has implemented several control measures to minimize air quality impacts, particularly focusing on particulate and sulfur oxide emissions. To control sulfur dioxide (SO_2) emissions from the smelting rotary furnace, a wet scrubber system is in place. This technology effectively reduces SO_2 emissions by capturing and neutralizing sulfur particles within a liquid medium, significantly lowering sulfur levels before they reach the atmosphere. For particulate emissions, baghouse filters

are installed on both the smelting rotary furnace and the kettle furnaces, effectively capturing dust, fine metal particles, and fumes generated during the smelting and refining processes. The baghouse filter system captures airborne particulates, ensuring they do not disperse into the surrounding environment.

Air quality survey data show that YMI's operations are currently within regulatory limits for key pollutants as set by the National Environmental Quality (Emission) Guidelines (NEQEG). Measurements taken over a 24-hour period for $PM_{2.5}$, PM_{10} and SO_2 are all within NEQEG thresholds, indicating effective management of particulates and sulfur emissions. The recorded maximum daily 8-hour ozone concentration is also within the guideline limit of 100 µg/m³, suggesting that volatile organic compounds (VOCs) and other ozone precursors are well controlled. NO_2 concentrations, measured against the one-hour NEQEG standard, are also below the guideline value, showing that combustion-related emissions from the smelting and refining processes are managed effectively.

The lead recycling process at YMI contributes emissions of sulfur oxides, nitrogen oxides, and particulates, which have potential air quality impacts if uncontrolled. However, with the implementation of wet scrubbers, baghouse filters, and hooded kettle systems, YMI effectively manages these emissions.

Table 5.4 Significance of Air Quality Impact

Impact	Potential impacts on Ambient Air Quality			
Impact Nature	**Negative**	Positive	Neutral	
	Impacts to ambient air quality would be considered adverse (negative).			
Impact Type	**Direct**	Indirect	Induced	
	Impacts to ambient air quality are considered direct.			
Impact Duration	Temporary	Short-term	**Long-term**	
	Potential impacts to air quality will occur throughout the operation phase only. The duration is therefore long-term.			
Impact Extent	**Local**	Regional	International	
	Potential impacts were considered up to 3km from the project and are considered local in their extent.			
Impact Scale	The scale of the impacts is likely to be within 3 km from the point of release.			
Frequency	The impact will occur daily during the operation phase.			
Impact Magnitude	Negligible	**Small**	Medium	Large
	The expected impact magnitude is small.			
Receptor	Low	**Medium**	High	

Sensitivity	The approach assumes that sensitivity within the general study area is medium for human health.			
Impact Significance	Negligible	**Minor**	Moderate	Major
	The significance of the impact is expected to be minor at worst.			

5.5.1.1 Mitigation Measures

- The factory has implemented Korean technology for air emission control, utilizing equipment such as a rotary furnace, baghouse, wet scrubber, cyclone, dust collection line, and blower motor with fan.
- The lead smelting, casting, and related processes operate within an enclosed system to minimize lead concentrations in ambient air. The factory used conveyors at each stage of production to keep workers from contacting dust particles.
- The factory is equipped with air emission control devices, including wet scrubber, bag filters, and cyclone dust collection system, to mitigate air pollution caused by lead particles and fumes generated during lead smelting. These systems ensure that lead concentrations remain within the specified regulatory standards.
- Air emission control devices are maintained through the implementation of a scheduled maintenance plan.
- The filters in the air emission control system and chimney will be replaced at regular intervals, and their ability to function will be tested on a regular basis.
- A monitoring system will be installed to track air quality emissions from the chimney to the surrounding environment, ensuring that lead concentrations remain within the standards.
- The company will monitor air quality parameters in accordance with Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining, and the measurements will be documented accordingly.

Figure 5-2 Air Emission Control Units in YMI Factory

5.5.1.2 Residual Impact

The predicted residual impact to ambient air quality during normal operation is Negligible.

5.5.2 Water Quality

The lead recycling process at YMI is designed to produce pure lead and lead alloys, including antimony and calcium lead ingots. This process relies on substantial water usage, primarily sourced from an underground tube well, with a daily consumption of approximately 600 cubic meters. This includes 450 gallons allocated for industrial cooling, cleaning, and dust suppression, and 150 gallons for domestic purposes. Due to the nature of lead recycling, there are potential impacts on water quality that necessitate a focused assessment and a structured management approach.

One primary concern is the risk of groundwater contamination. Lead and acid residue from battery-breaking operations pose a significant risk if there is any spillage or improper disposal of battery acid or smelting by-products. The potential leaching of toxic compounds, including lead, from these materials into groundwater could compromise the safety of the water source, leading to environmental and health risks. Another potential impact arises from wastewater generated during various cooling and cleaning operations. This wastewater can contain trace metals, lead particulates, and acids, which could lead to significant water pollution if discharged untreated into the environment.

Table 5.5 Significance of Water Quality Impact

Impact	Potential impacts on Water Quality		
Impact Nature	**Negative**	Positive	Neutral

	Impacts to water quality would be considered adverse (negative).			
Impact Type	**Direct**	Indirect	Induced	
	Impacts to water quality would be direct impacts through waste water generated from the production process.			
Impact Duration	Temporary	Short-term	**Long-term**	
	The operation phase is expected to continue for approximately 30 years, which would be considered long-term.			
Impact Extent	**Local**	Regional	International	
	Potential impacts would be limited to the project area, and hence would be considered to be local.			
Impact Scale	Discharge of waste water may elevate the amount of trace metals, lead particulates, and acids in the water, which may cause contamination.			
Frequency	Impacts to water quality from wastewater management could occur intermittently and/or continuously, depending on wastewater source.			
Impact Magnitude	Negligible	Small	**Medium**	Large
	Impacts to water quality from improper wastewater management could occur intermittently or from improper storage/disposal during operation phase.			
Receptor Sensitivity	**Low**	Medium	High	
	The primary receptor for impacts to water quality from wastewater discharge and runoff is the industrial zone drainage. Existing groundwater and surface water quality is relatively poor considering parameters such as Turbidity, TSS, COD, Nickel and Cadmium exceed the related standards, and sensitivity of the receptor is considered Low.			
Impact Significance	Negligible	**Minor**	Moderate	Major
	The combination of a Low Resource Sensitivity and Medium Impact Magnitude will result in an overall Minor Impact.			

5.5.2.1 Mitigation Measures

- Industrial wastewater from lead recycling processes will be treated by circular wastewater treatment units. All the industrial wastewater are treated with the wastewater treatment system and reused the treated effluent in the production process itself from settling ponds. Wastewater treatment process is mentioned as shown in **Figure 5-3** and **Figure 5-4.**
- Thermal evaporator unit is installed at YMI factory for the extra effluent water which might not be reused in the operation process. The treated water is reused in the Breaking Section and some are evaporated through the Thermal Evaporator. Therefore, the discharge of

industrial wastewater from the YMI factory to the surrounding water bodies is likely to be low.

- The wastewater will be treated to meet the guideline values outlined in Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining. This treatment ensures compliance with the prescribed discharge limits for effluents. The treated wastewater will be sent to a recognized laboratory for quality analysis, with measurements conducted and verified on a quarterly basis.

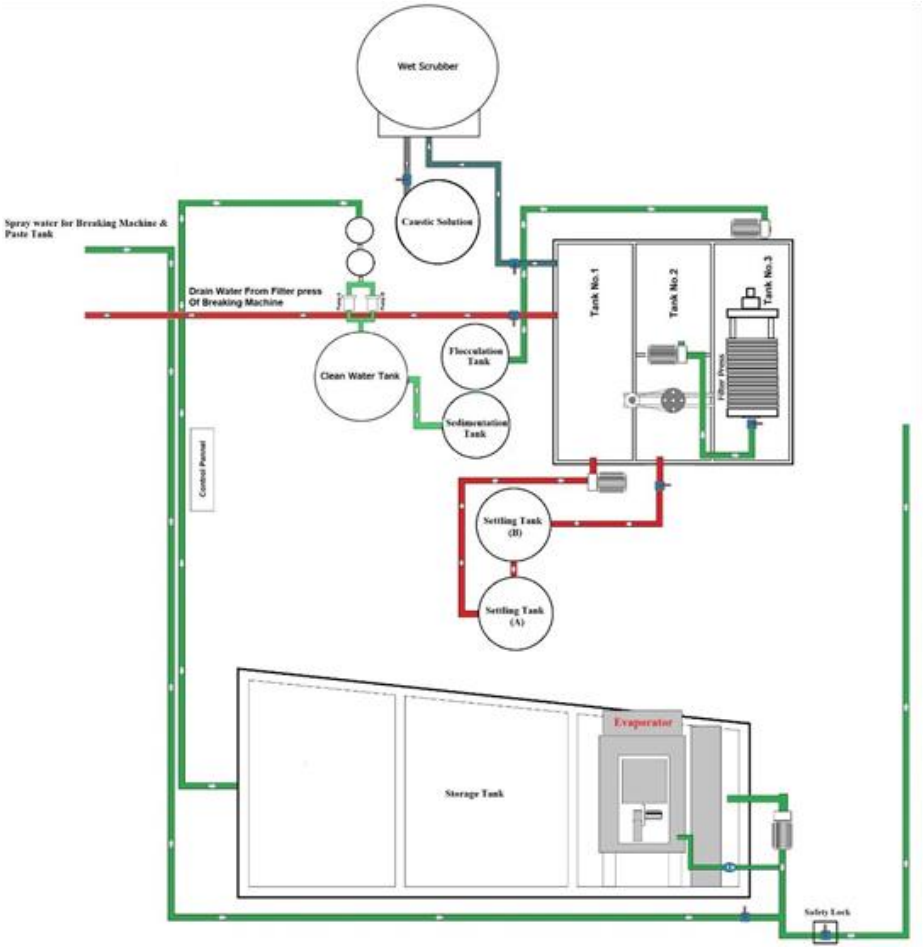


Figure 5-3 Wastewater Treatment Process

Figure 5-4 Thermal Evaporator

- In the battery breaking section of the factory, where lead plates are extracted, an impermeable floor has been constructed to prevent any potential acid seepage into the ground. It is noted that the old batteries arriving at the factory no longer contain liquid acid. Sodium Hydroxide or Sodium Carbonate are added as needed during the treatment process of discharged water from the breaking section to neutralize any residual acid present.

Figure 5-5 Condition of the Impermeable Floor Covering in The Factory

- All surface runoff from the factory site will be directed through gravity-fed drainage lines to a designated sedimentation pond. To prevent infiltration of surface runoff into the ground, a concrete drainage system has been installed, ensuring controlled flow towards the sedimentation pond. The design specifications of the sedimentation pond and drainage lines are illustrated in **Figure 5-6** to **Figure 5-8**.

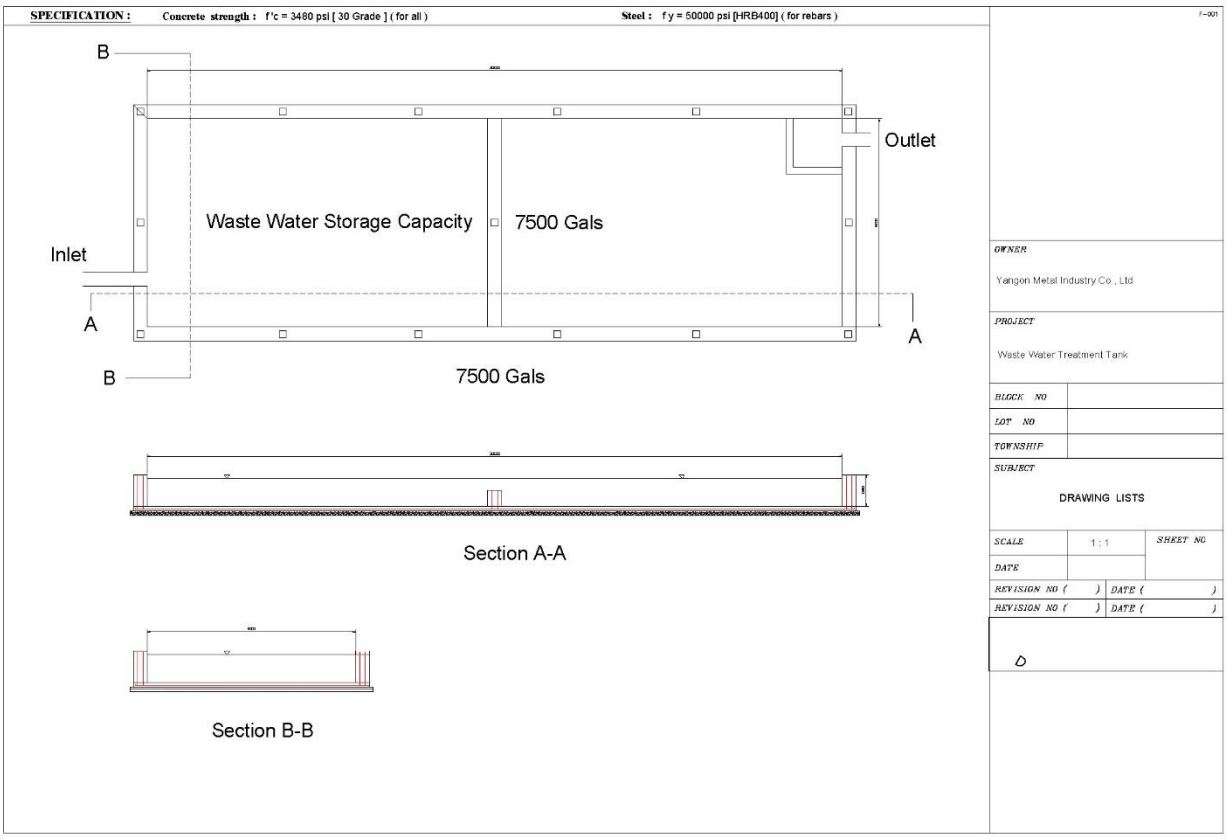
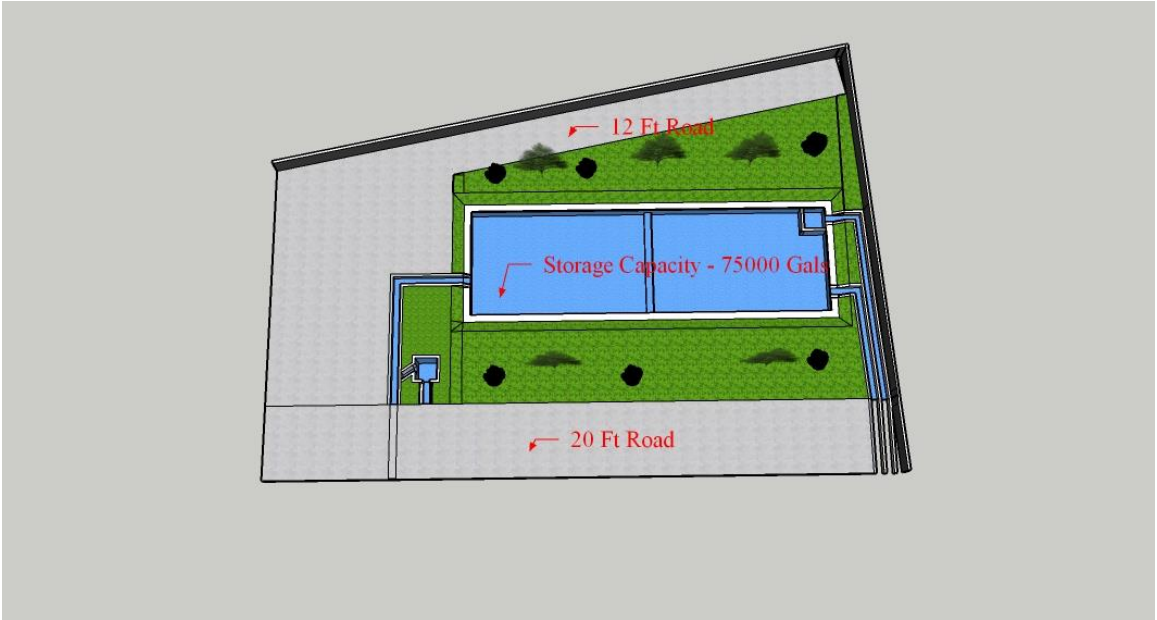


Figure 5-6 Sedimentation Pond Drawing



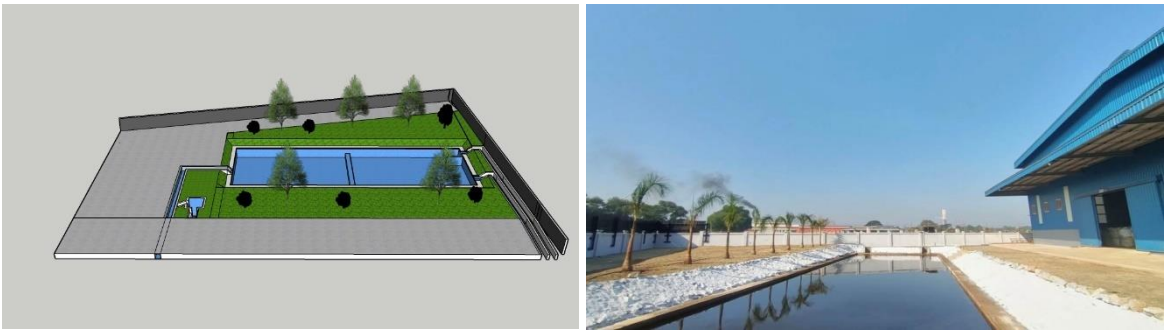


Figure 5-7 Sedimentation Pond Design and Photo

Figure 5-8 Drainage System

- Domestic wastewater, including sewage from toilets, showers, the canteen, hand basins, and offices, will be collected using a septic tank system.
- In 2024, YMI collected two water samples: one from the drainage in front of the factory and another from the sedimentation pond. These samples were then submitted to the National Analytical Laboratory for analysis. The findings from the water quality analysis are detailed in **Annex-10**.

5.5.2.2 Residual Impact

Following the implementation of the specified mitigation measures, residual impacts on water quality from YMI's lead recycling operations are expected to be of negligible significance. The established containment, treatment, and monitoring practices effectively minimize the potential for groundwater contamination and wastewater pollution. As a result, any remaining impacts on water quality are anticipated to be minimal, posing no significant risk to the surrounding environment or water resources.

5.5.3 Noise and Vibration

The lead recycling process at YMI’s facility, located in the Myaung Ta Kar industrial zone, involves the use of several heavy-duty machines, including a battery-breaking machine, chain scrap conveyor, rotary smelting furnace, locomotive cart with a 60-ton kettle, casting machine, and packing machine. These machines, combined with other industrial and transport activities in the area, are sources of mechanical noise and vibration. Noise and vibration monitoring points were established at the YMI factory as the source and at the Dhama Yayaye Monastery as the receptor to assess the impacts on the local environment. Since the factory is situated within an industrial zone, an existing baseline level of background noise is already present.

Noise and vibration in the vicinity arise from several sources. Mechanical noise is produced by various equipment such as industrial ventilators, exhaust fans, compressors, and electric motors,

as well as machinery employed across multiple factories. In addition, heavy-duty trucks, cars, three-wheelers, and motorbikes frequently move through the area, further contributing to the noise and vibration levels. Electrical equipment, including transformer and backup generators, also generate consistent noise and vibration, adding to the industrial background noise. These sources combine to create a continuous noise environment, particularly during working hours when machinery and vehicles are most active.

Noise monitoring indicates that the industrial zone's standard noise level is set at 70 dB. The survey results confirm that the noise levels remain below this threshold both during daytime and night-time, implying compliance with the industrial noise regulations. However, even if within regulatory limits, prolonged exposure to industrial noise can potentially impacting the well-being of nearby residents and workers.

Vibration impacts from the YMI factory are primarily due to the operation of heavy machinery like the smelting furnace, conveyors, and battery-breaking equipment, all of which involve high-intensity mechanical movements. Although vibrations dissipate over distance, they may be perceptible within the factory premises and immediate surroundings.

To address the noise and vibration impacts associated with YMI's lead recycling operations, several practical mitigation measures can be implemented to reduce these effects on the surrounding environment and nearby receptors, such as the Dhama Yayaye Monastery.

Table 5.6 Significance of Noise and Vibration Impact

Impact	Potential impacts on noise sensitive receptors due to noise emissions from lead recycling process equipment during the operation phase.		
Impact Nature	**Negative**	Positive	Neutral
	Potential impact is considered to be adverse (negative).		
Impact Type	**Direct**	Indirect	Induced
	Potential impacts would likely be direct impacts.		
Impact Duration	Temporary	Short-term	**Long-term**
	The operation phase is expected to continue for approximately 30 years, which would be considered long-term.		
Impact Extent	**Local**	Regional	International
	Noise and vibration impact from operation equipment will have localised impact.		
Impact Scale	The factory operates within an industrial zone where baseline noise levels are already elevated. According to survey results, the standard noise level for industrial zones is 70 dB, and measurements confirm that noise levels from factory activities remain below this standard during both daytime and night time. Additionally, recorded vibration levels fall well below regulatory thresholds set for commercial and industrial areas. As a result, the impact scale for noise and vibration from factory operations is minimal, indicating		

	compliance with environmental standards and minimal disturbance to the surrounding area.			
Frequency	Operation equipment is expected to run throughout operation period. However, some equipment will be placed on standby until certain situations arise, such as equipment failure (standby equipment to begin operation as back-up), and during unplanned events. There will be operation equipment that will operate during certain hours (not 24 hours a day) as per requirement of operating procedures.			
Impact Magnitude	Negligible	Small	**Medium**	Large
	Based on the characteristics above, the impact magnitude is likely to be medium during day time.			
Receptor Sensitivity	**Low**	Medium	High	
	The identified noise sensitive receptors are industrial, the sensitivity of the receptor is considered as low.			
Impact Significance	Negligible	**Minor**	Moderate	Major
	The combination of a low resource sensitivity and medium impact magnitude will result in an overall minor impact.			

5.5.3.1 Mitigation Measures

- Constructing physical barriers, such as soundproof walls or fences, around high-noise equipment (e.g., battery-breaking machines, rotary smelting furnace, and compressors) can help reduce noise levels. Enclosures around noisy machinery within the factory can also absorb and contain sound, preventing excessive noise from reaching the factory perimeter.
- Install noise-dampening materials, like acoustic panels, on walls and ceilings in areas housing heavy machinery. These materials help absorb sound and reduce the transmission of noise beyond the immediate vicinity of the machines.
- Maintaining equipment such as ventilators, conveyors, and electric motors can minimize mechanical noise by reducing friction, worn parts, and loose components that increase noise levels. Ensuring regular maintenance and lubrication will help keep machinery operating quietly and efficiently.
- Schedule high-noise activities during daytime hours whenever possible, when the ambient noise level is already elevated. This approach minimizes noise disturbances during nighttime hours, benefiting nearby sensitive receptors such as the monastery.
- Where possible, upgrading older machines to low-noise models can significantly reduce the overall noise profile of the factory.
- Landscaping with trees and bushes can help absorb some of the noise and vibration, reducing their impact on nearby areas.
- Train employees on best practices to minimize vibration, such as loading equipment properly and operating machinery at balanced speeds.
- Continue routine monitoring of noise and vibration levels at key points, including both the YMI facility and nearby receptors. This monitoring will help assess the effectiveness of

mitigation measures and ensure compliance with the industrial noise standard of 70 dB.

5.5.3.2 Residual Impact

If the recommended mitigation measures are implemented, residual impact significance would be Negligible Impact.

5.5.4 Waste

The lead recycling process at YMI, which produces 38.5 tons of lead daily and around 12,000 tons annually, involves several stages that generate a variety of solid wastes with significant environmental implications. The initial stage, battery breaking, separates non-metallic materials such as plastic casings and rubber separators from lead components, generating non-recyclable waste that poses environmental risks if not properly disposed of.

In the smelting rotary furnace stage, slag is generated as a primary solid waste. This slag contains traces of lead, sulfur, and other heavy metals, and improper disposal could result in these contaminants leaching into the soil and groundwater.

The refining and casting processes generate additional solid wastes, such as slag, which contain impurities from metals like antimony and calcium. These by-products require controlled handling, as they can release hazardous materials if improperly managed.

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

Table 5.7 Significance of Waste Impact

Impact	Impacts from generation and management of waste by increasing the stress put on the facilities and reducing the capacity and capability of the existing waste management network.		
Impact Nature	**Negative**	Positive	Neutral
	Potential impact is considered to be adverse (negative).		
Impact Type	**Direct**	Indirect	Induced
	Impacts to the existing waste management network would be direct.		
Impact Duration	Temporary	Short-term	**Long-term**
	The operation phase is expected to continue for approximately 30 years, which would be considered long-term.		
Impact Extent	**Local**	Regional	International
	Potential impacts would likely be restricted to the local area.		
Impact Scale	The scale of potential impacts due to release of waste is potentially large due to the quantities present during this stage. Currently, there is a limited number of licensed waste contractor within the region that are capable of		

	handling hazardous waste.			
Frequency	Impacts would occur intermittently but repeatedly throughout the day for the duration of the operation phase.			
Impact Magnitude	Negligible	Small	**Medium**	Large
	Based on the combination of the above impact characteristics the impact magnitude is considered to be medium.			
Receptor Sensitivity	Low	**Medium**	High	
	There are limited number of licensed waste contractors within the region henceforth the receptor sensitivity is rated as medium.			
Impact Significance	Negligible	Minor	**Moderate**	Major
	The combination of a medium resource sensitivity and medium impact magnitude will result in an overall moderate impact.			

5.5.4.1 Mitigation Measures

- The slag waste is properly managed in a designated storage area to prevent environmental pollution prior to disposal. It is currently stored in a covered facility with a concrete floor and walls, ensuring no leaching into the ground or drainage system.

Figure 5-9 Management of Slag Waste

- Use dedicated, labelled storage containers for spent chemicals and store them in areas with secondary containment systems to prevent accidental spills and leaks. Proper storage can prevent chemical release into soil or groundwater. Regular inspections of storage areas are

essential to ensure containment integrity.

- Provide ongoing training for employees on the handling, storage, and disposal of spent chemicals.
- Storage facilities and trash bins are provided for waste disposal at YMI factory, ensuring efficient handling, transfer, and transportation of waste. Separate bins for biodegradable waste, recyclable waste (such as plastics and papers), and hazardous waste are clearly labelled. Manual handling of waste is prohibited. However, if manual handling becomes unavoidable due to operational constraints, it will be carried out with appropriate precautions to ensure the safety of workers.
- At the YMI factory, a designated kitchen room is provided, and workers are prohibited from eating near the operational machines. Biodegradable waste, primarily food waste, is to be collected only in the dining area.
- Solid waste is segregated by type and disposed of in coordination with the relevant Township Development Committee.

Figure 5-10 Storage Bins at YMI

5.5.4.2 Residual Impact

If the recommended mitigation and management measures are implemented, residual impact significance would be reduced to Minor Impact.

5.5.5 Soil

The lead recycling process at YMI involves the handling and processing of lead and various chemicals, which pose potential risks to soil quality in the vicinity of the operation. Soil

contamination can occur through accidental spills, improper handling, or disposal of waste materials and chemicals. Additionally, leaks or accidental releases from storage areas, smelting furnaces, and transport equipment (e.g., forklifts and cranes) may lead to the deposition of heavy metals and other hazardous substances into the soil. The use of emergency generators may also contribute to potential soil contamination through fuel leaks and spills.

Table 5.8 Significance of Soil Impact

Impact	Potential impacts on soil quality due to leakage during the operation phase.			
Impact Nature	**Negative**	Positive	Neutral	
	Potential impacts to soil would be considered to be adverse (negative).			
Impact Type	**Direct**	Indirect	Induced	
	Impacts to soil would be direct impacts through accidental leaks of storage, piping, and equipment used in the lead recycling process.			
Impact Duration	Temporary	**Short-term**	Long-term	
	Accidental leaks and spills are expected to only have short-term impacts on soil.			
Impact Extent	**Local**	Regional	International	
	The soil impacts from lead recycling operations at YMI would be confined to the immediate project footprint, making the impact localized in nature.			
Impact Scale	Accidental leaks occurring along the lead recycling process may cause contamination to soil and groundwater. This impact may cause disturbances to flora and subsurface organisms, and the leaching of contaminated soil into groundwater.			
Frequency	The impacts are not expected to occur.			
Impact Magnitude	Negligible	**Small**	Medium	Large
	The potential impact from accidental leaks within the project area is anticipated to be small.			
Receptor Sensitivity	**Low**	Medium	High	
	The soil quality in the project area is considered degraded and of low sensitivity or importance, situated within an industrial zone. It does not support diverse habitats or populations and has minimal use for local communities. Overall, the soil sensitivity is assessed as low.			
Impact Significance	**Negligible**	Minor	Moderate	Major
	The combination of a low resource sensitivity and small impact magnitude			

	will result in an overall Negligible impact.

5.5.5.1 Mitigation Measures

- Conduct regular inspections of storage, piping, and equipment used in the lead recycling process to identify and repair leaks or damage promptly.
- In the battery breaking section of the factory, where lead plates are extracted, an impermeable floor has been constructed to prevent any potential acid seepage into the ground. It is noted that the old batteries arriving at the factory no longer contain liquid acid. Sodium Hydroxide or Sodium Carbonate are added as needed during the treatment process of discharged water from the breaking section to neutralize any residual acid present.
- Store chemicals in designated, clearly labelled, and weather-resistant areas with appropriate ventilation and security measures. Avoid storing chemicals directly on the ground to reduce the risk of soil contamination. For transport and handling, use closed containers or systems to minimize the potential for leaks and spills.
- Implement dust control measures in areas where lead processing, smelting, and handling take place, as dust and particulates can settle on the soil and contribute to contamination.
- Develop and implement a waste management plan to handle both hazardous and non-hazardous waste generated during the recycling process.
- Provide regular training for all personnel on emergency response procedures, including handling chemical spills, and accidental releases.
- Conduct regular soil sampling and analysis in areas surrounding the recycling facility to monitor for potential contamination by lead, heavy metals, and other hazardous chemicals.

5.5.5.2 Residual Impact

As the pre-mitigation impacts were assessed as negligible, the residual impacts are likewise expected to be of negligible significance.

5.5.6 Biodiversity

YMI Co., Ltd. is situated within the Myaung Ta Kar Special Foundry Industrial Zone, an area characterized by limited ecological value due to its industrial nature. The project encompasses 8 acres and features two primary habitat types: plantation and shrub land. A biodiversity survey recorded a total of 49 species, including 2 mammal species, 11 species of herpetofauna, 8 species of butterflies, 2 species of dragonflies, 22 species of birds, and 4 species of fish. Notably, the survey indicated the absence of threatened species as per the IUCN Red List, with one endemic species identified in the area.

While the ecological sensitivity of the site is low and there are no designated protective or sensitive biodiversity areas, the lead recycling operations may still pose potential risks to local wildlife and habitats. Activities such as battery breaking, smelting, and transportation of materials could lead to habitat degradation, fragmentation, and potential disturbances to local fauna.

Table 5.9 Significance of Biodiversity Impact

Impact	Potential impacts on disturbance and displacement of fauna and flora.		
Impact Nature	**Negative**	Positive	Neutral

	Potential impacts to habitat loss would be considered to be adverse (negative).			
Impact Type	Direct	**Indirect**	Induced	
	Potential impacts would likely be indirect impacts.			
Impact Duration	Temporary	Short-term	**Long-term**	
	Only occurs during the operation period.			
Impact Extent	**Local**	Regional	International	
	Impact extent will be within the Project Area and adjacent habitats within the AoI.			
Impact Scale	Disturbance and displacement will be small in scale and limited to areas within the Project Area and adjacent habitats within the AoI.			
Frequency	Occurs only once.			
Impact Magnitude	**Negligible**	Small	Medium	Large
	The impact magnitude is likely to be Negligible.			
Receptor Sensitivity	**Low**	Medium	High	
	The receptors are Least Concern species so the sensitivity is considered to be Low.			
Impact Significance	**Negligible**	Minor	Moderate	Major
	The combination of a low resource sensitivity and negligible impact magnitude will result in an overall Negligible impact.			

5.5.6.1 Mitigation Measures on Biodiversity

- Implement strict pollution control measures to minimize the risk of spills and contamination. This includes developing a waste management plan that includes proper storage and disposal of hazardous materials, as well as regular maintenance of equipment to prevent leaks.
- Establish a biodiversity monitoring plan to track the diversity of species in and around the project area.
- YMI is committed to maintaining green areas both inside and outside the factory compound. To preserve these spaces, a strict policy is enforced prohibiting anyone from picking flowers or cutting trees without proper authorization.

Figure 5-11 Green Area inside and Outside the Factory Compound

5.5.6.2 Residual Impact

Following the implementation of the proposed mitigation measures, the significance of the residual impact on biodiversity resulting from project activities is assessed to be negligible.

5.5.7 Transportation and Traffic

YMI Co., Ltd., located in the Myaung Ta Kar Special Foundry Industrial Zone, generates significant traffic activity, primarily attributed to the transportation of raw materials and finished products. A recent survey conducted along the access road to YMI recorded a total vehicle volume of 1,267. Notably, motorcycles comprised the majority of this traffic, accounting for 83% of the total. The high percentage of motorcycle traffic raises concerns regarding the increased risk of accidents, particularly when coupled with the movement of heavier vehicles utilized for material transportation, such as cranes and forklifts.

In addition to the traffic generated by YMI, the volume of vehicles along the Yangon-Pyay Road reached 6,825 during the same survey period. Motorcycles again dominated this thoroughfare, representing 40% of the total traffic. In contrast, larger vehicles, such as trailer trucks, constituted only 2% of the traffic, indicating potential challenges in maintaining road safety and operational efficiency in this area.

The raw materials transported to and from YMI include used battery materials, which may contain

residues of acids and battery products. Additionally, the by-products could be contaminated with metals and certain sulfur compounds. Given these factors, it is imperative that the transportation of raw materials, by-products, and finished products be conducted with utmost caution. Measures must be implemented to prevent manual contact and to mitigate the risk of accidental releases, ensuring the safety and health of all personnel involved in these operations.

5.5.7.1 Mitigation Measures

- YMI employs vehicles equipped with acid and battery proof containers to transport materials safely, thereby minimizing the risk of accidental spills that could harm workers and individuals along the transport route, as illustrated in **Figure 5-12**.

Figure 5-12 Transporting Vehicle Used at YMI

- YMI has effectively managed the parking area for workers, accommodating various types of vehicles. The parking area is maintained regularly to ensure cleanliness and is constructed with a concrete floor and a shaded roof. These measures are implemented to prevent oil spills from contaminating the soil and to provide a cooler environment for workers.

Figure 5-13 Parking Area for Bicycles and Motorbikes

- Implement a scheduling system for the transportation of materials and finished products to

avoid peak traffic hours. This would help to reduce congestion on both the access road to YMI and the Yangon-Pyay Road, contributing to improved safety and traffic flow.

- Install clear signage to inform drivers of the presence of heavy vehicles and potential hazards, particularly near the access road. Additionally, conduct awareness campaigns to educate local residents and road users about safe practices when sharing the road with heavy and commercial vehicles.

5.6 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 neighbouring 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

5.6.1 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.

5.6.2 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

5.6.2.1 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.

5.6.2.2 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.

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.

5.6.2.3 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.

5.6.3 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.

5.7 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.

5.7.1 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 questionnaire was prepared by the health consultant.

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 5-14 Photographic Records of Staff Health Survey in YMI Factory Clinic

Figure 5-15 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 pork in various ways and less habit to eat vegetables.

5.7.2 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.

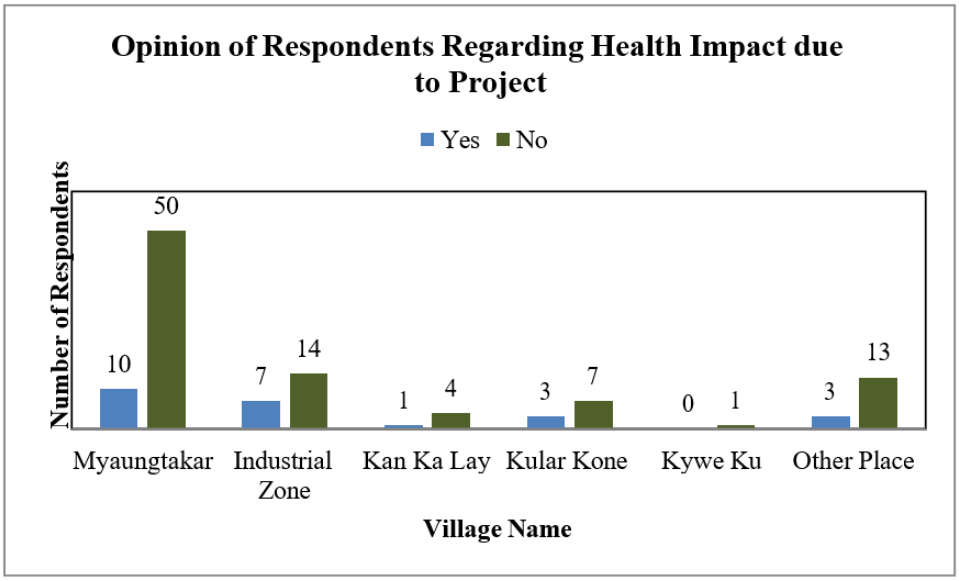


Figure 5-16 Opinion of Respondents

5.7.3 Investigation Results of Community Health Survey

The 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.

5.7.4 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.

5.7.4.1 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 %.

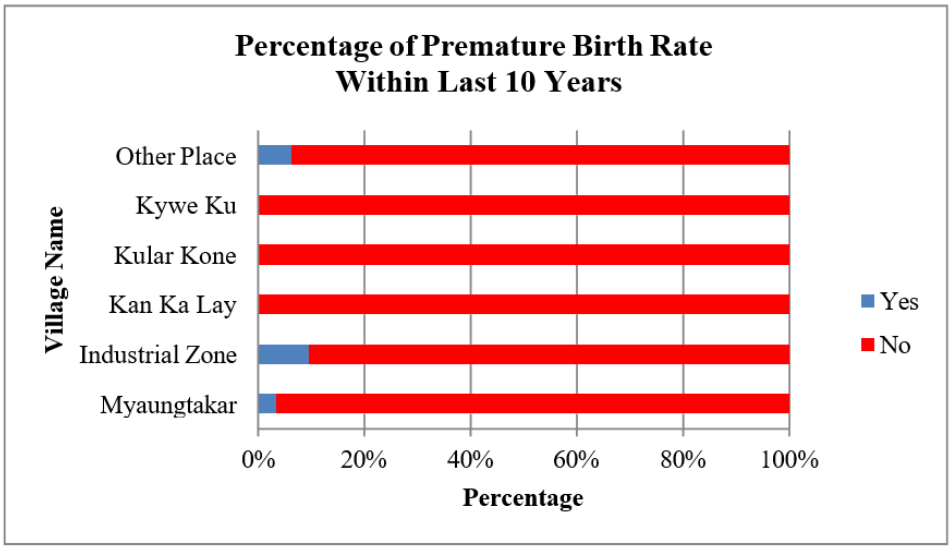


Figure 5-17 Premature Birth Rate

5.7.4.2 Birth Rate of Underweight Baby

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

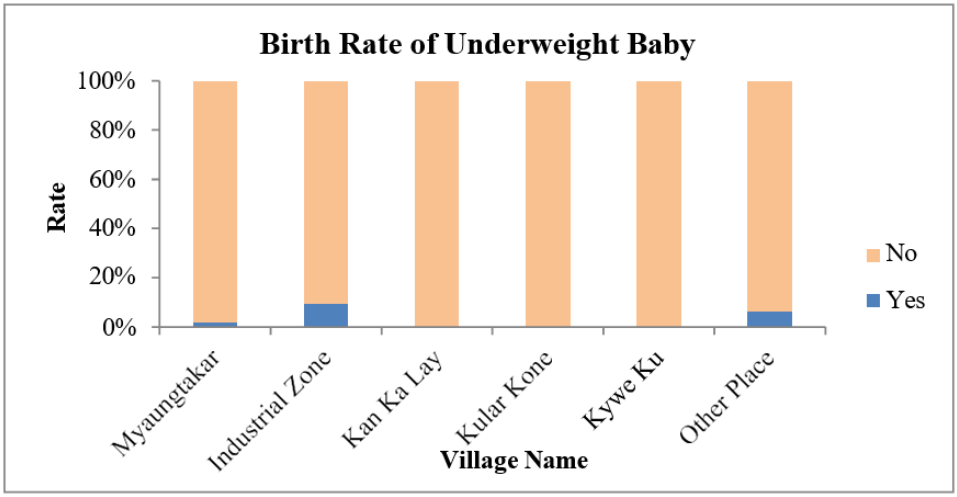


Figure 5-18 Birth Rate of Underweight Baby

5.7.4.3 Visual Impairment Condition

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

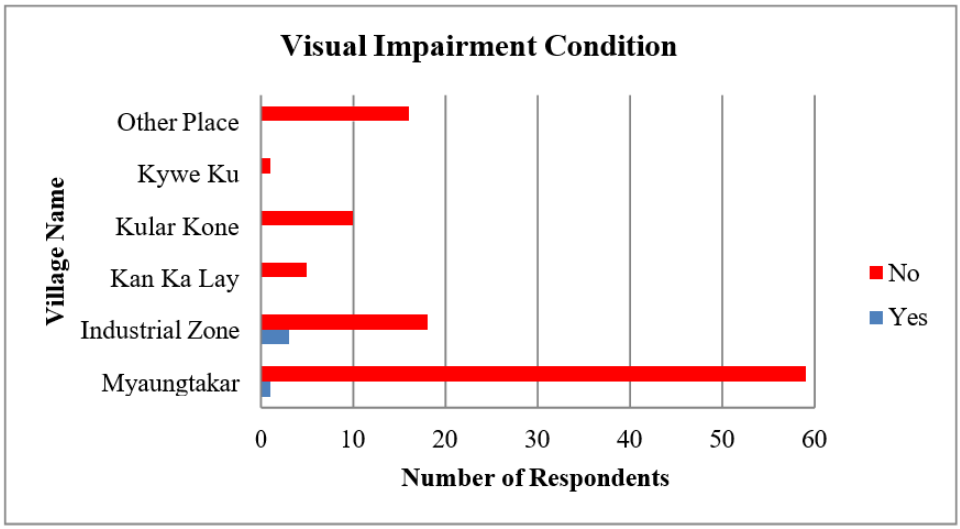


Figure 5-19 Visual Impairment Condition

5.7.4.4 Occurrence of Double Vision

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

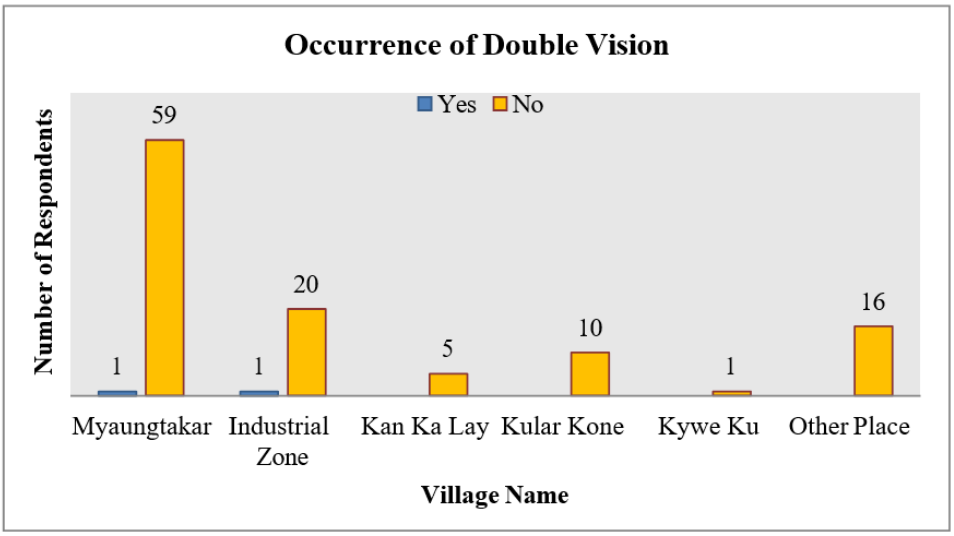


Figure 5-20 Occurrence of Double Vision

5.7.4.5 Hearing Impairment Condition

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

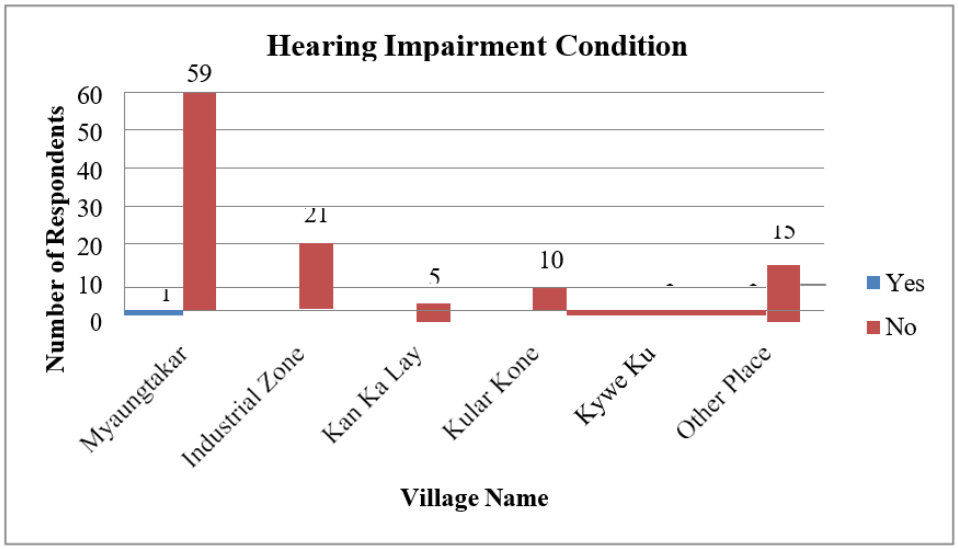


Figure 5-21 Hearing Impairment Condition

5.7.4.6 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.

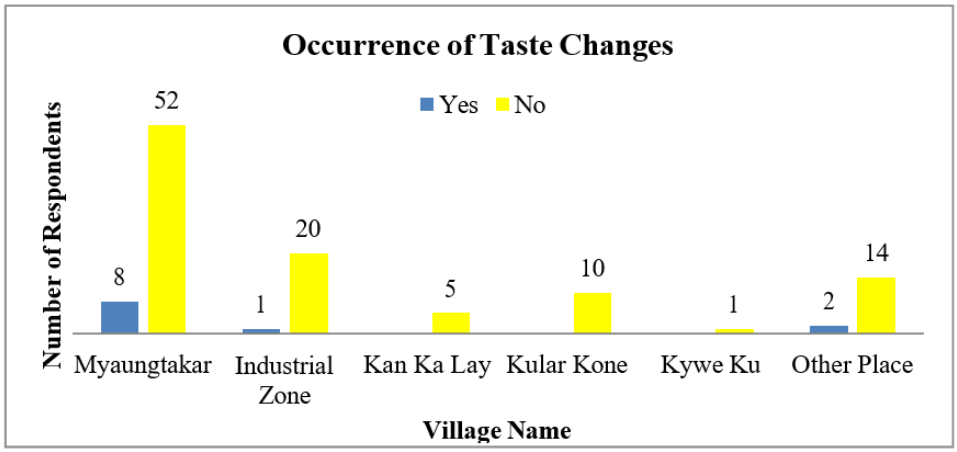


Figure 5-22 Occurrence of Taste Changes

5.7.4.7 Occurrence of Swollen Tongue

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

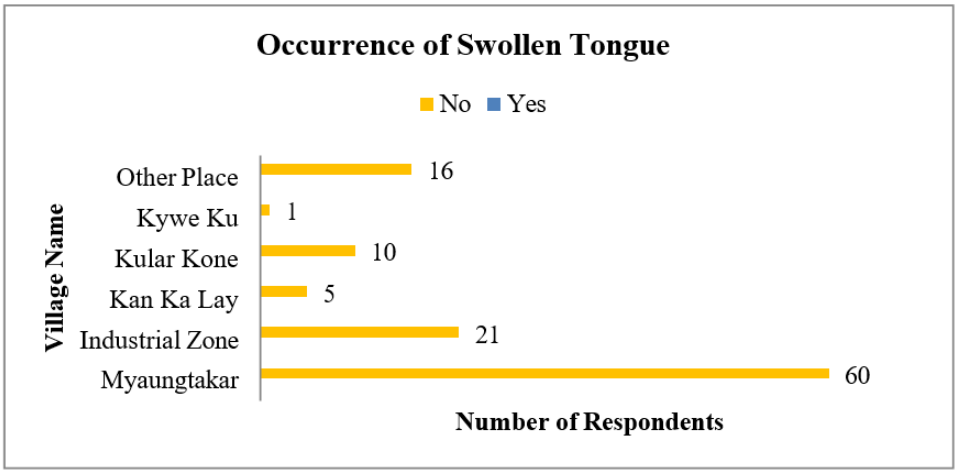


Figure 5-23 Occurrence of Swollen Tongue

5.7.4.8 Occurrence of Insomnia

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

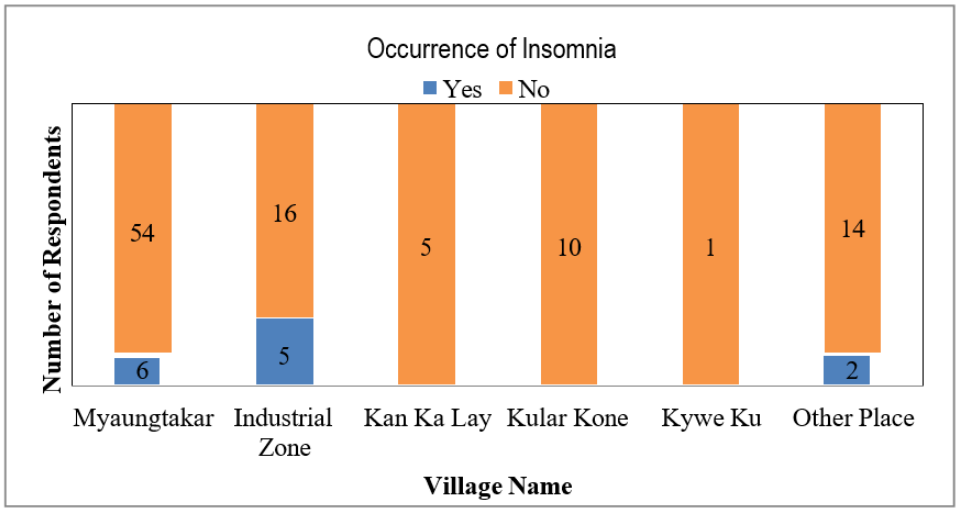


Figure 5-24 Occurrence of Insomnia

5.7.4.9 Occurrence of Eating Disorders

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

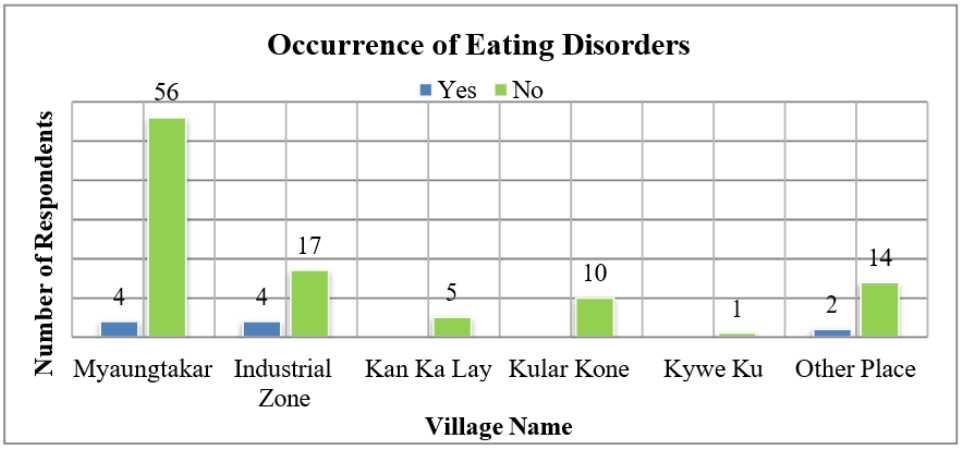


Figure 5-25 Occurrence of Eating Disorders

5.7.4.10 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.

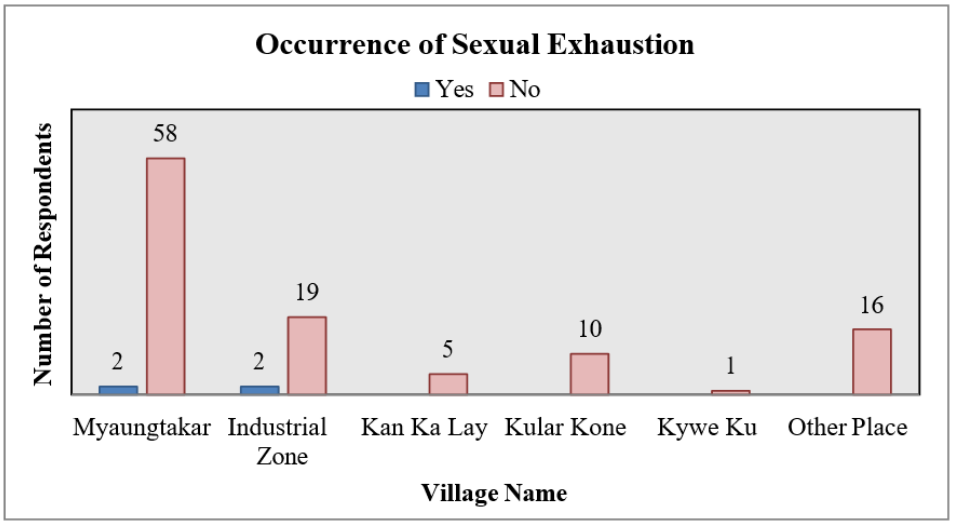


Figure 5-26 Occurrence of Sexual Exhaustion

5.7.4.11 Occurrence of Depression

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

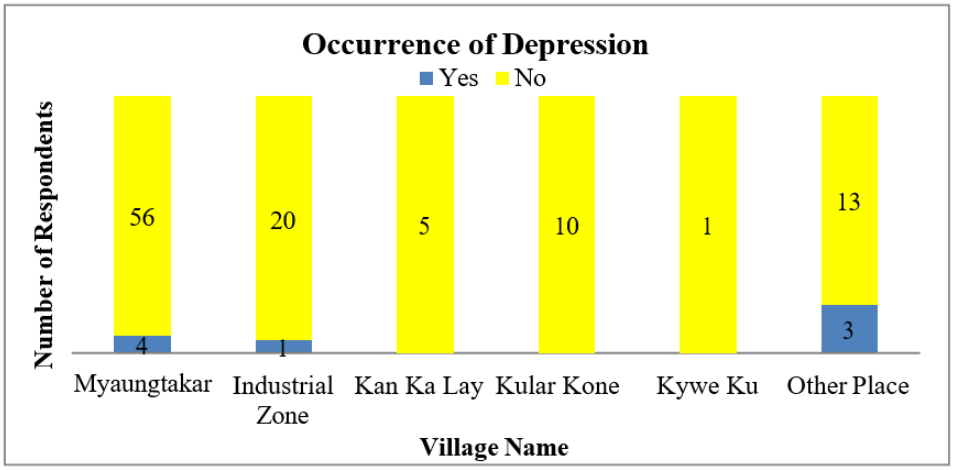


Figure 5-27 Occurrence of Depression

5.7.4.12 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.

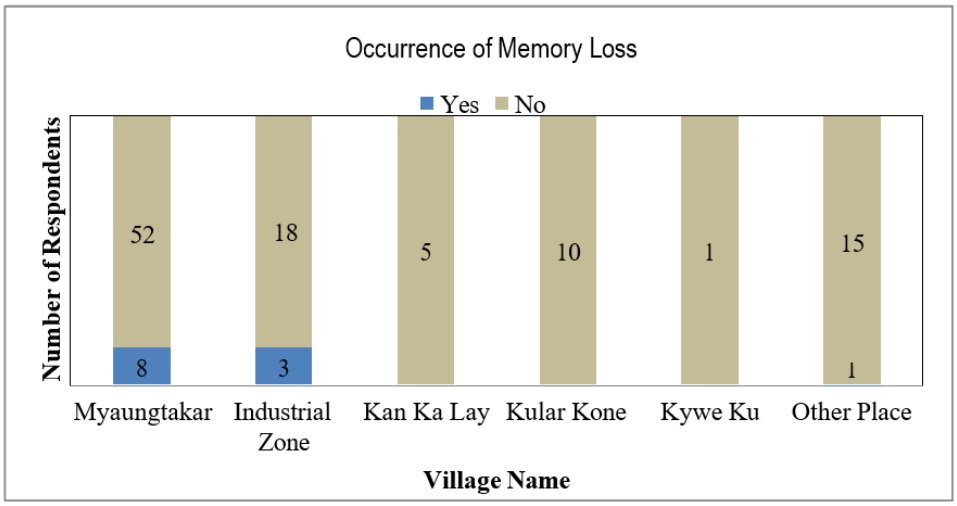


Figure 5-28 Occurrence of Memory Loss

5.7.4.13 Occurrence of Headache

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

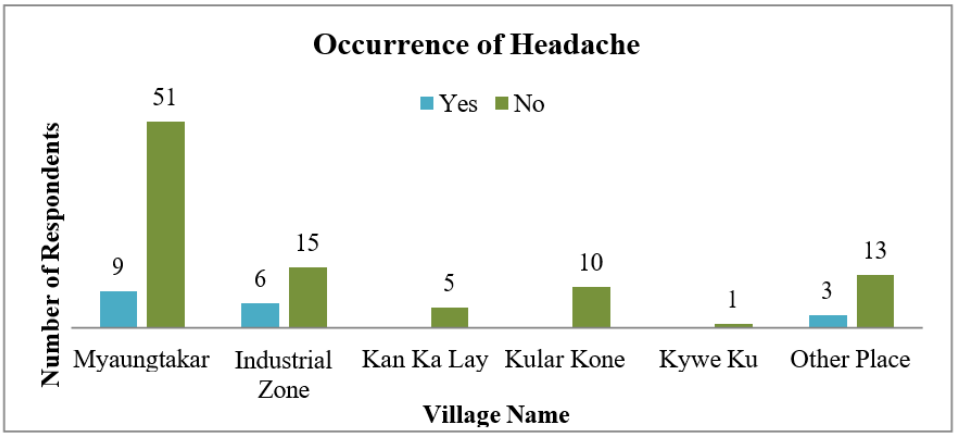


Figure 5-29 Occurrence of Headache

5.7.4.14 Occurrence of Anxiety

Occurrence of anxiety is almost negative in all survey area.

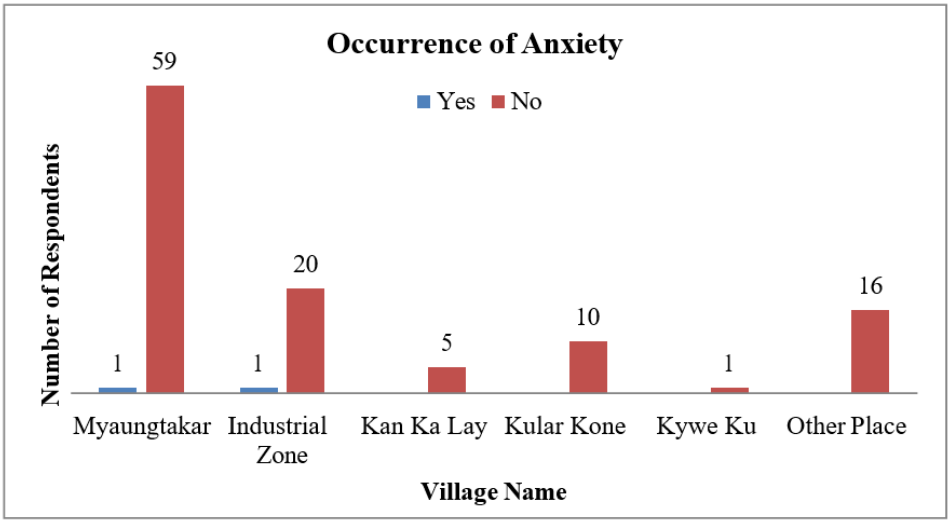


Figure 5-30 Occurrence of Anxiety

5.7.4.15 Occurrence of Epilepsy without Fever

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

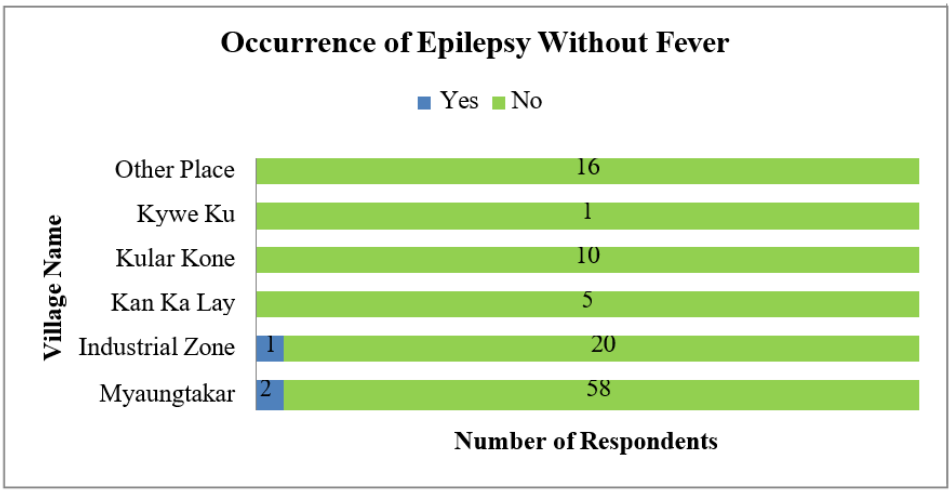


Figure 5-31 Occurrence of Epilepsy without Fever

5.7.4.16 Occurrence of Frequent Abdominal Pain

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

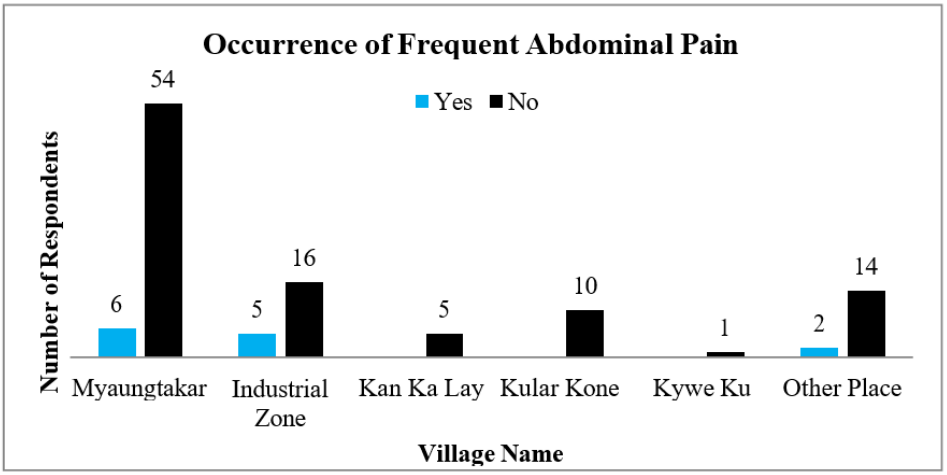


Figure 5-32 Occurrence of Frequent Abdominal Pain

5.7.4.17 Occurrence of Nausea and Vomit

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

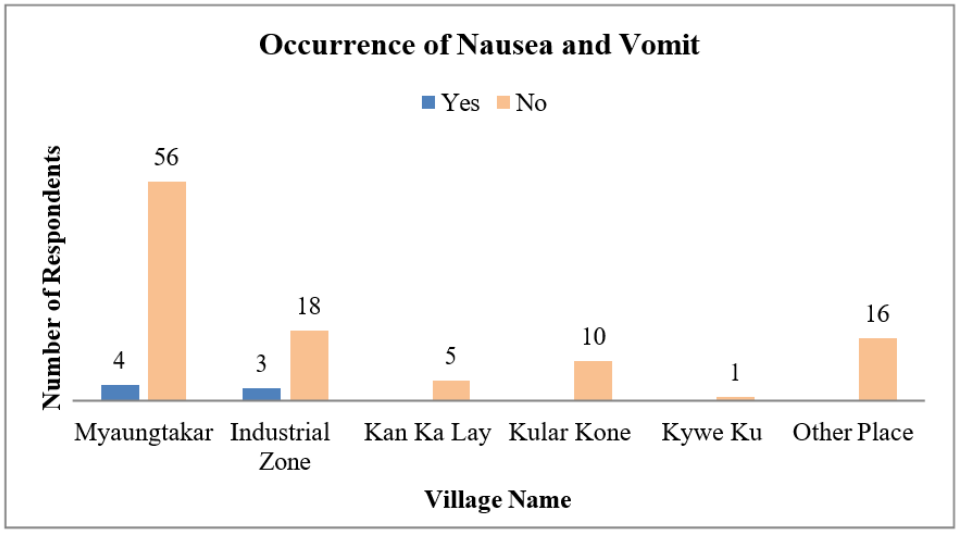


Figure 5-33 Occurrence of Nausea and Vomit

5.7.4.18 Occurrence of Frequent Constipation/Diarrhea

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

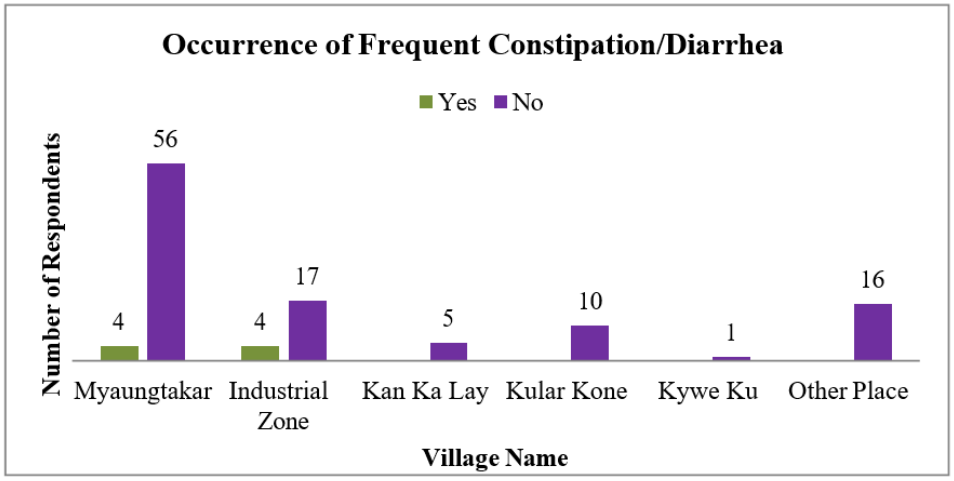


Figure 5-34 Occurrence of Frequent Constipation/Diarrhea

5.7.4.19 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.

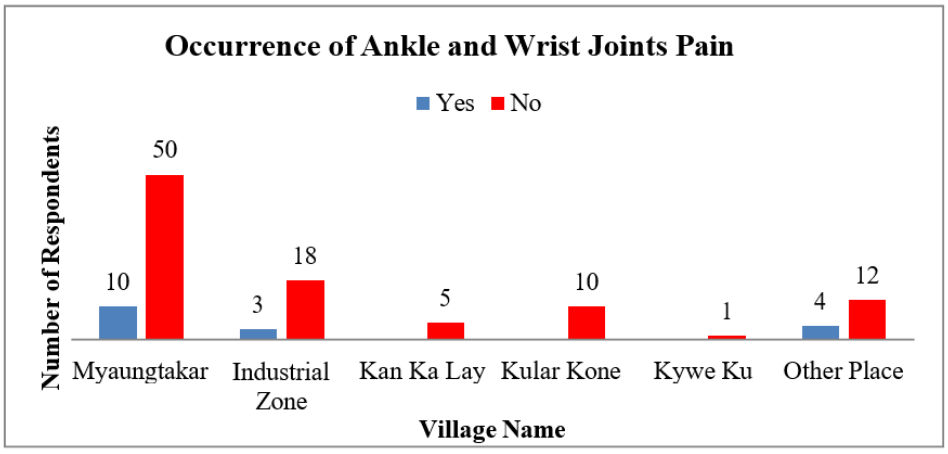


Figure 5-35 Occurrence of Ankle and Wrist Joints Pain

5.7.4.20 Weakness in the Limbs

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

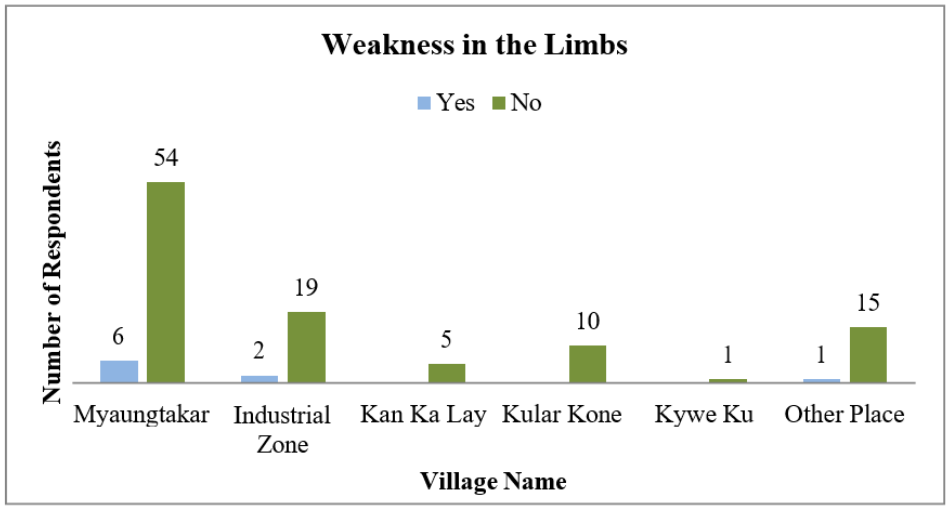


Figure 5-36 Weakness in the Limbs

5.7.4.21 Occurrence of Weight Loss

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

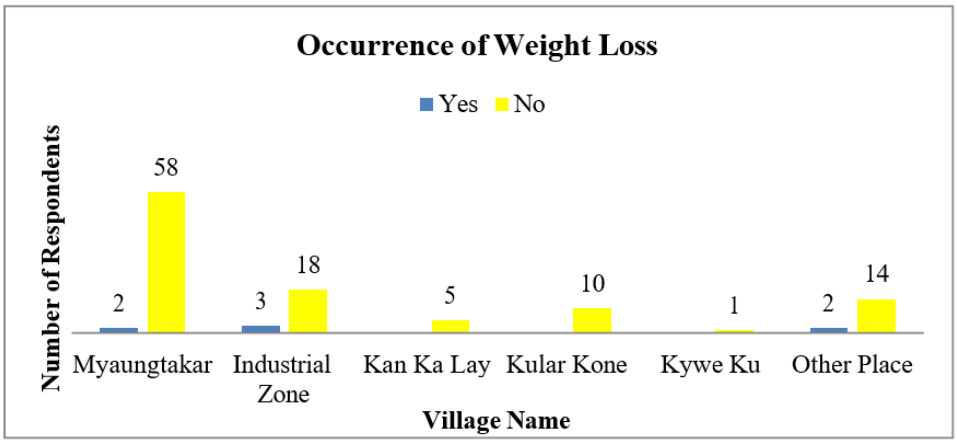


Figure 5-37 Occurrence of Weight Loss

5.7.4.22 Occurrence of Fatigue and Tiredness

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

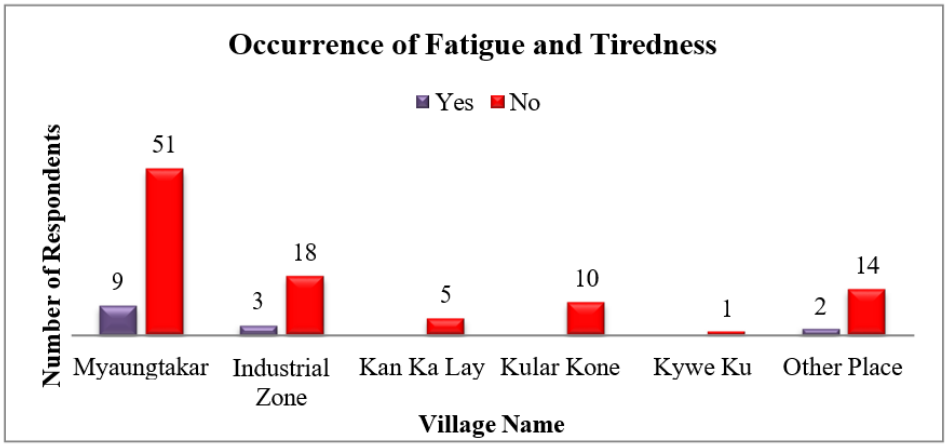


Figure 5-38 Occurrence of Fatigue and Tiredness

5.7.4.23 Occurrence of High Blood Pressure

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

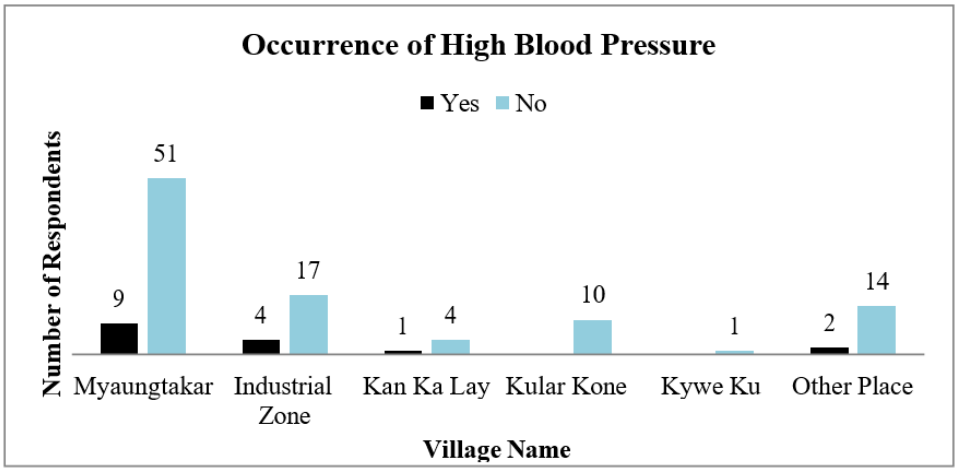


Figure 5-39 Occurrence of High Blood Pressure

5.7.4.24 Occurrence of Swelling of the Limbs

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

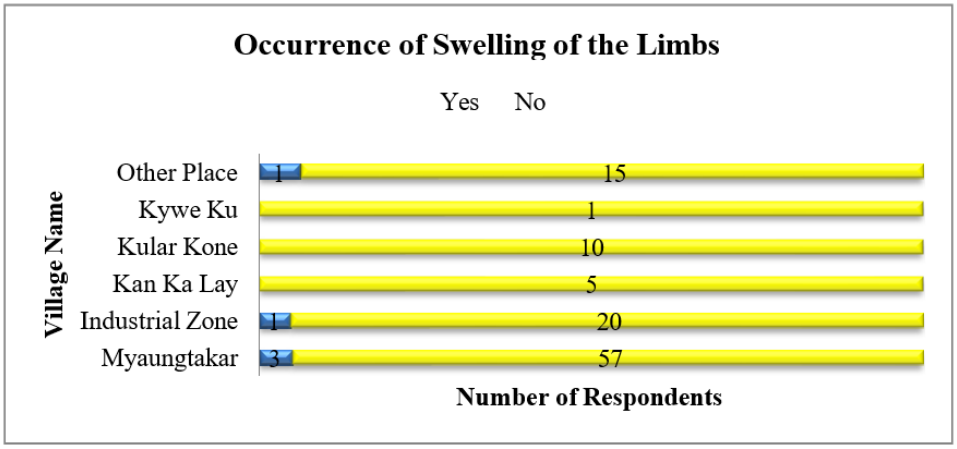


Figure 5-40 Occurrence of Swelling of the Limbs

5.7.5 Occupational Health Impact Surveys on Reproductive Characteristics and Child Development

5.7.5.1 Occurrence of Difficulty Conceiving

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

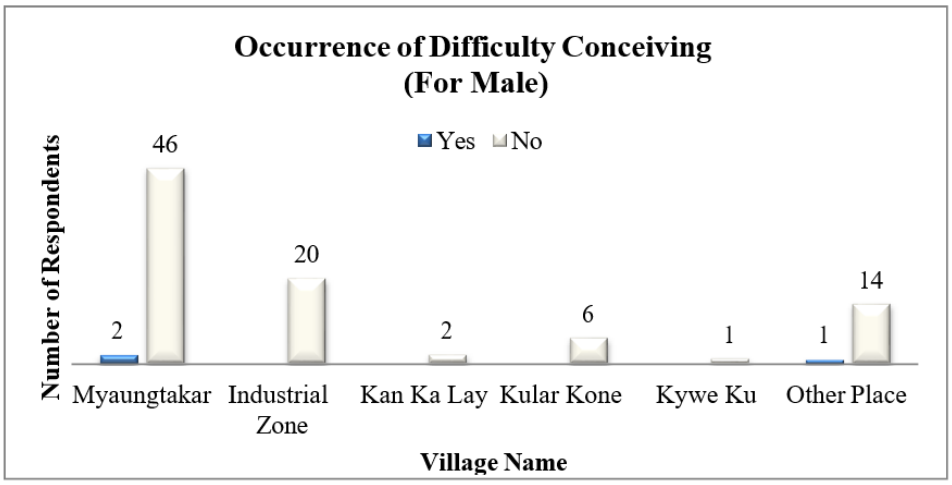


Figure 5-41 Occurrence of Difficulty Conceiving (for Male)

5.7.5.2 Occurrence of Premature Birth

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

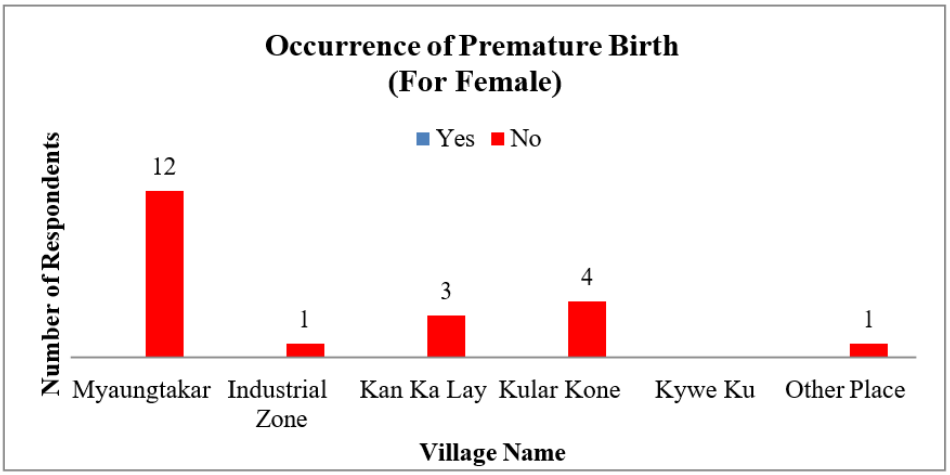


Figure 5-42 Occurrence of Premature Birth (for Female)

5.7.5.3 Occurrence of Abortion and Miscarriage

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

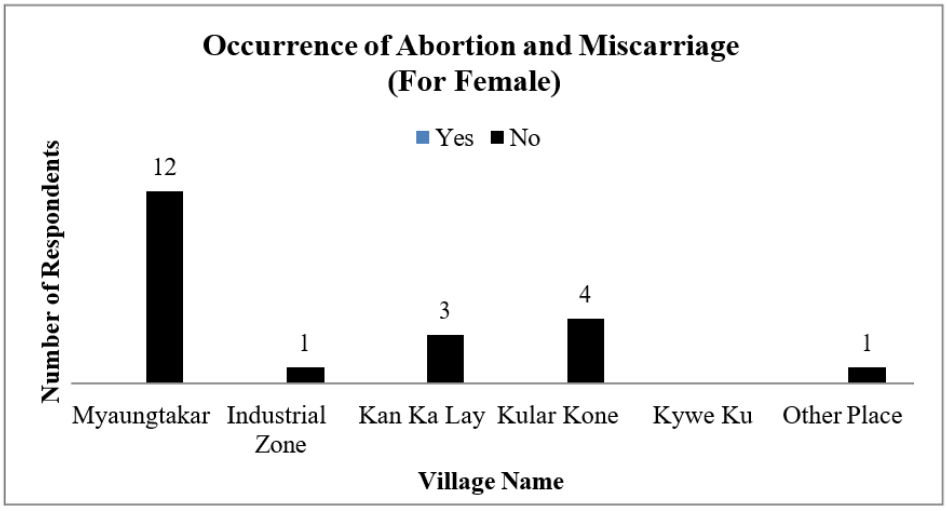


Figure 5-43 Occurrence of Abortion and Miscarriage (for Female)

5.7.5.4 Occurrence of Stillbirth

There was no occurrence of stillbirth in female workers.

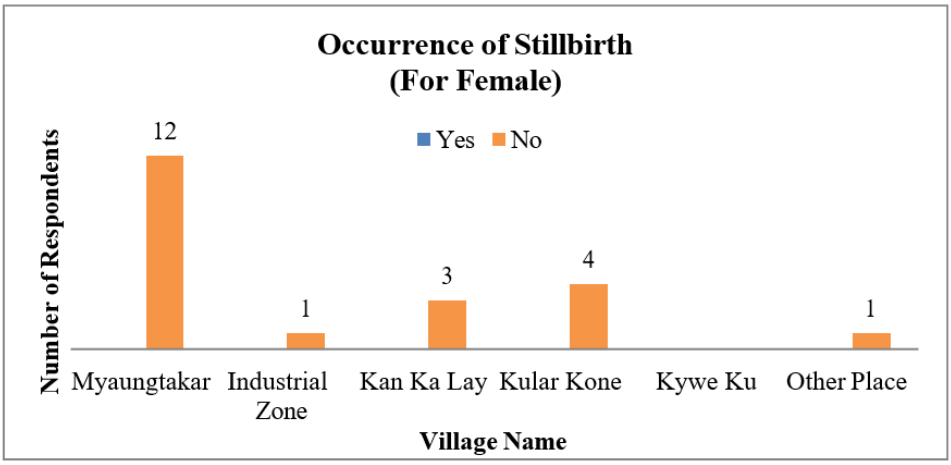


Figure 5-44 Occurrence of Stillbirth

5.7.5.5 Occurrence of Intellectual Disabilities in Children

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

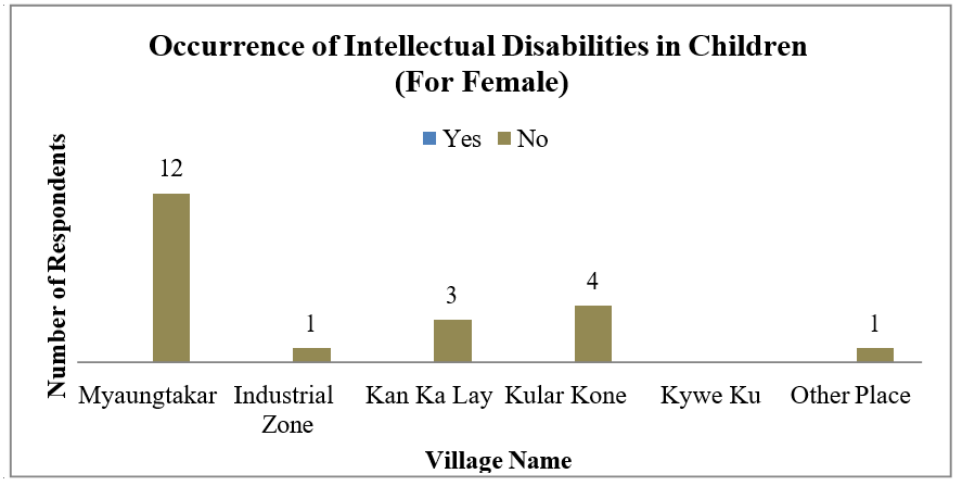


Figure 5-45 Occurrence of Intellectual Disabilities in Children (for Female)

5.7.5.6 Occurrence of Epilepsy in Children

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

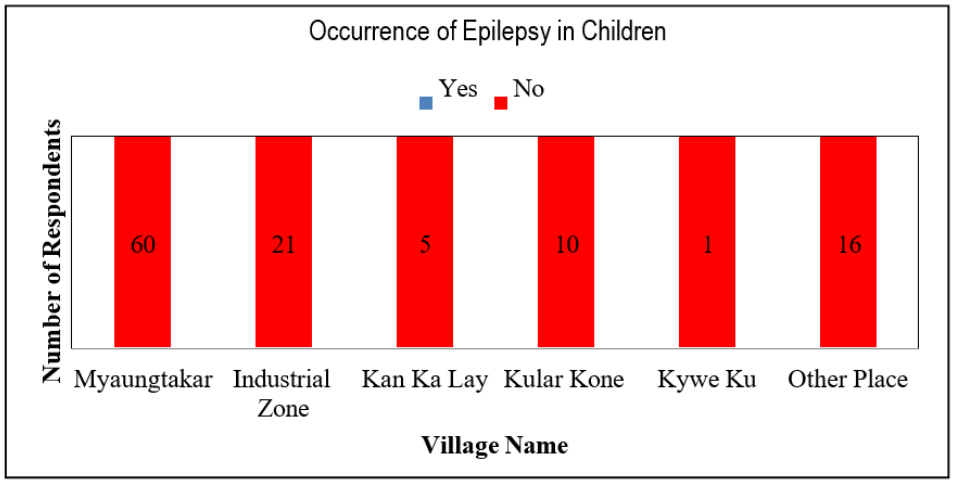


Figure 5-46 Occurrence of Epilepsy in Children

5.7.5.7 Occurrence of Child Development Delay

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

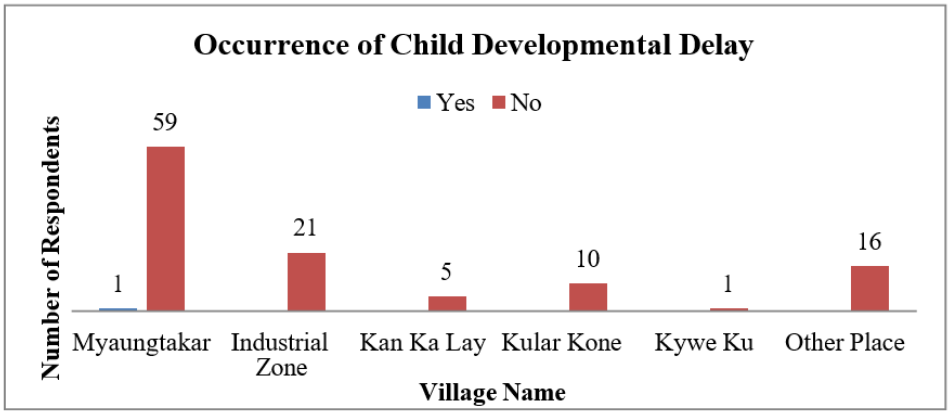


Figure 5-47 Occurrence of Child Development Delay

5.7.5.8 Occurrence of Difficulty in Learning of Children

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

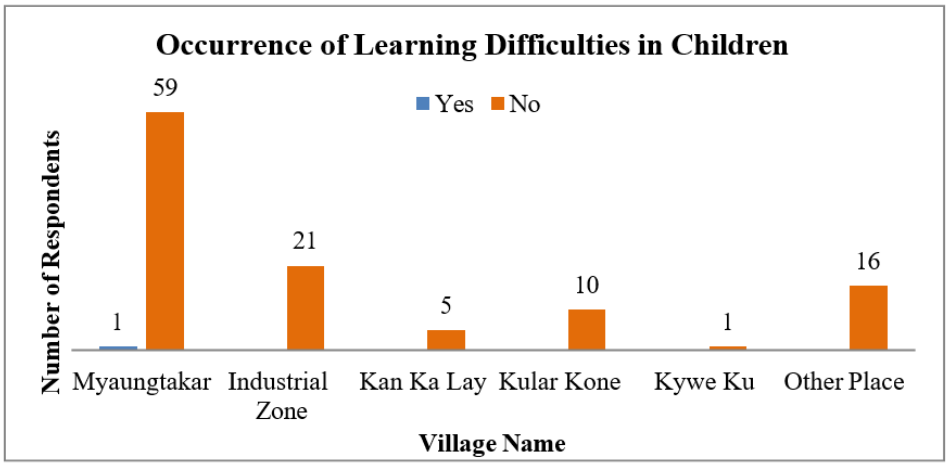


Figure 5-48 Occurrence of Learning Difficulties in Children

5.7.5.9 Occurrence of Hearing Loss in Children

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

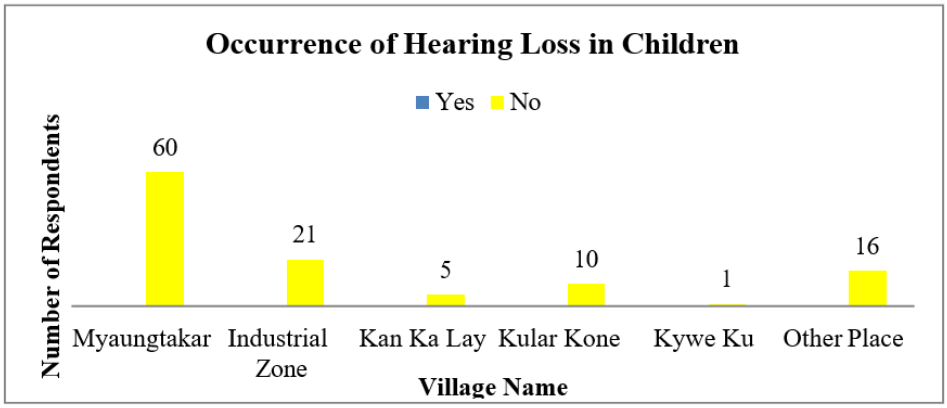


Figure 5-49 Occurrence of Hearing Loss in Children

5.7.6 Health Assessment on Lead Poisoning Characteristics

5.7.6.1 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.

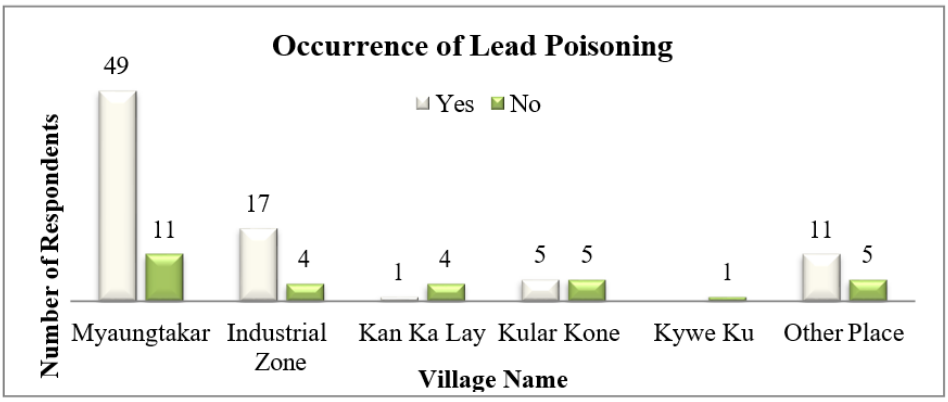


Figure 5-50 Occurrence of Lead Poisoning

5.7.6.2 Leaflets about Lead Poisoning

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

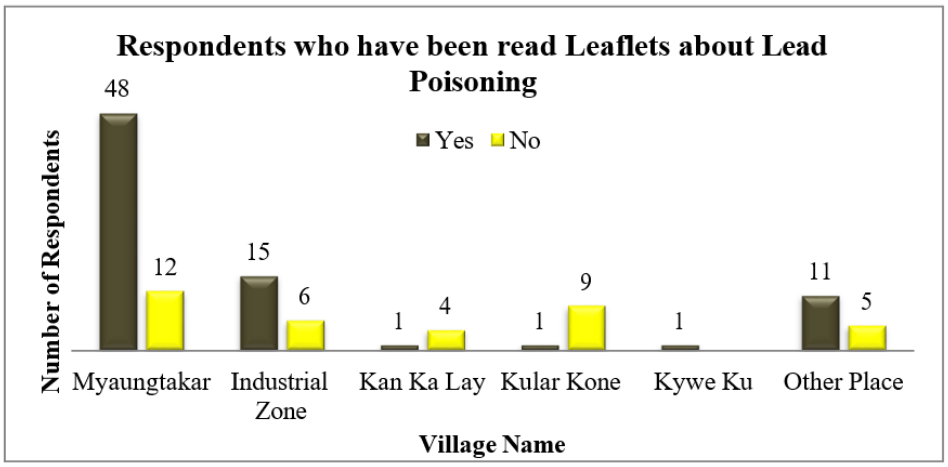


Figure 5-51 Leaflets about Lead Poisoning

5.7.6.3 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.

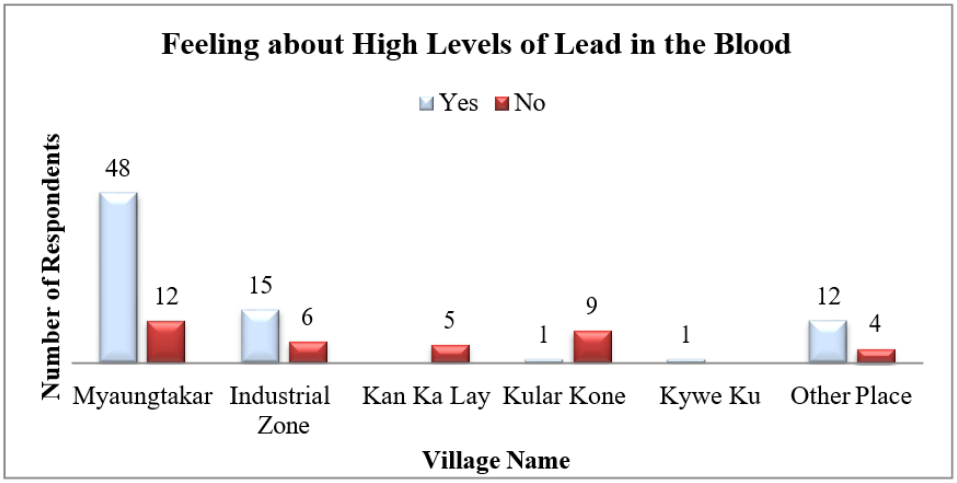


Figure 5-52 Feeling about High Levels of Lead in the Blood

5.7.6.4 Bone Damage due to Lead Poisoning

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

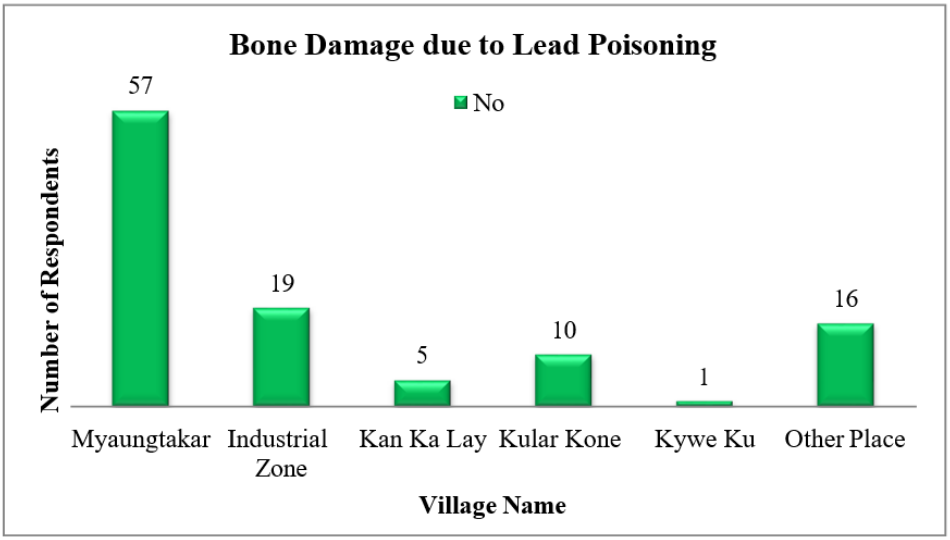


Figure 5-53 Bone Damage due to Lead Poisoning

5.7.7 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.

5.7.7.1 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 %.

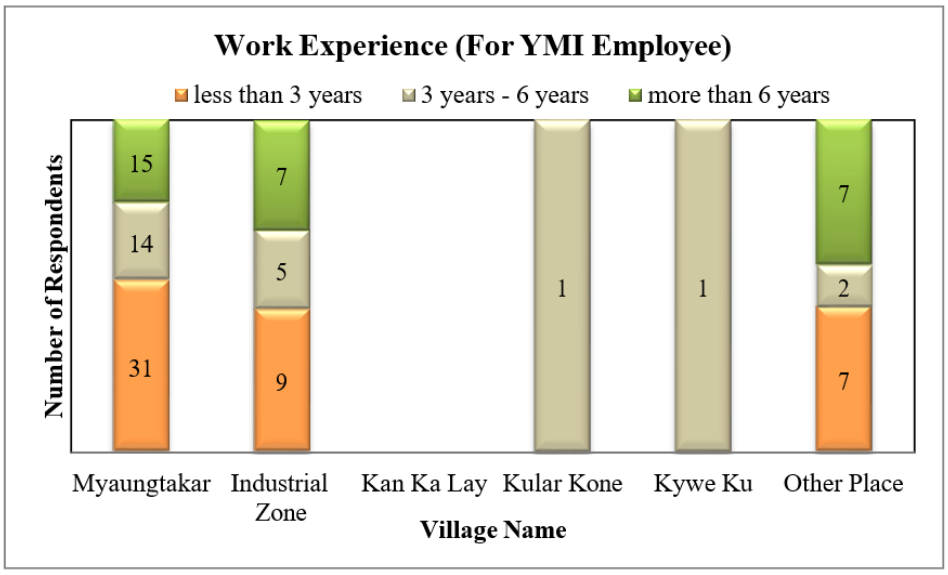


Figure 5-54 Work Experience (for YMI Employee)

5.7.7.2 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.

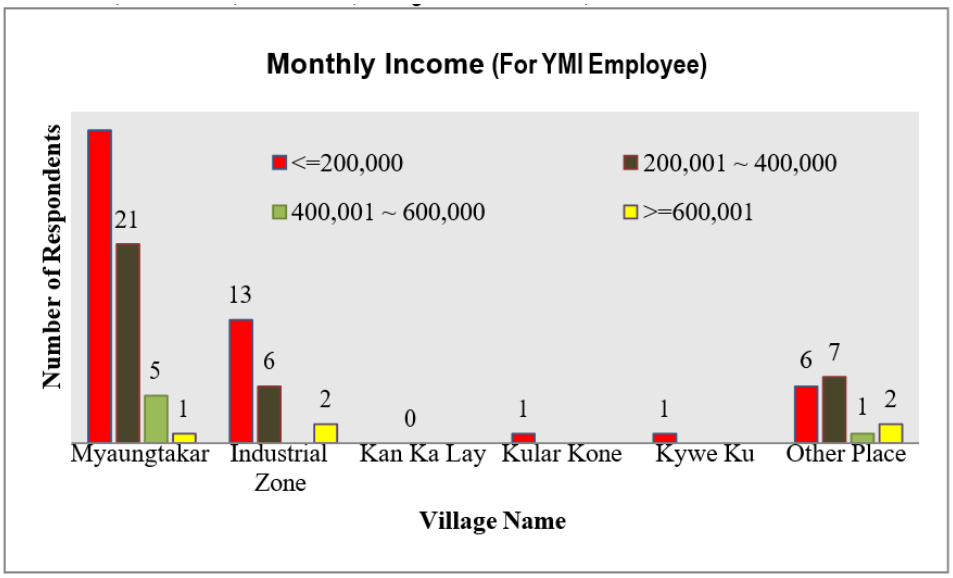


Figure 5-55 Monthly Income (for YMI Employee)

5.7.7.3 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.

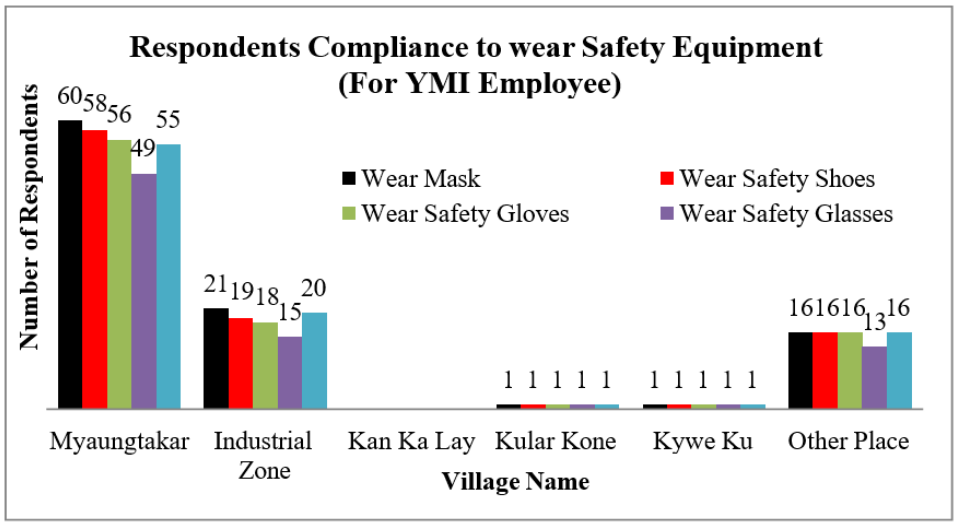


Figure 5-56 Compliance to wear Safety Equipment (for YMI Employee)

5.7.7.4 Condition of PPE Supply from Factory

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

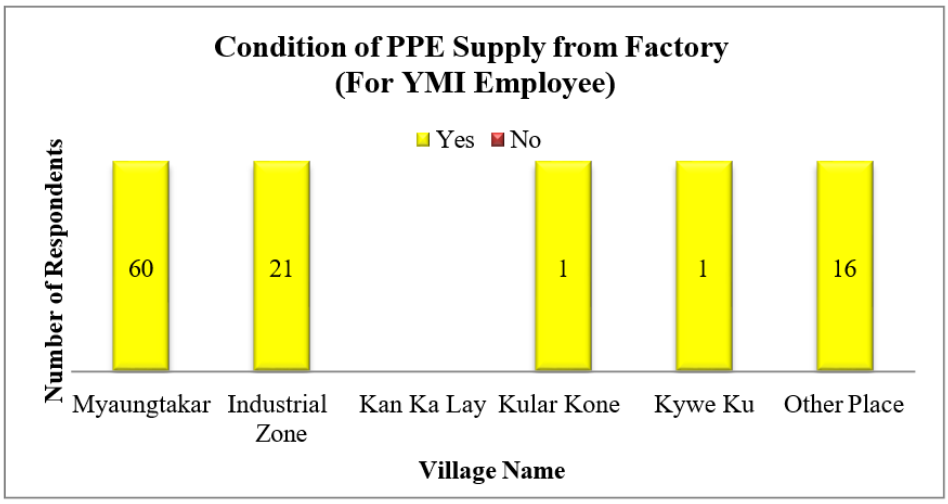


Figure 5-57 Condition of PPE Supply from Factory

5.7.7.5 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 check-up.

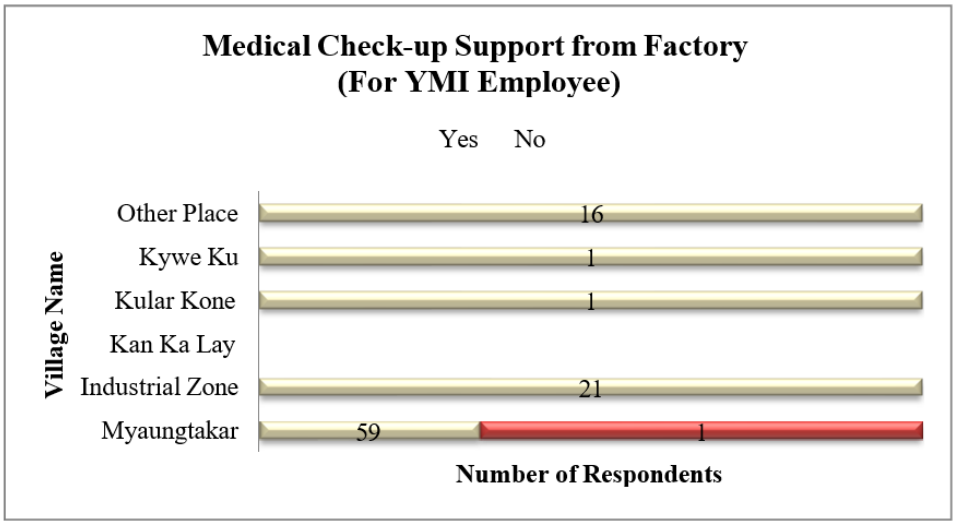


Figure 5-58 Medical Check-up Support from Factory (for YMI Employee)

5.7.7.6 Health Insurance Support from Factory

Almost 75 % of workers gave feedback they got the health insurance support from factory, where 25% are not.

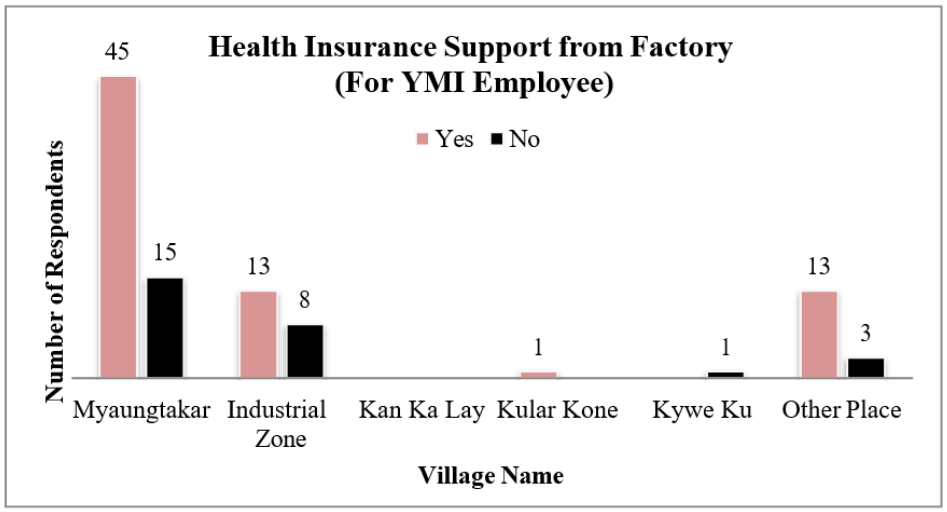


Figure 5-59 Health Insurance Support from Factory (for YMI Employee)

5.7.7.7 Presence of Factory Clinic

The factory supported the onsite factory clinic for its workers for medical care.

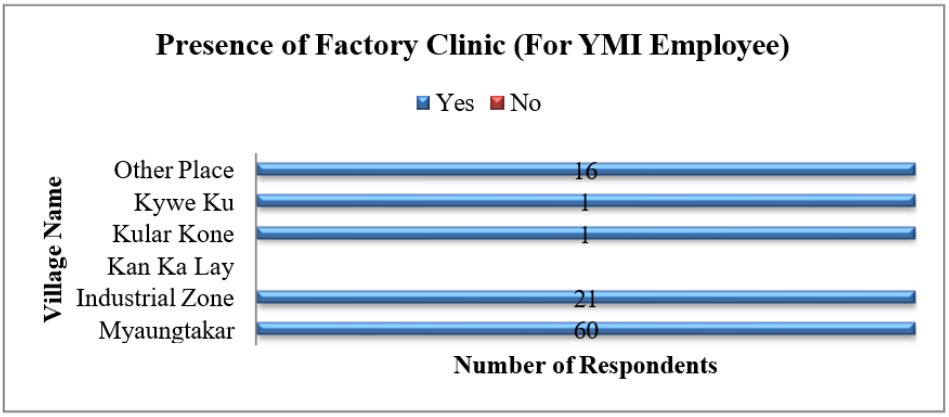


Figure 5-60 Presence of Factory Clinic (for YMI Employee)

5.7.7.8 Respondents who have been visited to Factory Clinic

About 55 % of workers have been visited to the factory clinic for health care and assessment.

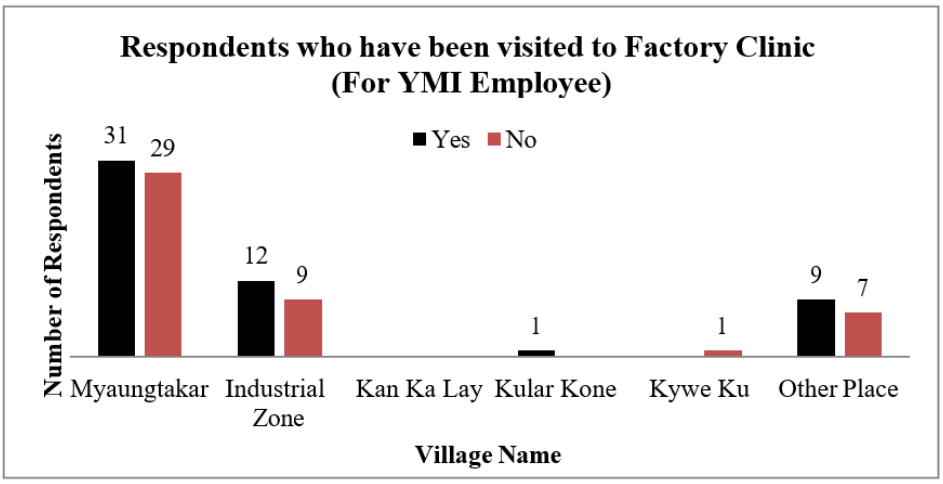


Figure 5-61 Respondents who have been visited to Factory Clinic (for YMI Employee)

5.7.7.9 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%.

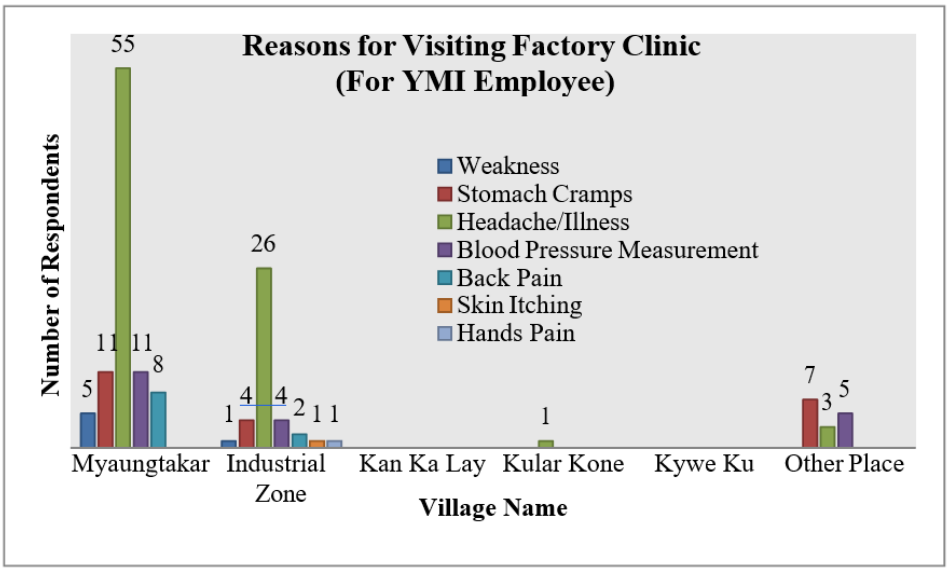


Figure 5-62 Reasons for Visiting Factory Clinic (for YMI Employee)

5.7.8 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 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.

5.7.9 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 5.10**.

Table 5.10 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

5.7.10 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. The blood test results for lead concentrations in staff during 2024 are provided in **Appendix-9**.

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 check-up 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 centre inside the factory

5.7.10.1 Workplace Safety

The labelling 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.

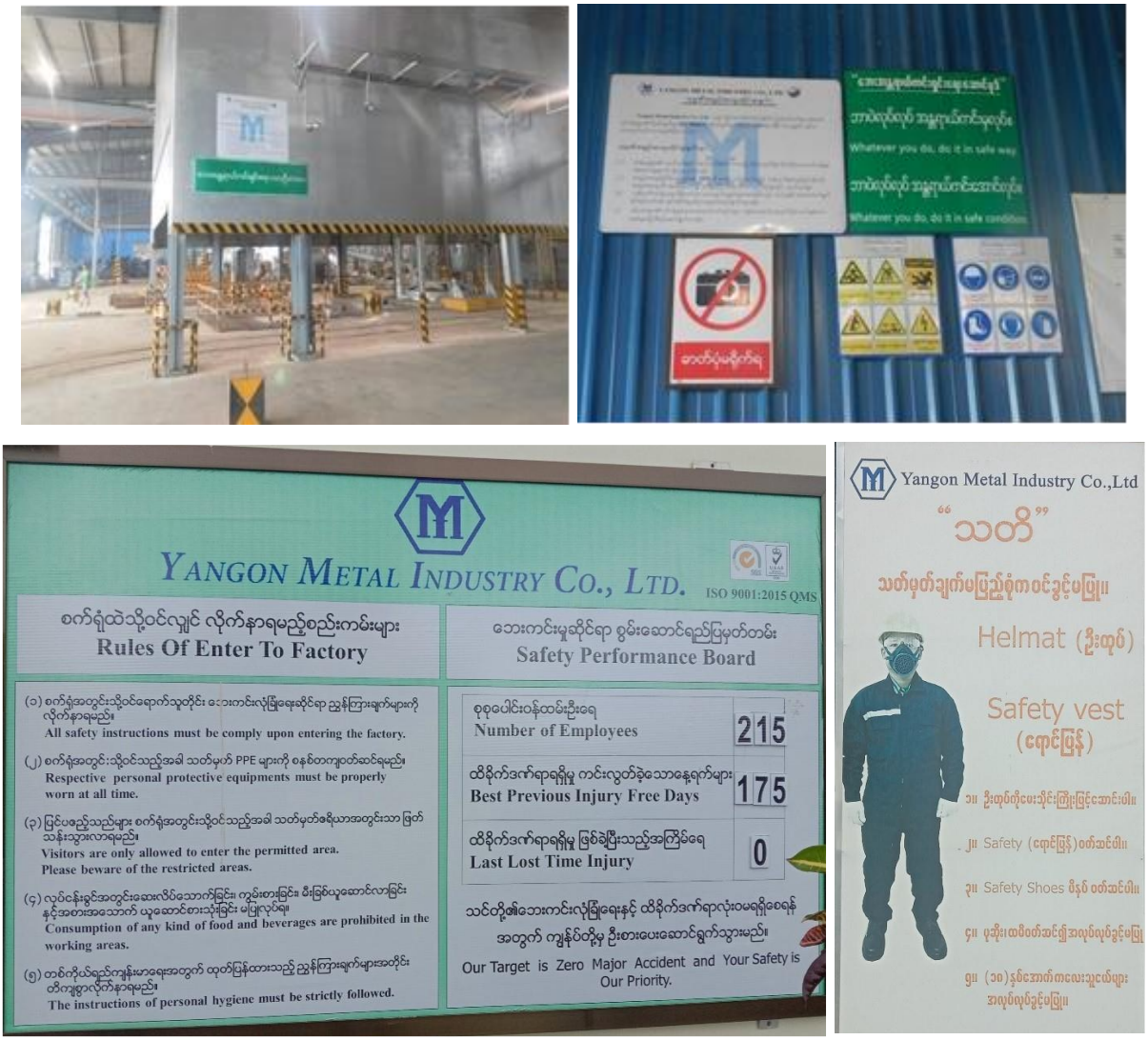


Figure 5-63 Occupational Safety Control Units

Figure 5-64 Sanitary Toilet, Bathroom, Closing Room and Eye Shower

Figure 5-65 Air Blower Before Kitchen Room, Washing Facilities and Dining Room

Figure 5-66 Support of First Aid Room and Onsite Healthcare Centre

5.8 DECOMMISSIONING PHASE POTENTIAL IMPACTS

The decommissioning phase of a project involves the dismantling and removal of equipment, structures and materials that are no longer needed for the project. This phase may have potential impacts on the environment, workers and surrounding communities, such as:

- Waste generation from demolition of building
- Air pollution from dust, smoke and vehicle emissions
- Noise pollution from demolition activities and transportation
- Loss of employment and income for workers and suppliers

To mitigate these impacts, the following measures are recommended:

- Ensure that the decommissioning phase is carried out in compliance with the applicable laws, regulations and standards.
- Seek opportunities for reuse, recycling or recovery of materials and equipment, and dispose of the remaining waste in a safe and responsible manner.
- Implement the engagement plan that could addresses the needs and concerns of the affected stakeholders, such as workers, suppliers, customers and communities, and provides adequate consultation and communication.
- Implement the decommissioning phase as per agreed condition with the government and local stakeholders, whether to prepare for alternative use or transfer for the other development initiatives.

At present, there are no plans or schedule for decommissioning the proposed project components. It is likely that the project components will only be decommissioned once it is no longer economical to continue operation, the factory is rendered redundant and/or no longer required for various reasons, or is unsafe to operate. Given the current stage of the Project components, detailed decommissioning plans have not yet been formulated. Therefore, this EIA Study will not provide a detailed assessment of impacts for the decommissioning phase.

CHAPTER 6 CUMULATIVE IMPACT ASSESSMENT

6.1 OBJECTIVE

The objective of this Cumulative Impact Assessment (CIA) is to evaluate and address the combined impacts of the Yangon Metal Industry (YMI) facility alongside other private and public developments in the Myaung Ta Kar Industrial Zone, Hmawbi Township. This assessment focuses on Valued Environmental and Social Components (VECs) that may be affected by industrial activities, with the aim of developing strategies to mitigate YMI's contributions to cumulative impacts on air quality, water, soil, noise, and biodiversity within the zone.

6.2 METHODOLOGY AND APPROACH: RAPID CUMULATIVE IMPACT ASSESSMENT (RCIA)

The CIA employs the RAPID Cumulative Impact Assessment (RCIA) method, which provides a streamlined approach to assess cumulative impacts in a focused yet efficient manner. This method emphasizes evaluation of the interactions between multiple projects and their impacts on VECs. RCIA involves identifying relevant VECs, assessing cumulative impacts based on existing and future developments, and recommending mitigation measures.

- 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
- 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

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.

6.3 SPATIAL AND TEMPORAL BOUNDARIES

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

6.3.1 Spatial Boundaries

The primary spatial boundary encompasses the Myaung Ta Kar Industrial Zone and surrounding areas affected by emissions, runoff, and other impacts from YMI and neighbouring facilities. This area is marked by industrial development, with limited residential or ecological zones.

6.3.2 Temporal Boundaries

The assessment considers cumulative impacts from past and current industrial activities, alongside projected impacts over the next decade based on anticipated future developments within the industrial zone. This timeline aligns with local development planning for industrial growth.

6.4 RELEVANT EXISTING AND FUTURE PRIVATE AND PUBLIC PROJECTS AND DEVELOPMENTS

The Myaung Ta Kar Industrial Zone was established between 2006 and 2008 to centralize industrial production in the region, particularly steel and metal processing. Currently, approximately 50 facilities (attached in **Annex-6**) operate within the zone, including YMI and five stack-emission factories:

- Khin Maung Nyunt Steel Products Galvanizing
- SOGO Steel Industry
- Japfa Comfeed Mill
- Han Steel
- Myanmar Smelting and Refining Co., Ltd.

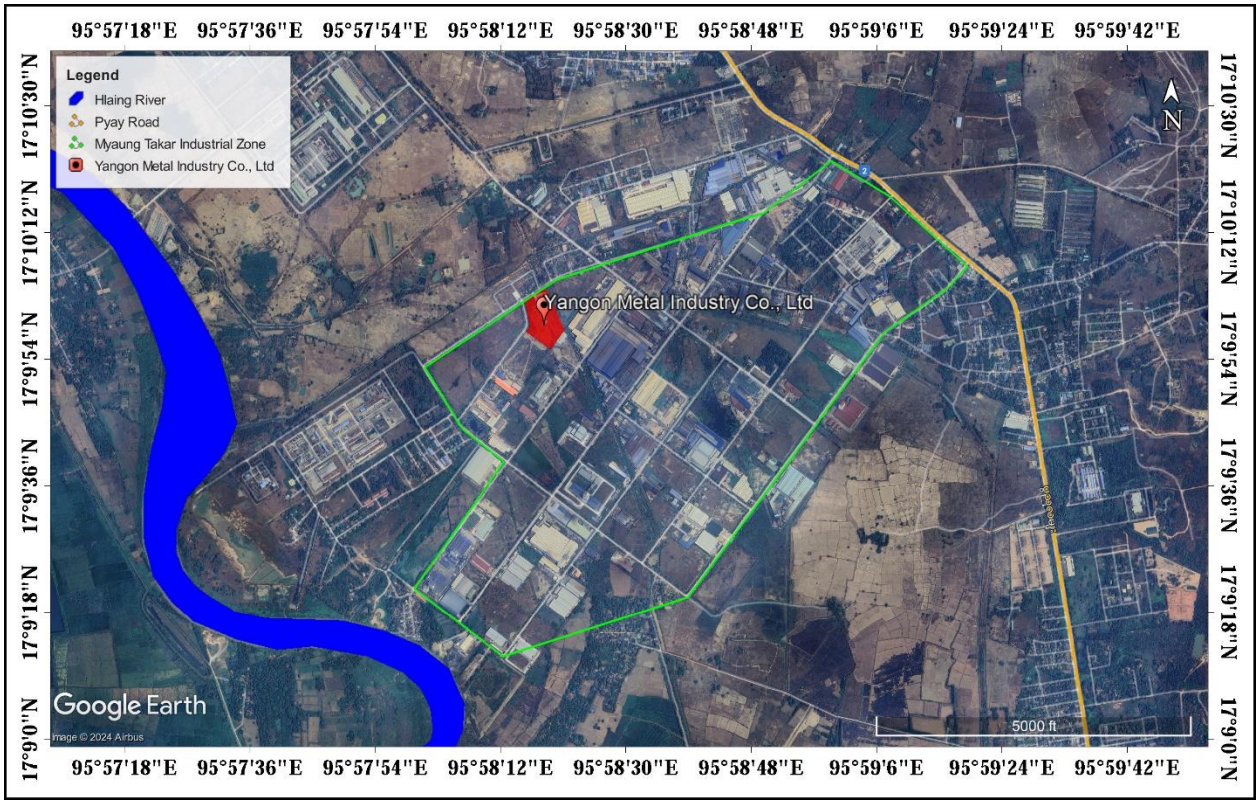


Figure 6-1 Myaung Ta Kar Industrial Zone and Proposed Project

Future expansions are anticipated, including additional steel plants and potential infrastructure developments that could further intensify industrial emissions and resource demands. These ongoing and upcoming projects create a complex landscape of cumulative impacts on shared resources.

6.5 BASELINE STATUS OF VALUED ENVIRONMENTAL AND SOCIAL COMPONENTS (VECS)

6.5.1 Air Quality

The baseline air quality is within the National Environmental Quality (Emission) Guidelines (NEQEG), with $PM_{2.5}$, PM_{10}, SO_2, and Ozone levels remaining below thresholds. NO_2 concentrations are also comply with the one-hour guideline limit.

6.5.2 Noise and Vibration

Current noise levels are within the standard 70 dB limit for industrial zones, and vibration levels remain under the Japan Standards for industrial vibration, both during daytime and night time.

6.5.3 Water Quality

Groundwater quality shows elevated turbidity, iron, and manganese levels beyond guidelines. Drainage water from the industrial area also exceeds Total Suspended Solids (TSS) and Chemical Oxygen Demand (COD) limits, primarily due to stormwater runoff and kitchen waste contributions.

6.5.4 Soil Quality

Lead levels in the soil exceed maximum permissible limits (MPL) due to leakage from outdoor-stored lead-acid batteries, while other metal levels, such as chromium, zinc, and copper, are within safe ranges.

6.5.5 Biodiversity

Biodiversity surveys recorded 49 species within the zone, indicating low ecological sensitivity due to the industrial nature of the area. No threatened species are present, though one endemic species was noted.

6.6 POTENTIAL CUMULATIVE IMPACT ON THE COMPONENTS

6.6.1 Air Quality

The combined emissions from YMI and neighboring facilities contribute incrementally to ambient particulate and gas levels, posing potential risks to air quality as industrial density increases.

6.6.2 Noise and Vibration

The proximity of multiple heavy industrial operations may amplify noise levels over time, although current compliance suggests that cumulative noise impacts are moderate.

6.6.3 Water Quality

Repeated and combined discharge from industrial wastewater and runoff elevates TSS and COD in drainage channels, affecting downstream water quality and potentially impacting local aquatic ecosystems.

6.6.4 Soil Quality

Lead contamination from the collective storage practices and emissions across facilities poses a high risk of cumulative soil pollution in the industrial zone.

6.6.5 Biodiversity

Habitat fragmentation and pollution from industrial emissions and runoff may incrementally reduce species diversity, although the industrial environment's inherently low sensitivity mitigates significant biodiversity impacts.

6.7 POTENTIAL SIGNIFICANCE OF CUMULATIVE IMPACT

6.7.1 Air Quality

Cumulative impacts on air quality are moderately significant, primarily due to the sustained emissions of particulates and gases from multiple stack sources.

6.7.2 Noise and Vibration

The cumulative noise impacts are minor but could increase as industrial activities expand.

6.7.3 Water Quality

Water quality impacts are significant, especially given the recurring exceedance of TSS and COD levels, which necessitates coordinated management efforts among stakeholders.

6.7.4 Soil Quality

Soil contamination, especially from lead, is significant due to persistent pollutant inputs and inadequate containment measures.

6.7.5 Biodiversity

While cumulative impacts on biodiversity are low, continuous habitat degradation may further reduce ecological value over time.

6.8 MEASURES TO MITIGATE THE PROJECT'S CONTRIBUTION TO THE CUMULATIVE IMPACTS

In consideration of cumulative impacts arising within the Myaung Ta Kar Industrial Zone, the following mitigation measures are proposed to manage YMI's contributions to cumulative environmental impacts effectively:

6.8.1 Air Quality

To address the combined air emissions from YMI and surrounding factories, the following steps are recommended:

- Implement scrubbers and high-efficiency particulate air filters on stack emissions to capture particulates and reduce NOx and SOx gases. Similar technologies should be encouraged across neighboring facilities to manage the cumulative air quality impacts effectively.
- Establish a collaborative air quality monitoring network within the Myaung Ta Kar Industrial Zone. Regular monitoring of $PM_{2.5}$, PM_{10}, SO_2, NOx, and Ozone levels will enable early detection of pollutant accumulation and prompt coordinated responses.
- Ensure all facilities within the zone comply with optimal stack height requirements to facilitate better dispersion of pollutants and reduce local pollutant concentrations.

6.8.2 Noise and Vibration

Although noise and vibration levels currently comply with guidelines, industrial growth may increase cumulative noise impacts. Recommended mitigation measures include:

- Routine maintenance of machinery and equipment at YMI and surrounding factories will help keep noise and vibration levels within acceptable limits.
- Install sound barriers, especially around high-noise equipment and along property boundaries, to minimize noise impacts within the industrial zone. Encourage other factories to adopt similar noise control measures to reduce cumulative noise pollution.

6.8.3 Water Quality

Given the elevated levels of TSS, COD, and certain metals in the industrial zone's drainage, the following actions are necessary:

- Establish a centralized treatment plant within the industrial zone to handle wastewater from multiple facilities. This would standardize treatment processes and ensure that effluents meet National Environmental Quality (Emission) Guidelines.
- Implement wastewater recycling systems at YMI and other industries to reduce discharge volumes. Reusing treated water in industrial processes will reduce the cumulative wastewater load in the drainage system.
- Install a stormwater treatment system to capture and treat runoff before it enters the drainage network. Additional efforts should include the construction of sedimentation ponds and regular clearing of drainage channels to prevent clogging and pollution accumulation.

6.8.4 Soil Quality Mitigation

To mitigate soil contamination risks, especially from lead, the following steps should be taken:

- Store lead-acid batteries and other raw materials in designated, covered areas with impermeable flooring to prevent lead leaching into the soil. This measure should be standardized across all metal-processing facilities within the zone.
- Implement spill containment and response plans to manage accidental spills of hazardous substances, and encourage similar measures across facilities in the zone. Establish a periodic soil monitoring plan to detect potential contamination.

6.8.5 Biodiversity Mitigation

Although ecological sensitivity is low, cumulative industrial impacts could further degrade local biodiversity. The following measures are recommended:

- Establish green buffer zones around YMI and throughout the industrial zone to reduce the dispersal of pollutants into adjacent areas and support local biodiversity. Tree planting initiatives, especially with native species, should be promoted to create habitats for local wildlife.
- Reduce emissions of pollutants and manage solid waste effectively to prevent contamination of surrounding areas, which may serve as secondary habitats for wildlife. Encourage zone-wide protocols for managing hazardous waste.

6.9 CONCLUSION

Through these mitigation measures, YMI and other industries in the Myaung Ta Kar Industrial Zone can collectively minimize cumulative environmental impacts on air quality, noise, water, soil, and biodiversity. Sustaining regional environmental quality amid industrial growth will require strong coordination with local stakeholders, regular environmental monitoring, and continued investment in protective measures.

CHAPTER 7 ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

7.1 OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

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 fulfil 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 EMP Implementation Organization and Responsibilities

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".

The company has established an EHS team for implementation of environmental management and monitoring. Organization structures of the EHS team are shown in the following Figure.

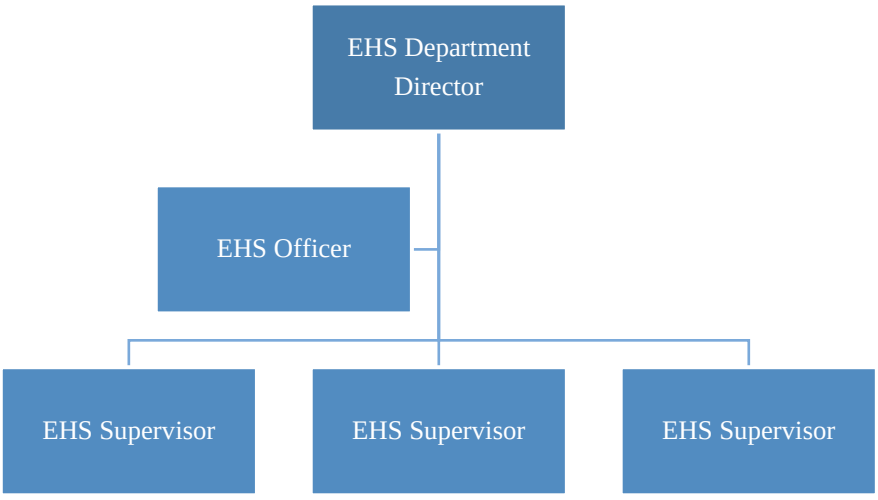


Figure 7-1 Organization Structure of EHS Department

The responsibilities of EHS Team are shown in the following Table.

Table 7.1 Roles and Responsibilities

No.	EHS Department	Responsibility
1.	Director	To implement the EHS policies.
2.	EHS Officer	Implementation of EMP according to the EHS policies.
3.	EHS Supervisor	Monitoring and implementation of EMP
4.	EHS Supervisor	Monitoring and implementation of EMP
5.	EHS Supervisor	Monitoring and implementation of EMP

7.2 AIR QUALITY MANAGEMENT PLAN

7.2.1 Objectives

- To maintain the ambient air quality in the project site 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.

7.2.2 Legal Requirements

National Environmental Quality (Emission) Guidelines, 2015

7.2.3 Implementation Schedule

Operation phase of the project

7.2.4 Management Action

- Installation of air emission preventive measures, such as Rotary Furnace, Bag House, Wet Scrubber, Cyclone, Dust Collection Line and Blowing Motor and Blowing Fan.
- Lead smelting, casting, and related processes are enclosed to minimize lead concentrations in ambient air.
- Conveyors are used throughout production to prevent worker contact with dust particles.
- A scheduled maintenance plan is in place for air emission control devices.
- Filters in the system and chimney are replaced regularly, with functionality tested periodically.
- A monitoring system will track air quality emissions from the chimney to the environment, ensuring compliance with standards.
- Air quality parameters will be monitored according to Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining, with documented measurements.

7.2.5 Responsibilities

HSE Department under the guidance of YMI

7.3 WATER QUALITY MANAGEMENT PLAN

7.3.1 Objectives

- Adhere to national and international water quality regulations and standards to protect public health.
- Safeguard surface and groundwater resources from contamination and degradation, ensuring their availability for current and future generations.

7.3.2 Legal Requirements

National Environmental Quality (Emission) Guidelines, 2015

7.3.3 Implementation Schedule

Operation phase of the project

7.3.4 Management Action

- Industrial wastewater from lead recycling is treated using circular wastewater treatment units, with treated effluent reused in production from settling ponds.
- A thermal evaporator unit at the YMI factory handles excess effluent not reused in operations, minimizing discharge to surrounding water bodies.
- Wastewater treatment complies with Section 2.3.7.1 of the National Environmental Quality (Emission) Guidelines for Base Metal Smelting and Refining, ensuring prescribed discharge limits are met.
- Treated wastewater is analysed quarterly at a recognized laboratory for quality verification.
- An impermeable floor has been constructed in the battery breaking section to prevent acid seepage.
- Sodium Hydroxide or Sodium Carbonate is added during the treatment of discharged water to neutralize any residual acid.
- Surface runoff is directed through gravity-fed drainage lines to a designated sedimentation pond, with a concrete drainage system to prevent ground infiltration.
- Domestic wastewater, including sewage from various sources, is collected using a septic tank system.

7.3.5 Responsibilities

HSE Department under the guidance of YMI

7.4 NOISE & VIBRATION MANAGEMENT PLAN

7.4.1 Objectives

To minimize noise and vibration from operation machinery.

7.4.2 Legal Requirements

National Environmental Quality (Emission) Guidelines, 2015

7.4.3 Implementation Schedule

Operation phase of the project

7.4.4 Management Action

- Construct physical barriers (e.g., soundproof walls, fences) around high-noise equipment (battery-breaking machines, rotary smelting furnace, compressors) to reduce noise levels.
- Use enclosures around noisy machinery to absorb and contain sound, preventing it from reaching the factory perimeter.
- Install noise-dampening materials (e.g., acoustic panels) on walls and ceilings in areas with heavy machinery to absorb sound and reduce noise transmission.
- Maintain equipment (ventilators, conveyors, electric motors) to minimize mechanical noise by addressing friction, worn parts, and loose components through regular maintenance and lubrication.
- Schedule high-noise activities during daytime hours to minimize disturbances during night time, benefiting sensitive receptors like nearby monasteries.
- Upgrade older machines to low-noise models to significantly reduce the factory's overall noise profile.
- Use landscaping with trees and bushes to absorb noise and vibrations, reducing their impact on surrounding areas.
- Train employees on best practices for minimizing vibration, such as proper loading of equipment and operating machinery at balanced speeds.
- Continue routine monitoring of noise and vibration levels at key points (YMI facility and nearby receptors) to assess the effectiveness of mitigation measures and ensure compliance with the industrial noise standard of 70 dB.

7.4.5 Responsibilities

HSE Department under the guidance of YMI

7.5 WASTE MANAGEMENT PLAN

7.5.1 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.

7.5.2 Legal Requirements

Yangon City Development Committee Law, 2018

7.5.3 Implementation Schedule

Operation phase of the project

7.5.4 Management Action

- Slag waste is managed in a designated storage area with a covered facility featuring a concrete floor and walls to prevent environmental pollution and leaching.
- Dedicated, labelled storage containers are used for spent chemicals, stored in areas with secondary containment systems to prevent spills and leaks.
- Regular inspections of storage areas are conducted to ensure containment integrity.
- Ongoing training is provided for employees on the handling, storage, and disposal of spent chemicals.
- The YMI factory is equipped with storage facilities and trash bins for efficient waste handling, transfer, and transportation, with separate, clearly labelled bins for:
- Manual handling of waste is prohibited, but if unavoidable, it will be done with appropriate safety precautions.
- A designated kitchen room is provided, and eating near operational machines is prohibited; biodegradable waste is collected only in the dining area.
- Solid waste is segregated by type and disposed of in coordination with the relevant Township Development Committee.

7.5.5 Responsibilities

HSE Department under the guidance of YMI

7.6 SOIL MANAGEMENT PLAN

7.6.1 Objectives

- Implement measures to prevent contamination from hazardous materials, chemicals, and waste produced during operations, ensuring soil health and safety.

7.6.2 Legal Requirements

Environmental Conservation Law, 2012

7.6.3 Implementation Schedule

Operation phase of the project

7.6.4 Management Action

- Conduct regular inspections of storage, piping, and equipment in the lead recycling process to promptly identify and repair leaks or damage.
- Construct an impermeable floor in the battery breaking section to prevent acid seepage; neutralize residual acid in discharged water with Sodium Hydroxide or Sodium Carbonate as needed.
- Store chemicals in designated, labelled, weather-resistant areas with proper ventilation and security; avoid ground storage to prevent soil contamination and use closed containers for safe transport and handling.
- Implement dust control measures in lead processing, smelting, and handling areas to reduce soil contamination from particulates.

- Develop and implement a waste management plan for hazardous and non-hazardous waste from the lead recycling process.
- Provide regular training for personnel on emergency response procedures, including handling chemical spills and accidental releases.
- Conduct regular soil sampling and analysis around the facility to monitor for contamination by lead, heavy metals, and hazardous chemicals.

7.6.5 Responsibilities

HSE Department under the guidance of YMI

7.7 BIODIVERSITY MANAGEMENT PLAN

7.7.1 Objectives

Protect and maintain the diversity of species, habitats, and ecosystems within and surrounding the project site.

7.7.2 Legal Requirements

The Conservation of Biodiversity and Protected Areas Law, 2018

7.7.3 Management Actions

- Implement strict measures to minimize the risk of spills and contamination, including:
  - Developing a waste management plan for proper storage and disposal of hazardous materials.
  - Conducting regular maintenance of equipment to prevent leaks.
- Establish a monitoring plan to track the diversity of species in and around the project area.
- Maintain green areas both inside and outside the factory compound with a strict policy prohibiting unauthorized picking of flowers or cutting of trees.

7.7.4 Responsibilities

HSE Department under the guidance of YMI

7.8 TRANSPORTATION AND TRAFFIC SAFETY PLAN

7.8.1 Objectives

Manage traffic and transport issues to minimize potential impacts on the communities and the operation of the road network.

7.8.2 Legal Requirements

Traffic Safety and Motor Vehicle Management Law, 2020

7.8.3 Implementation Schedule

Operation Phase of the Project

7.8.4 Management Action

- YMI uses vehicles with acid- and battery-proof containers for safe material transport, minimizing spill risks along the transport route.
- The parking area for workers accommodates various vehicle types, has a concrete floor and shaded roof, and is regularly maintained to prevent soil contamination from oil spills and provide a cooler environment.
- A scheduling system is implemented for material and product transport to avoid peak traffic hours, reducing congestion on YMI's access road and the Yangon-Pyay Road, and enhancing safety.
- Clear signage is installed to alert drivers of heavy vehicles and potential hazards, especially near the access road.
- Awareness campaigns are conducted to educate local residents and road users on safe practices around heavy and commercial vehicles.

7.8.5 Responsibilities

HSE Department under the guidance of YMI

7.9 Occupational Health & Safety Management Plan

7.9.1 Objectives

To avoid or mitigate and manage impacts on the OSH issues.

7.9.2 Legal Requirements

Occupational Safety and Health Law (2019)

7.9.3 Implementation Schedule

Operation Phase of the project

7.9.4 Management Action

- Ensure medical facilities at the project site (e.g., First Aid Kits and others).
- Implement Regular Medical check-up and blood test for lead level especially for operation workers. Conduct Medical check-up 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.
- Change/Transfer to other department if any workers showed up the excess guideline value of lead level in blood test.
- Enforce the use of PPE for all workers during operations.
- Provide workers with three meals daily, including lead toxicity-reducing fruits (e.g., bananas).
- Rotate job assignments for workers in factory operations to reduce exposure.

- Install adequate bathrooms and air shower machines at factory exits for workers.
- Supply uniforms and dedicated space for uniform storage.
- Conduct regular medical check-ups for all workers.
- Shift workers with elevated blood lead levels to the sales department, maintaining their salary and rights.
- Provide first aid kits and an on-site healthcare centre within the factory.
- Ensure workplace safety with clear labelling and signboards for occupational and visitor safety.
- Maintain a “zero accident” goal, with YMI meeting all safety requirements to date.

7.9.5 Responsibilities

HSE Department under the guidance of YMI.

7.10 GRIEVANCE REDRESS MECHANISM

7.10.1 Objectives

To avoid the project impacts on social environment. The social environment includes residential and neighbourhood amenity, connectivity, community health, community diversity, social infrastructure provision, and safety.

7.10.2 Legal Requirements

Environmental Impact Assessment Procedure (2015)

7.10.3 Implementation Schedule

Operation Phases of the project

7.10.4 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 transportation.
- Develop an effective and responsive system for receiving, handling and responding to complaints received during the operation.
- 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 neighbours to factory.
- Evaluate effectiveness of consultation, liaison and mitigation outcomes.

7.10.5 Responsibilities

U Kyaw Htoo

Position: General Manager, YMI

Phone: +959254043654

Email: kyawhtoo@yangonmetal.com

7.11 CHEMICAL MANAGEMENT PLAN

7.11.1 Objectives

Minimize risks of soil, water, and air contamination from chemical waste by ensuring proper handling, storage, and disposal practices.

7.11.2 Legal Requirements

The Prevention of Hazard from Chemical and Related Substances Law, 2013

7.11.3 Management Action

- Collect waste chemicals in individual, leak-proof, sealed containers made of compatible materials (e.g., avoid placing acids in metal containers).
- Avoid using unwashed containers that may contain incompatible residues from previous chemical storage.
- Keep hazardous chemical containers securely closed to prevent leaks or vapor escape, ensuring lids, bungs, and rims are tightly in place.
- Clearly identify and label all waste containers.
- Store hazardous waste in designated areas, away from operational and residential areas, near the point of generation, and under operator control.
- Segregate chemical wastes by type (e.g., flammables, poisons, acids, alkalis) and ensure incompatible substances do not mix.
- Store oxidizing agents separately from reducing agents and organic compounds.
- Store water-reactive agents apart from water, aqueous solutions, and acids.
- Seal air-reactive materials in containers to prevent atmospheric exposure.

7.11.4 Responsibilities

HSE Department under the guidance of YMI.

7.12 INCIDENT MANAGEMENT

The following shall constitute key management interventions in response to each respective emergent situation.

7.12.1 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.

7.12.2 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.

7.12.3 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 Hmawbi 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.

7.12.4 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.

7.13 EMERGENCY RESPONSE PLAN

Table 7.2 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 7.2 Emergency Response

Emergency Situation	Cause	Proposed Response	Respondents
Staff Injury	- Unskilled labor - 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.
Chemical Poisoning (Lead)	- Unskilled labor - 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)
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,	**Key Respondent:** Fire Discoverer, immediate supervisor and Safety and Health Manager **Other Respondents:** Emergency Response

		water) - Inform Fire Brigade and Police - Document incidence	Team.
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.

7.13.1 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.

7.14 BUDGET ALLOCATION FOR EMP

The project cost includes the estimated expenses associated with the implementation of the Environmental Management Plan (EMP) and the installation of pollution abatement and mitigation measures as detailed in this Environmental Impact Assessment (EIA) report. The costs for the Environmental Management Plan have been specifically estimated.

Table 7.3 Budget Allocation for EMP

No.	Description	Approx. Capital Cost (USD)
1	Air Quality Management Plan	200,000
2	Noise and Vibration Management Plan	50,000
3	Water Quality Management Plan	200,000
4	Waste Management Plan	50,000
5	Biodiversity Management Plan	10,000
6	Occupational Health and Safety Management Plan	10,000
7	Community Health and Safety Management Plan	10,000
8	Fire Safety Management Plan	100,000
9	Emergency Response Plan	100,000
	Total	**730,000**

7.15 ENVIRONMENTAL MONITORING AND REPORTING PLAN

The EHS team will be conducted weekly or monthly inspections of the proposed project. The monitoring report will be submitted to the Environmental Conservation Department every six months, as mentioned in the EMP.

Note: If the project is beyond the current estimated cost, the necessary funds will be expanded.

Table 7.4 Environmental Monitoring Plan

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
Environmental Monitoring Plan (Operation Phase)						
Air quality	SO_2, NO_2, O_3, CO, $PM_{2.5}$, PM_{10}	AQ-1: Near Production Area, YMI Factory 17°10'1.18"N 95°58'26.11"E AQ-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	7,000,000 per year
Noise and Vibration	Noise and Vibration level (dB)	NV-1: Near Production Area, YMI Factory 17°10'2.09"N 95°58'24.92"E NV-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	2,400,000 per year
Surface Water quality	Biological Oxygen Demand, Chemical Oxygen Demand, Oil and Grease, pH, Total Coliform Bacteria, Total Nitrogen, Total Phosphorus, Total Suspended Solids	SW-1: Drainage Water, Drainage channel of the factory 17°10'7.68"N 95°58'24.30"E SW-2: Wastewater, Final wastewater treatment pond 17°10'0.45"N 95°58'26.88"E	Twice/year	YMI	National Environmental Quality (Emission) Guidelines (2015)	4,000,000 per year

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
Groundwater Quality	Total Coliforms, Fecal Coliforms, Taste, Odor, Color, Turbidity, Arsenic, Lead, Nitrate, Manganese, Chloride, Hardness, Iron, pH, Sulphate, Total Dissolved Solids (TDS)	GW-1 Groundwater, Tube well within factory compound 17°10'7.17"N 95°58'23.64"E	Twice/year	YMI	National Drinking Water Quality Standards, Ministry of Health (2019)	2,000,000 per year
Soil	Zinc (Zn), Copper (Cu), Manganese (Mn), Iron (Fe), Lead (Pb), Cadmium (Cd), Nickel (Ni), Chromium (Cr), Arsenic (As), Mercury (Hg)	SQ-1: Bare soil near the raw materials store area 17°10'0.28"N 95°58'22.68"E	Twice/year	YMI	Applicable International Guidelines	2,000,000 per year
Waste	- Amount and Type of Waste	Trash Bins	Weekly	YMI	Township Development Committee Guidelines	1,000,000 per year
Biodiversity	- Flora and Fauna	Project Area	Annually	YMI	The Conservation of Biodiversity and Protected Areas Law, (2018)	1,000,000 per year
Occupational Health and Safety	- First Aid Box and safety equipment - Records accidents and worker's medical checkups condition	Project Area	Weekly	YMI	Occupational Safety and Health Law (2019)	500,000 per month
Community Health and Safety	- Records accidents and medical condition	Project Area	Annually	YMI	The Social Security Law (2012) Public Health Law (1972)	1,000,000 per year

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
Emergency Response and Management Plan	- Evacuation routes and procedures - First aid supplies and training - Emergency contact information	Project Area	Twice/year	YMI	The Employment and Skill Development Law (2013)	2,000,000 per year
Fire Safety	- Firefighting equipment (fire extinguisher, firefighting hose, etc.) - Fire Detection System	Entire Boundary	Monthly	YMI	Myanmar Fire Brigade Law (2015)	1,000,000 per year
Preparation of Monitoring Report	Monitoring according to EMP plan and monitoring report preparation		Biannually	YMI	EIA Procedure 2015	4,000,000 per year
Decommissioning Phase						
Air quality	SO_2, NO_2, O_3, CO, $PM_{2.5}$, PM_{10}	AQ-1: Near Production Area, YMI Factory 17°10'1.18"N 95°58'26.11"E AQ-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	Once, during decommissioning	YMI	National Environmental Quality (Emission) Guidelines (2015)	3,000,000
Waste	Waste generated from decommissioning activities such as concrete, metal, and wood	Project Area	Once, during decommissioning	YMI	Township Development Committee Guidelines	500,000
Noise	Noise level (dB)	NV-1: Near Production Area,	Once, during decommissio	YMI	National Environmental Quality (Emission)	1,200,000

Category	Item	Location	Frequency	Responsible Organization	Target Value	Budget Allocation
		YMI Factory 17°10'2.09"N 95°58'24.92"E NV-2: Dhama Yayaye Monastery 17°09'19.138"N 95°58'43.386"E	ning		Guidelines (2015)	
Occupational Health and Safety	- First Aid Box and safety equipment - Accidents Records	Project Area	Weekly	YMI	Occupational Safety and Health Law (2019)	1,000,000

7.16 PROPOSED CSR ACTIVITIES

YMI endeavours 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.

a) Establishing of skill development centres focusing on infrastructure sector requirements (Up to 0.5% of net profit).
b) 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 (Up to 1% of net profit)
c) Elementary education initiatives in line with the policy framework and applicable laws in Myanmar (Up to 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.

7.17 MANAGEMENT PLAN DURING DECOMMISSIONING PHASE

The decommissioning phase of the proposed project involves the removal of all structures, equipment, and materials from the site, as well as the restoration of the land to its pre-project condition. The management plan for this phase aims to minimize the potential impacts of the decommissioning activities on the surrounding environment and the local community. The decommissioning phase management plan covers the following aspects:

7.17.1 Waste management

All waste generated during the decommissioning phase will be segregated, stored, transported, and disposed of in accordance with the relevant regulations and standards. Non-hazardous waste, such as concrete, metal, and wood, will be recycled or reused as much as possible.

7.17.2 Air quality

Dust and emissions from the decommissioning activities will be controlled by using water sprays, covers, filters, and other appropriate measures. The use of machinery and vehicles will be optimized to reduce fuel consumption and greenhouse gas emissions. Air quality monitoring will be conducted regularly to ensure compliance with the applicable standards and guidelines.

7.17.3 Noise and vibration

Noise and vibration from the decommissioning activities will be mitigated by using limiting working hours, installing noise barriers, and notifying nearby residents in advance. Noise and vibration monitoring will be carried out periodically to ensure compliance with the relevant criteria and limits.

7.17.4 Stakeholder Engagement

The socioeconomic impacts from the decommissioning activities are expected for the stakeholders such as workers, suppliers, customers and communities, and the project will implement the

adequate consultation and communication to address the potential impacts.

CHAPTER 8 PUBLIC CONSULTATIONS AND PROJECT DISCLOSURE

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.

8.1 PUBLIC 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 8.1 Public Consultation Meeting (Scoping Stage)

Item	Presenter	Designation	Title	Duration	Location
1	U Tint Myo Naing	Managing	Explain about company	10:00–10:10	Meeting Room, Yangon Metal Industry
2	Dr. Lai Lai Win	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	
3	Question and Answer sessions by all meeting attendees			10:45-11:35	

8.1.1 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-3**.

The public and civil society including the government departments attended the meeting and the attendees are listed as the following table.

Table 8.2 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 (Hmawbi)	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

8.1.2 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**.

Table 8.3 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	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

	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 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.	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 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 analysed 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.	
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 Myaung Ta Kar Industrial Zone, located in Hmawbi 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).

8.1.3 Main Issues and Suggestions

Some of the distinctive suggestions have been described in the following table and the details information is attached in **Annex-4**.

Table 8.4 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, Hmawbi 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.

8.2 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.

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

Focus group discussion was conducted by 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 8-1 Stakeholder Consultation of EKTA Consultants with the YMI Factory and Surrounding Village Community

8.2.2 Public Disclosure

The suggestion form was prepared by 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 8.5 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

Figure 8-2 Administrator, Myaung Ta Kar Village Tract

Figure 8-3 Administrator, Kular Kone Village Tract

8.2.3 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.

Table 8.6 Key Concerns from Village Community

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.	

8.2.4 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.

8.2.5 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 team 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.

Figure 8-4 Consultation Activities

8.2.6 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.

8.3 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 9 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 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.

9.1 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.

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 9.1**.

Table 9.1 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 Institutional Framework	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.

	The project shall conform on the followings: - relevant standardizations for ambient air quality (NEQEG) - relevant standardizations for wastewater discharges (General application of NEQEG) - relevant standardizations for noise and vibration (Industrial noise standard of NEQEG) - 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.
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 labour 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 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 EMP and the relevant sub-plans. 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. 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 proactively address any project-related grievances raised in accordance with the established grievance redress process and procedure in a timely manner.
Chapter 9. Conclusions and Recommendations	The project will follow strictly the commitments and further suggestions as illustrated in **Table 9.1**.

9.2 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 EMP 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 EMP:

a) 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.
b) All the environmental management activities shall be carried out against standardization of any pollutant outlet in accordance with the relevant standards.
c) 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

ရှမ်းတံဆိပ်

၂၀၁၉ - ၂၀၂၀ ခု၊ ဘဏ္ဍာရေးနှစ် စားအအေးဆိုင် **လုပ်ငန်းလိုင်စင်**

၁။ လုပ်ငန်းပိုင်ရှင်အမည် ဦးအောင်မျိုးနိုင်

၂။ နိုင်ငံသားမှတ်ပုံတင်အမှတ် ၁၂/အစန(နိုင်)၁၅၇၅၉၇

၃။ လုပ်ငန်းတည်ရှိသည့်နေရာ အမှတ်(၂၆၁၊ ၂၆၂၊ ၂၆၃) ပါရမီလမ်း မြောင်းတကာချို

၄။ လုပ်ကိုင်ခွင့်ပြုသည့်လုပ်ငန်းအမျိုးအစား ရန်ကုန်မြို့နယ်လက် ၃ သတ္တု [illegible]

၅။ နှစ်စဉ်လိုင်စင်ကြေးငွေ -၃၀၀၀၀၀/- (သုံးသိန်းကျပ်ချက်သာ ခုနစ်ထောင်)

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 ကြိုတင် တိကျစွာ လိုက်နာရမည်။

၄။ လိုင်စင်ရရှိသူသည် မိမိလုပ်ငန်းမှထွက်ရှိသည့် အမှိုက်သရိုက်၊ အညစ်အကြေးနှင့်ဓါတုဗေဒပစ္စည်းများအား အမှိုက်ကင်းမဲ့ဝုံ 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၍ စည်ပင်သာယာရေး အဖွဲ့များဥပဒေအရ 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 (၀၁၈၅)
ရက်စွဲ ၊ ၂၀၂၀ ခုနှစ်၊ ဒီဇင်ဘာလ (၁၀) 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။

(ရွှေထူး)
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

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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 ၃၄၂ ဖြင့် လုပ်ငန်းလိုင်စင် လျှောက်ထားသော Yangon Metal Industry Co.,Ltd. ကုမ္ပဏီ/လုပ်ငန်းမှ ဦး/ဒေါ် ဦးတင့်မျိုးနိုင် (ဘ) ဦးအုန်းလွင် နိုင်ငံသားစိစစ်ရေး ကတ်ပြားအမှတ်/ နိုင်ငံခြားသားမှတ်ပုံတင်အမှတ် ၁၂/ အစန (နိုင်)၁၅၇၅၄၃ အား ဤ လုပ်ငန်းလိုင်စင်ကို ထုတ်ပေးလိုက်သည်။

၂။ ခွင့်ပြုသည့်လုပ်ငန်းအမျိုးအစား

သိုလှောင်ခြင်း၊ ၊ သုံးစွဲခြင်း၊ တင်သွင်းခြင်း၊ သယ်ယူပို့ဆောင်ခြင်း၊ လက်ဝယ်ထားရှိခြင်း၊ ဝယ်ယူခြင်း။

၃။ လုပ်ငန်းလုပ်ကိုင်ခွင့်ပြုသည့် ဓာတုပစ္စည်းနှင့် ဆက်စပ်ပစ္စည်းများ၏ အမျိုးအမည်များ ထားရှိမည့်နေရာ (ပြည့်စုံစွာဖော်ပြရန်) — အမှတ် (၂၆၁၊ ၂၆၂၊ ၂၆၃)၊ ပါရမီလမ်း၊ မြောင်းတကာစက်မှုဇုန်၊ ရန်ကုန်တိုင်းဒေသကြီး။

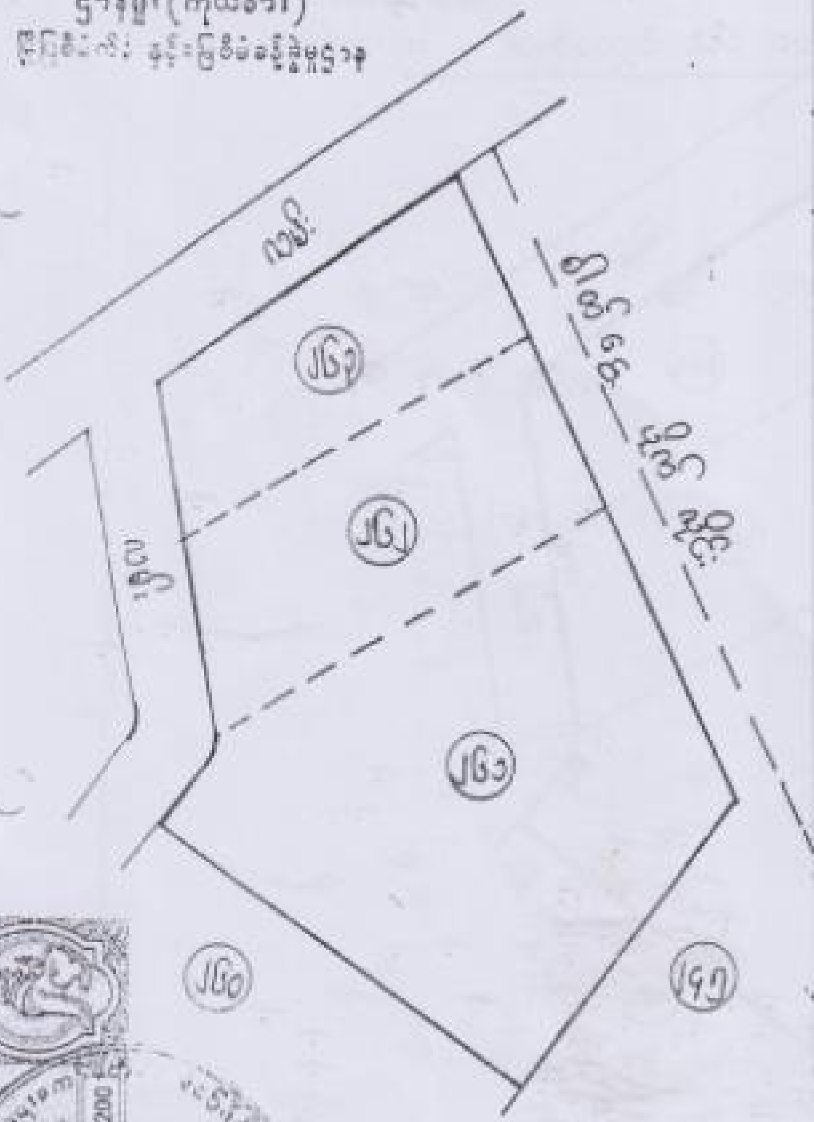
၄။ လုပ်ငန်းလိုင်စင်သက်တမ်းကုန်ဆုံးမည့်နေ့ရက် — ၂၁ - ၁ - ၂၀၂၂

ဥက္ကဋ္ဌ
ဗဟိုကြီးကြပ်ရေးအဖွဲ့

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ရန်ကုန်မြို့တော်စည်ပင်သာယာရေးကော်မတီ

ဌာနမှူး (ကိုယ်စား)
မြို့ပြစီမံကိန်း နှင့်မြေစီမံခန့်ခွဲမှုဌာန



၂၀၁၅-၀၆/ ခုနှစ်သုံးမြေပုံမှရေးကူး ပေးသည့် မှန်ကန်ကြောင်း သက်သေခံသည့် မိတ္တူမြေပုံ	
အမည်ပေါက်	Yangon Metal Industry Co. Ltd
မြေတိုင်းရပ်ကွက်အမှတ်	မြောင်းတကာ သံမဏိစက်မှုဇုန်
လူနေရပ်ကွက်အမှတ်	-
မြေကွက်အမှတ်	၂၆၁ + ၂၆၂ + ၂၆၃
မြေအမျိုးအစား	နှစ်(၆၀)ဂရန်
ဧရိယာ	၈.၁၈၉ ဧက (အဝိုင်းအစ မပါ)
မြို့နယ်	မှော်ဘီ
စကေး	၁" = ၂၀၀'
ဌာနတွင်ငွေပေးသွင်း လျှောက်ထားသည့်အကြောင်းအရာ	
မြေတိုင်း (၂) မြို့ပြစီမံကိန်းနှင့်မြေစီမံခန့်ခွဲမှုဌာန	
မြေတိုင်း (၁) မြို့ပြစီမံကိန်းနှင့်မြေစီမံခန့်ခွဲမှုဌာန	
ဌာနမှူး မြို့ပြစီမံကိန်း နှင့်မြေစီမံခန့်ခွဲမှုဌာန	

၂၀၁၅/၁၆ ခုနှစ်တင်သုံး မြေပုံ/မြို့မြေစာရင်းမှ ရေးကူး သော ကောက်နုတ်ချက် မိတ္တူ မြေပုံ/မြေစာရင်း ဖြစ်၍ မှန်ကန်ကြောင်း ထောက်ခံပါသည်။

(မြို့ပြ/မြေယာဌာန)

ထောက်ခံစာ မှတ်ပုံတင်ခွင့် ၂၈-၉-၁၅

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

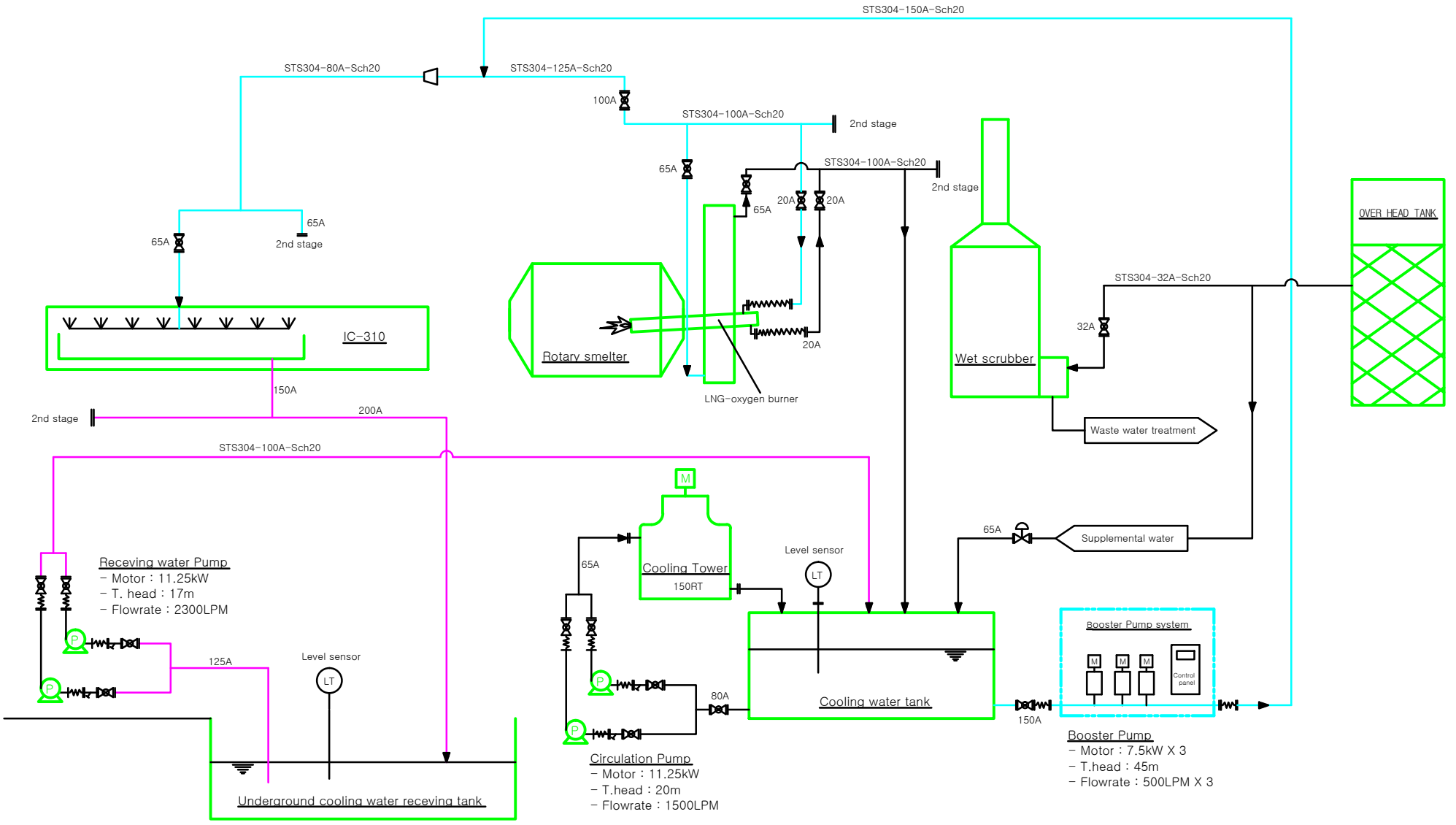
Soda Ash Dense(Maximum - 250 Ton)

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

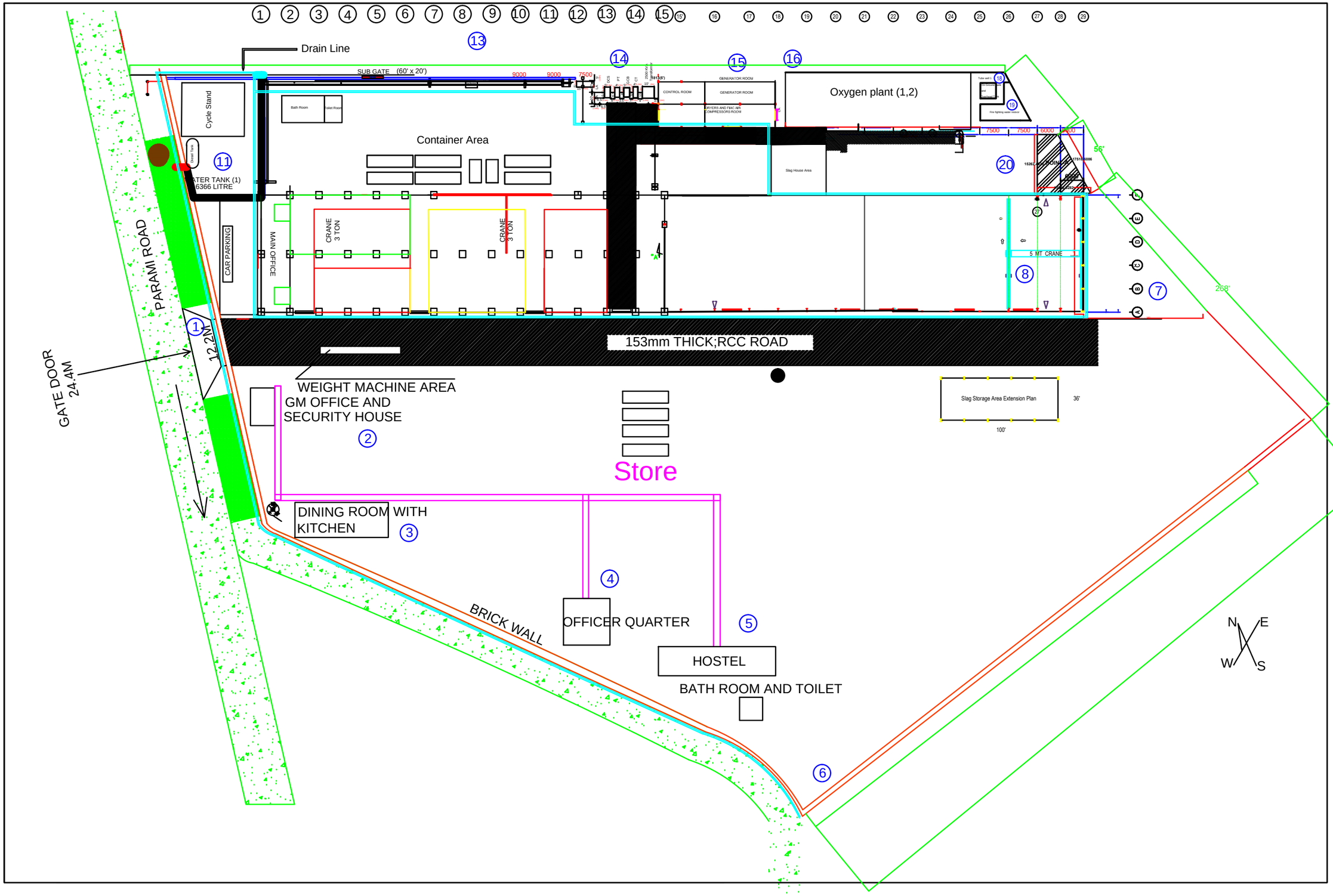
Yangon Metal Industry co.,ltd.

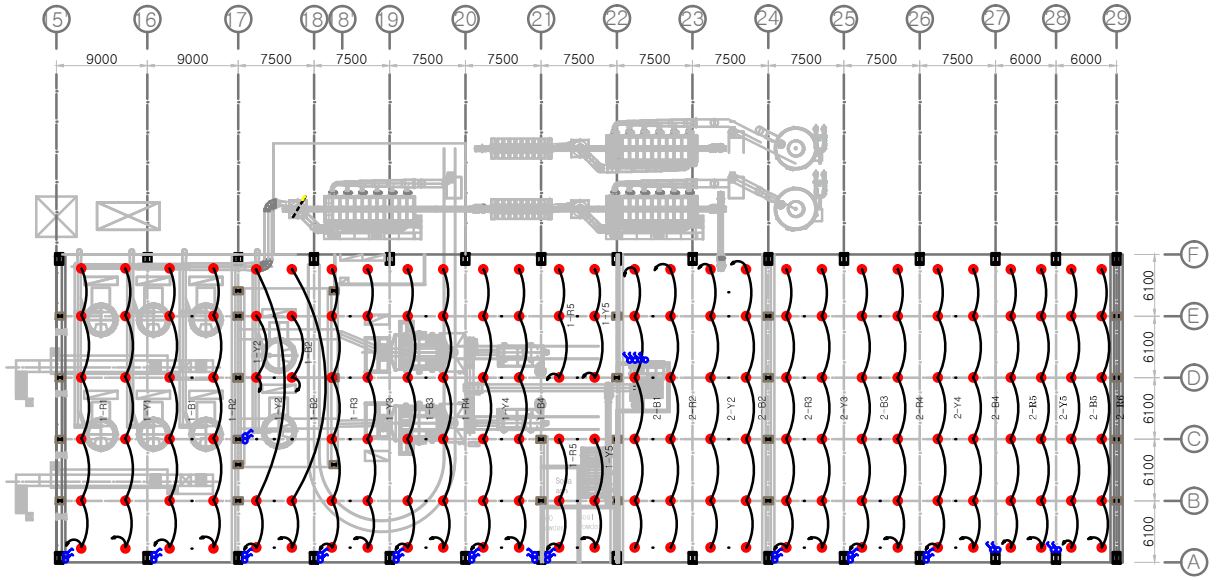
TITLE P&ID for Cooling Water

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

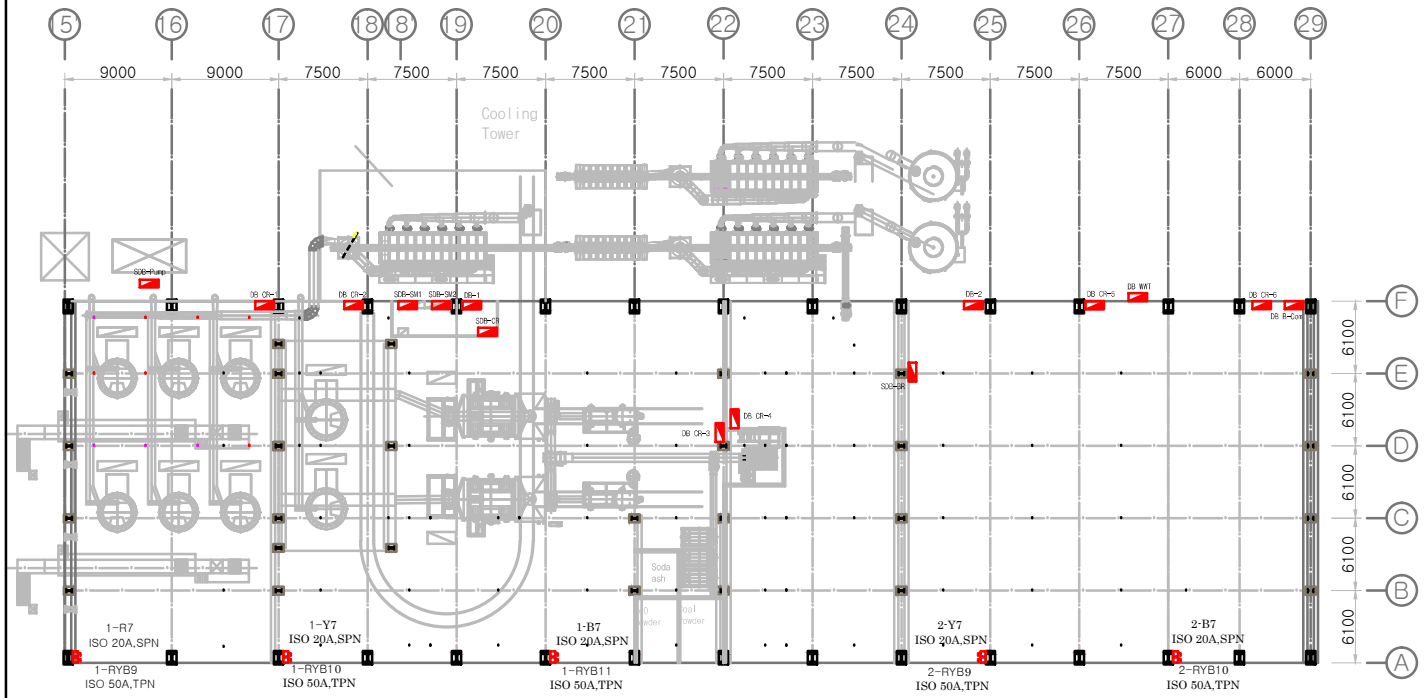
SCALE : N.T.S

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

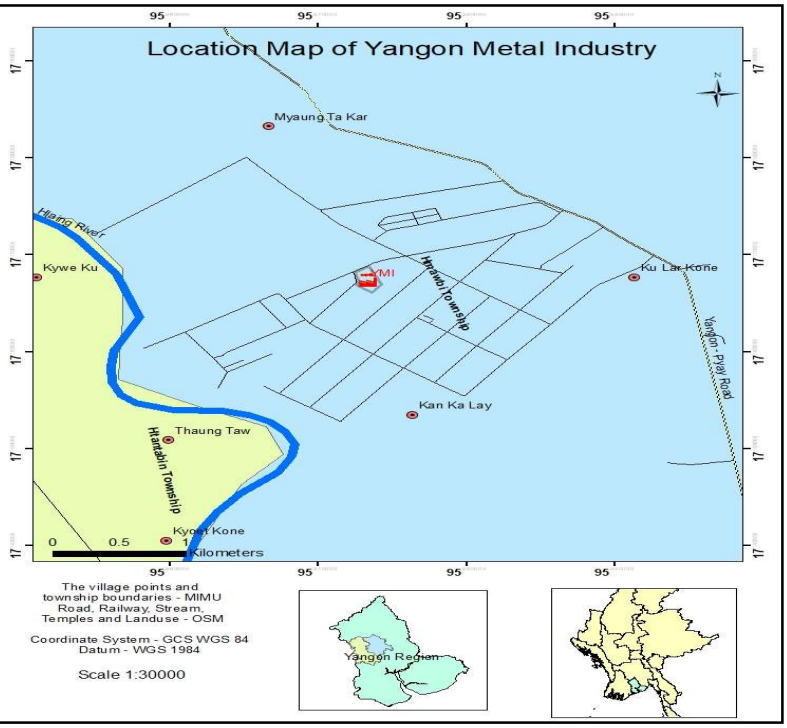
စီမံကိန်းနောက်ခံအကြောင်းအရာ

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

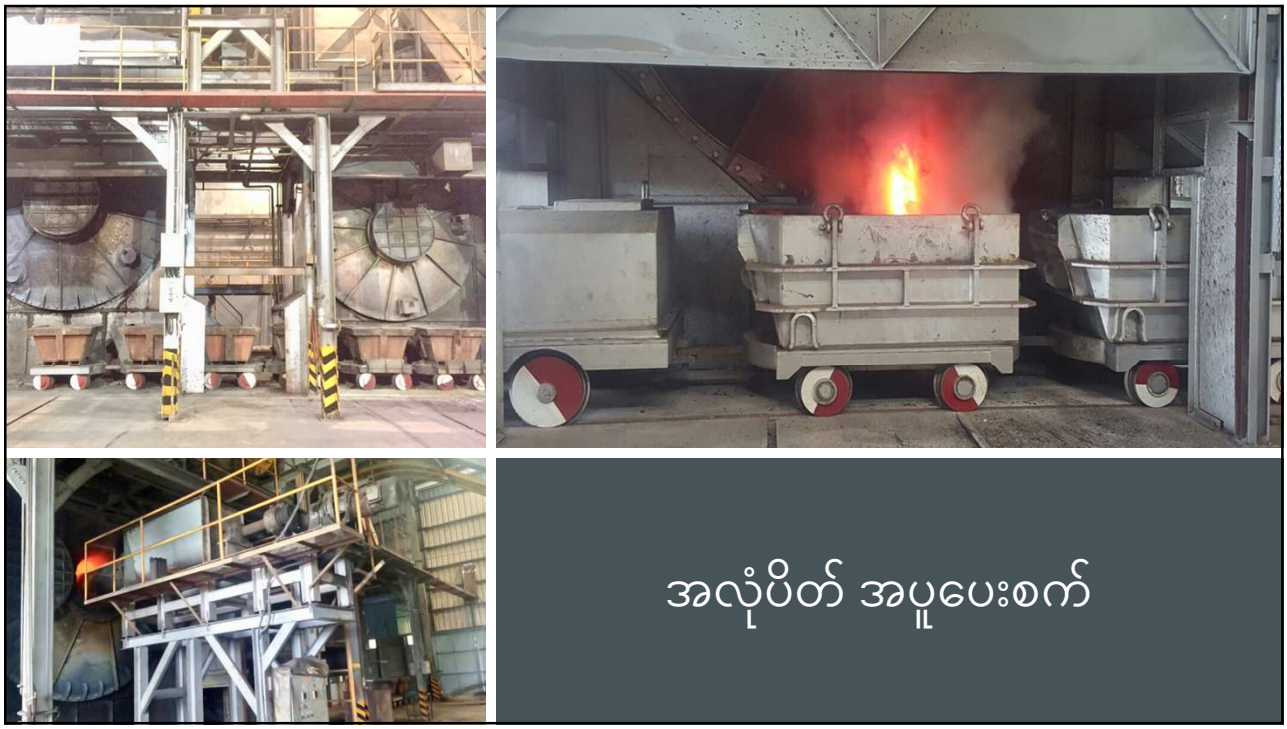


ကြိတ်ခွဲစက်မှ ထွက်လာသော ပစ္စည်းများ

9


ခဲကျိုချက်ခြင်းနှင့် စက်တစ်ခုမှတစ်ခုဆီသို့သယ်ယူပို့ဆောင်ခြင်း

10



11

12

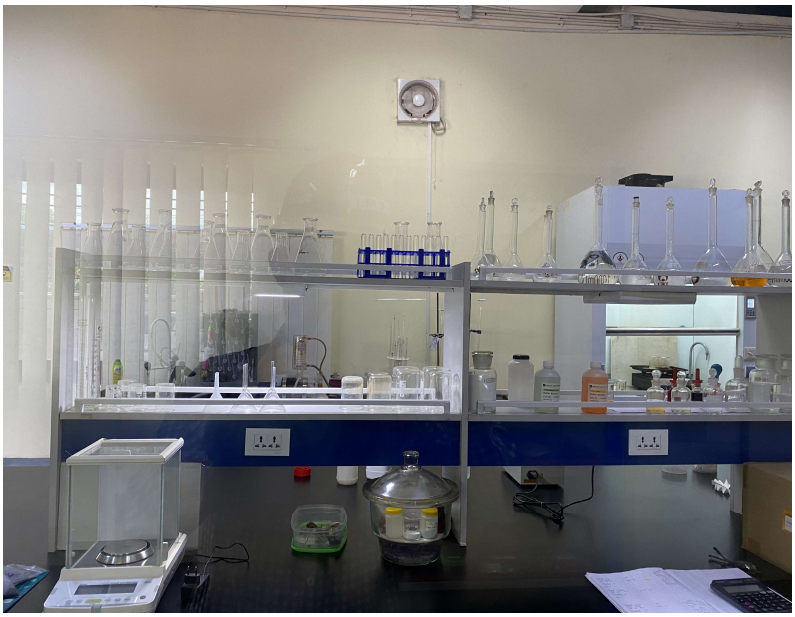
ထုတ်လုပ်သည့် ကုန်ချောပစ္စည်းများ

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

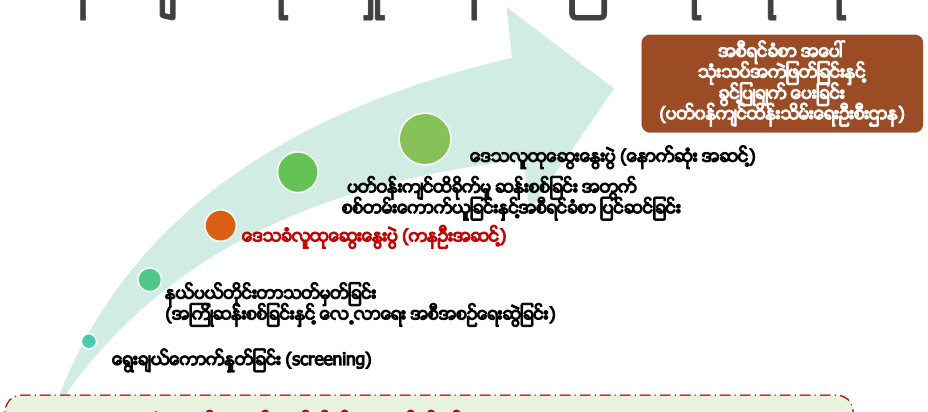
20

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။

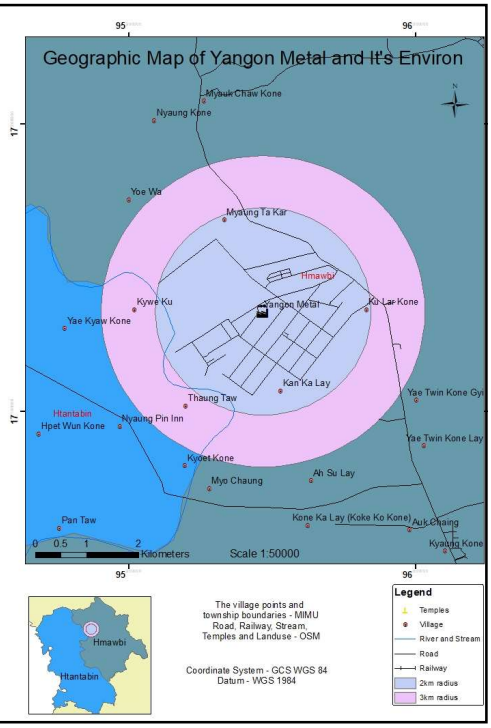
၂။ ပတ်ဝန်းကျင်ဆိုင်ရာ နှင့် လူမှုရေးဆိုင်ရာ ဆန်းစစ်လေ့လာမှုများ၊ စုံစမ်းစစ်ဆေးမှုများ ဆောင်ရွက်ခြင်း။

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

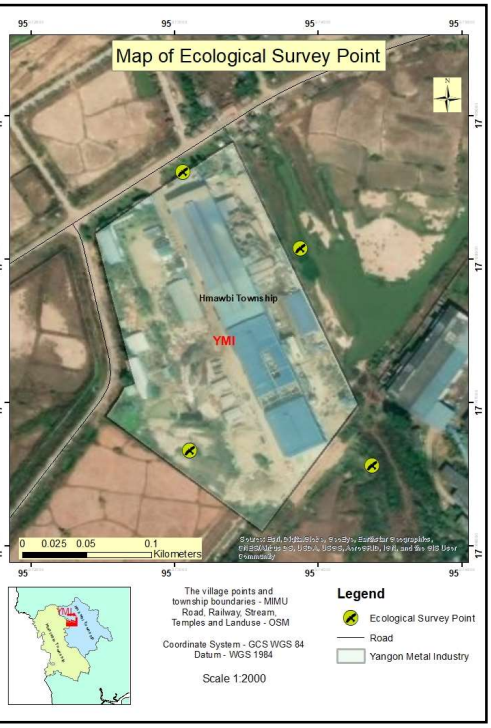
ပတ်ဝန်းကျင်ထိခိုက်မှုကို ဆန်းစစ်လေ့လာမည့် အချက်အလက်များ

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

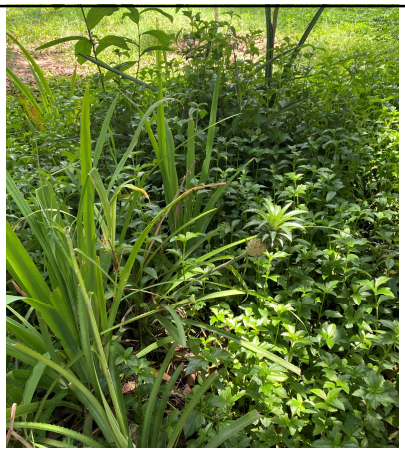
ပတ်ဝန်းကျင်ထိခိုက်နိုင်ခြေဆန်းစစ်မှုများ

လုပ်ငန်းစဉ်	အနည်းငယ်	အလယ်အလတ်	အမြင့်စား	ပြောင်းလဲခြင်း မရှိ	ဆန်းစစ်ရန်လိုအပ်
လည်ပတ်သည့်ကာလ					
သတ္တဂါများထိခိုက်မှု				√	
အပင်များထိခိုက်မှု				√	
အခြားအသုံးပြုမှုများအတွက် ရေအရင်းမြစ်ထိခိုက်မှု	√				
မြေအောက်ရေထိခိုက်မှု		√			
စီးဆင်းရေထိခိုက်မှု	√				
အလုပ်အကိုင်အခွင့်အလမ်း		√			
ယဉ်ကျေးမှုအမွေအနှစ်များဆုံးရှုံးမှု				√	
ကျန်းမာရေးထိခိုက်နိုင်မှု		√			
ဆူညံသံ	√				
အစိုင်အခဲစွန့်ပစ်ပစ္စည်း		√			
ဓါတုပစ္စည်းအန္တရာယ်			√		
လူမှုစီးပွား					√
လေထုအရည်အသွေး		√			

29

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

33

34

35

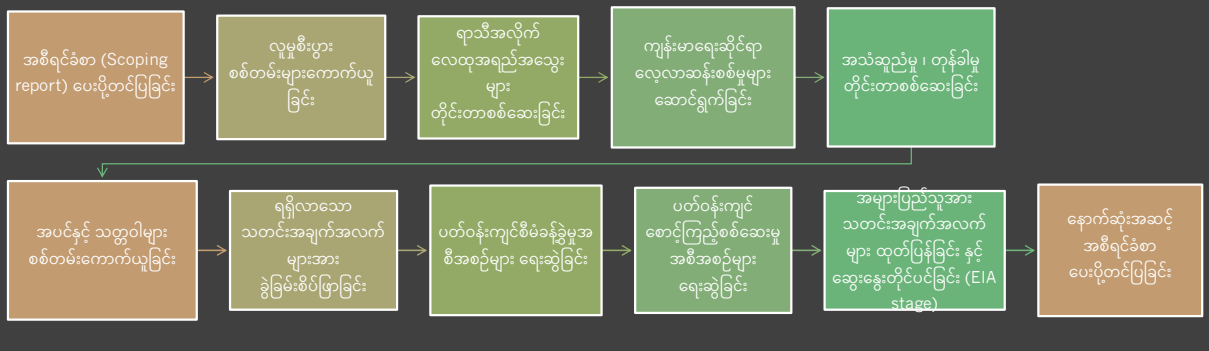
ရေအငွေ့ပြန်စက်

36

စွန့်ပစ်ပစ္စည်းများ စီမံခန့်ခွဲမှု

37

အနာဂတ်လုပ်ငန်းစဉ်များ



38

ကျေးဇူးတင်ပါသည် ။

အကြံပြုဆွေးနွေးချက်များအား ဖိတ်ခေါ်အပ်ပါသည်။

39

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ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၂ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အစည်းအဝေးခန်းမ ၊ YMI စက်ရုံအတွင်း ၊ မြောင်းတကာစက်မှုဇုန် ၊ မှော်ဘီမြို့နယ် ။

စဉ်	အမည်	ရာထူး	ဌာန	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
၁.	ဦး[illegible]	[illegible]	[illegible]	09795515827	[illegible]
၂	ဦး[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
၃.	ဦး[illegible]	[illegible]	[illegible]	09-423669902	[illegible]
၄.	ဦး[illegible]	[illegible]	[illegible]	09505977228	[illegible]
၅.	ဦး[illegible]	[illegible]	Yangon Metal Industry	09.254043651	[illegible]
၆	ဦး[illegible]	Safety Manager	"	09-959560810	[illegible]
၇	ဦး[illegible]	Asst, Mgr. (QC)	"	09-450063177	[illegible]

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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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၂၀၂၀ ခုနှစ်၊ ဇွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးအောင်စိုး	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နိုင်ပါသည်။ (...........)
ဆက်သွယ်ရန်ဖုန်း	09795515827	
နေရပ်လိပ်စာ	E.I	

အကြံပြုချက်

၁။ လေအရည်အသွေး၊ ~~[illegible]~~ စွန့်ထုတ်ရေ အရည်အသွေး၊ မြေဆီလွှာ အရည်အသွေးများကို အမြဲတမ်းစစ်ဆေးသင့်ပါသည်။

၂။ အန္တရာယ်ရှိသော ဓာတုပစ္စည်းပုံးများတွင် label များအား အများအကျင့်ရအောင် သတ်မှတ်သင့်ပါသည်။

၃။ ဖြိုခွဲစက်များတွင် Battery အိုးအဟောင်းများမှ အက်ဆစ်ရည် ဖိတ်စင်မှုများကို ကိုင်တွယ်သော ဝန်ထမ်းများ အနေဖြင့် PPE ဝတ်စုံ ဝတ်ဆင်သင့်ပါသည်။

၄။ ဝန်ထမ်းများအား ကျန်းမာရေးစစ်ဆေးမှုများကို အခါအားလျော်စွာ စစ်ဆေးပေးသင့်ပါသည်။

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၂၀၂၀ ခုနှစ်၊ ဖွန်လ (၁၈) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးကျော်ငြိမ်း	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	095059798	
နေရပ်လိပ်စာ	[illegible]	

<u>အကြံပြုချက်</u>

(၁) [illegible]

[illegible]

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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 လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	[illegible]	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နှိုင်ပါသည်။ (...........)
ဆက်သွယ်ရန်ဖုန်း	၀၉-၄၂၃၆၆၉၉၀၂	
နေရပ်လိပ်စာ	၁၁ ရပ်ကွက် [illegible] မှော်ဘီ(မြို့)နယ်	

အကြံပြုချက်

[illegible]

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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	ဦးမျိုးညွန့်အောင်	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နှိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	09979765226.	
နေရပ်လိပ်စာ	KMN Galvanizing Co., Ltd.	

အကြံပြုချက်

ဒီနေ့ဆောင်ရွက်ထားသည်များ (သဘာဝပတ်ဝန်းကျင်) ထိခိုက်မှုအနည်းဆုံးဖြစ်စေရန် ဆောင်ရွက်ထားသည်မှာ ပြည့်စုံကောင်းမွန်ပါသည်။ ရေရှည်တိုင်းသွားဆောင် ရွက်သွားရန် အကြံပြုအပ်ပါသည်။

18/6/2020.

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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 လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦးအောင်ယဉ် (ရဲကမ်းသူ)	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...X...) နိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	၀၉၂၅၀ ၇၇၃၈၆၇	
နေရပ်လိပ်စာ		

<u>အကြံပြုချက်</u>

ကျွန်တော် (ရဲကမ်းသူ) [illegible] သည်။ [illegible] သည်။ [illegible] ပါသည်-

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

EKTA Be Green!

YANGON METAL INDUSTRY CO., LTD.

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အစည်းအဝေးခန်းမ - Yangon Metal Industry.

စဉ်	အမည်	ရာထူး	လိပ်စာ	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
1	Than Zaw Lin	Production Manager	A.G.I [illegible]	09-454174558	[illegible]
2	Min Zaw Oo	GM	No. 253-254 AGI Yandanar Street Myandagar Industry	09.979112985	[illegible]
3.	Daw Thein Thein Swe.	Assistant. Manager	Khin Maung Myint steel, Product.	09-795518226	[illegible]
4.	Kyaw Htoo	FM	YMI	09.254043654	[illegible]
5.	U Saw Hoomer	[illegible]	[illegible]	09790159435	[illegible]
6	U Zaw Lwin	[illegible]	[illegible]	09773399600	[illegible]
7.	[illegible]	[illegible]	[illegible]	095059798	[illegible]
8	[illegible]	[illegible]	"	09.686752937	[illegible]
9.	[illegible]	Asst. Mgr QC	YMI	09450063177	[illegible]
10.	[illegible]	HSE Officer	YMI	09420310332	[illegible]
11.	Nyi. Nyi. Ag	Asst. Mgr (HR)	YMI	094444 60051	[illegible]
12	Phyo Wai Aung		YMI.	09696872492	[illegible]

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့ တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အစည်းအဝေးခန်းမ - Yangon Metal Industry.

စဉ်	အမည်	ရာထူး	လိပ်စာ	ဆက်သွယ်ရန်ဖုန်း	လက်မှတ်
13	[illegible]	YMI	မြောင်းတကာ	09,79887871	
14	[illegible]	YMI	မြောင်းတကာ,	09.697659031	
15	Ngyi Ngyi Tun	YMI-AM	မြောင်းတကာ	09420124349	
16	TINT MYO NAING	YMI M.D	မြောင်းတကာ	09 5103779	
17.	ဦး[illegible]အောင်	ဦးစီးအရာရှိ	[illegible]	09-254373312	
18.	[illegible]	[illegible]	"	09.770468178	

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၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် ဦး[illegible]		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နိုင်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	09-686752937.	
နေရပ်လိပ်စာ	[illegible]	

<u>**အကြံပြုချက်**</u>

- စက်ရုံ၏ တင်ပြချက်များအား အားလုံးကောင်းပါသည်။
- စက်ရုံ၏ [illegible] ကျင့်ဝတ်ကို [illegible] ၊ မီး[illegible] များကို အမြဲ [illegible] ပါသည်။
- အကြံပြုလိုသည်မှာ [illegible] အကြောင်းအရာ [illegible] များလည်း [illegible] ပါသည်။ ([illegible])

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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

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် [illegible]		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	095059798	
နေရပ်လိပ်စာ	[illegible]	

<u>အကြံပြုချက်</u>

[illegible]

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Yangon Metal Industry မှ ဆောက်လုပ်လည်ပတ်နေသည့် ခဲကျိုချက်ခြင်းနှင့်
သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု
အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

အကြံပြုလွှာ

<table>
<tr><td colspan="3">အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန်
လူကြီးမင်း၏ အကြံပြုချက်အား လိုက်လှဲစွာ ကြိုဆိုပါသည်။</td></tr>
<tr><td>အမည်
U Zaw Lwin</td><td></td><td>အစီရင်ခံစာတွင်
အမည်မဖော်ပြလိုပါက
ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။
(..........)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">09773399600</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">[illegible]</td></tr>
<tr><td colspan="3"><u>အကြံပြုချက်</u>

Yangon Metal Industry မှ ဆောင်ရွက်မယ့် ပတ်ဝန်းကျင်စီမံ
ခန့်ခွဲမှု အစီအစဉ်တွေ အပေါ် ပြောဆိုပါသည်။ ..စီမံမှုအားလုံး
ကောင်းမွန်စွာတွေ့ရှိပါသည်။</td></tr>
</table>

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 လိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည်	ဦး သန်းထွဋ်အောင် ဦး စိုးသူရရှိန် [illegible] - [illegible]	အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိုင်ပါသည်။ (..........)
ဆက်သွယ်ရန်ဖုန်း	၀၉ - 254373312.	
နေရပ်လိပ်စာ	[illegible] - [illegible] ရပ် [illegible]	

<u>အကြံပြုချက်</u>

အဆိုပါ စက်ရုံအနေဖြင့် ဆောင်ရွက်ထားရှိသည့် အချက်အလက်များ ကောင်းမွန်ပြည့်စုံပြီး ဆောင်ရွက်ထားရှိသည့် အချက်များကို အစဉ်ဂရုစိုက်ဆောင်ရွက်ထားရန်နှင့် ခဲစက်ရုံဖြစ်သည့် အတွက် အဓိက [illegible] များနှင့် ပတ်ဝန်းကျင်ကျန်းမာရေး ထိခိုက်မှု မရှိစေရန် အထူးဂရုပြု ဆောင်ရွက်ပေးနိုင်ပါရန် အကြံပြုတင်ပြအပ်ပါသည်။ အထက်သက်ဆိုင်ရာ ဌာန [illegible] လမ်းညွှန်ချက်များကို လိုက်နာဆောင်ရွက်ရန် လိုအပ်ပါသည်။

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သန့်စင်ခြင်းစက်ရုံစီမံကိန်းအတွက် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီရင်ခံစာ ဆောင်ရွက်ထားရှိမှု
အခြေအနေများအား သက်ဆိုင်သူများနှင့် ဆွေးနွေးညှိနှိုင်းခြင်း အခမ်းအနားသို့
တက်ရောက်သူစာရင်း

၂၀၂၃ ခုနှစ်၊ ဇန်နဝါရီလ (၂၀) ရက်

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<table>
<tr><td colspan="3">အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန်
လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။</td></tr>
<tr><td>အမည်
ဒေါ်ရင်ရင်ဌေး</td><td></td><td>အစီရင်ခံစာတွင်
အမည်မဖော်ပြလိုပါက
ကွက်လပ်တွင် (…x…) နိုင်ပါသည်။
(………..)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">09.770468178</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">မြောက်ဒဂုံ - စည်ပင်</td></tr>
<tr><td colspan="3"><u>အကြံပြုချက်</u>

Yangon Metal ခဲ၊ သတ္တု ကျိုချက်ခြင်းနှင့် ပတ်သက်၍ ကော့ဘာ သုံးသပ်
ချက်အရ စနစ်တကျ ဆောင်ရွက်ထားခြင်းကို သိရှိပါသည်။
စက်ရုံအနေနှင့် ခဲ၊ စက်ရုံဖြစ်သည့်အတွက် ဝန်ထမ်းများအား စနစ်တကျလုပ်
ဆောင်ပေးခြင်း၊ PPE ဝတ်စုံများဝတ်ဆင်ပေးရန် ၊ လိုအပ်ပါသည်။
ကျန်းမာရေးနှင့် ပတ်သက်၍ အထူးဂရုစိုက်ပေးရန်၊ အထူးသဖြင့် Covid-၁၉
ကာကွယ်ဆေးများ အကြိမ်ရေ <s>[illegible]</s> ပြည့်မီအောင် ထိုးထားပေးရန် လိုအပ်
ပါသည်။ ခဲ၊ စက်ရုံဖြစ်သည့်အတွက် ရေဆိုးစွန့်ပစ်မှု မရှိပေသော်လည်း၊
Water Treament လုပ်ဆောင်ထားပုံ အဆင့်ဆင့်ကို စနစ်တကျ လုပ်ဆောင်
ထားမှုအား ၊ အခါအားလျော်စွာ ၊ သက်ဆိုင်သည့် ဌာနများမှ လာရောက်စစ်ဆေး
မှုနိုင်ပါသဖြင့် ၊ စနစ်တကျ လုပ်ဆောင်ထားမှုအား တင်ပြနိုင်ရန်
အကြံပြုချက် ပေးခြင်းပါသည်။
စည်ပင်သာယာရေးအဖွဲ့အနေဖြင့် ၊ ထွက်ရှိသည့် ၊ အမှိုက်နှင့် အညစ်အကြေးများကို</td></tr>
</table>

အဖွဲ့နှင့် ပူးပေါင်းဆောင်ရွက်သွားရန်။

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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 Than Zaw Aklin		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (…x…) နှိပ်ပါသည်။ (………..)**
ဆက်သွယ်ရန်ဖုန်း		
နေရပ်လိပ်စာ		

<u>အကြံပြုချက်</u>

YMI စက်ရုံ လုပ်ငန်းများသည် [illegible]၊ [illegible] ရှိပါတယ်

အများ အကျိုးပြု လုပ်ငန်းများ ဆောင်ရွက်ရောက်ကို လေးစား [illegible] ပါတယ်.

စက်ရုံရဲ့ စက်ရုံ များ [illegible] လေးစားဂုဏ်ယူ [illegible] ဖြစ်ပါတယ်

ဒီထက်ပိုမို [illegible] Quality မြင့် [illegible]

နိုင်မယ်လို့ ယုံကြည်ပါတယ်။

[signature]

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အကြံပြုလွှာ

အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန် လူကြီးမင်း၏ အကြံပြုချက်အား လှိုက်လှဲစွာ ကြိုဆိုပါသည်။		
အမည် MIN [illegible]		အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (…x…) နှိုင်ပါသည်။ (………..)
ဆက်သွယ်ရန်ဖုန်း	၀၉. ၇၇၉၁၁၃၄၈၅	
နေရပ်လိပ်စာ		

<u>အကြံပြုချက်</u>

YMI စက်ရုံသည် [illegible] ကောင်းသော စက်ရုံဖြစ်
ခြင်းကြောင့် ပတ်ဝန်းကျင် လုပ်ငန်းများ အတွက် [illegible]
စက်ရုံဖြစ်ပါသည်။ [illegible]
[illegible] ပတ်ဝန်းကျင် [illegible]
များအတွက် [illegible]
ကောင်းတစ်ခု ဖြစ်ပါသည်။

[signature]

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အကြံပြုလွှာ

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အမည် ဒေါ်သိန်းသိန်းဌေး		**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိုင်ပါသည်။ (..........)**
ဆက်သွယ်ရန်ဖုန်း	09-795518226 .	
နေရပ်လိပ်စာ	~~Khin Maung~~ [illegible]	

<u>အကြံပြုချက်</u>

- သဘာဝ ပတ်ဝန်းကျင်ထိန်းသိမ်းစောင့်ရှောက်မှု အား
ပိုမို ဖန်တီး ကောင်းမွန်စွာဖြင့် များစွာ မှု ကြောင့်
[illegible] ဂုဏ်ယူ [illegible] မှု မရှိအောင်၊
ကာကွယ်ပေးပြီး၊ စနစ်တကျ လုပ်ဆောင်ပေးသော
ကြောင့် ကောင်းမွန်ပါသည်။ ထို့ဖြင့် ပတ်ဝန်းကျင်
[illegible] ဂရုပြု [illegible] စနစ်တကျ နှင့် ကျေးရွာ [illegible]
အား CSR လုပ်ငန်း များ ကိုလည်း လုပ်ဆောင်ပေး
[illegible] ပါ ကြောင့် အကြံပြု [illegible] ပါသည်။
[illegible] ကြီး များ [illegible] ကြောင့်
အကြံပြု အပ်ပါသည်။

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အကြံပြုလွှာ

<table>
<tr><td colspan="3">အကြံပြုချက်များအား အောက်တွင် ဖော်ပြပေးပါရန်
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<tr><td>အမည်</td><td>ဦးကျော်ထူး</td><td>အစီရင်ခံစာတွင်
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(………..)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">09-254043654</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">ရန်ကုန် မြောက်ဒဂုံ</td></tr>
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ပတ်ဝန်းကျင် ထိခိုက်မှု၊ ကျန်းမာရေး စနစ် ဆက်နွယ်ချက်
လေ့လာ စောင့်ကြည့်မှုများ ပြုလုပ်သွား သင့်ပါသည်။</td></tr>
</table>

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အကြံပြုလွှာ

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<tr><td>အမည်</td><td>WIN 1616 00</td><td>အစီရင်ခံစာတွင်
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(..........)</td></tr>
<tr><td>ဆက်သွယ်ရန်ဖုန်း</td><td colspan="2">09420310537</td></tr>
<tr><td>နေရပ်လိပ်စာ</td><td colspan="2">YMI</td></tr>
<tr><td colspan="3"><u>အကြံပြုချက်</u>

[illegible]
water treatment system [illegible]
[illegible] Dust
Control [illegible] Bag House [illegible] Plant [illegible]
(၃) [illegible]</td></tr>
</table>

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အမည်	[illegible]	**အစီရင်ခံစာတွင် အမည်မဖော်ပြလိုပါက ကွက်လပ်တွင် (...x...) နှိပ်ပါသည်။ (...........)**
ဆက်သွယ်ရန်ဖုန်း	၀၉၄၄၄၄၄၆၆၈၅၁	
နေရပ်လိပ်စာ	[illegible]	

<u>အကြံပြုချက်</u>

ယခုကဲ့သို့ ကျွန်ုပ်တို့ ဆောင်ရွက်ရှိသော သဘာဝပတ်ဝန်း ကျင် [illegible] ထိန်းသိမ်းရေး ဆောင်ရွက်မှုများ [illegible] ဆက်လက် ကျွန်ုပ်တို့မှ ဆောင်ရွက်သွားမည် ဆိုပါက သဘာဝပတ်ဝန်းကျင် ထိခိုက်မှုနည်းသော [illegible] [illegible] တစ်ခု [illegible] ဖြစ်ပါကြောင်း [illegible] ပါသည်။

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

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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	

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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။			

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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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Evaluation of Compliance for Legal and Other Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
	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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Evaluation of Compliance for Legal and Other Requirement

Sr No.	Legal	Compliance	Reaponsible Department	Time Sheldule	Comply/ Non-Comply
၁၀။	သဘာဝဓါတ်ငွေ့အသုံးပြုမှု	သဘာဝဓါတ်ငွေ့ရောင်းချမှုစာချုပ်ပါ သဘောတူညီချက်များ၊စည်းကမ်းချက်များနှင့်အညီလိုက်နာဆောင်ရွက်ထားရှိပါသည်။	Admin	Instruction	Comply

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Annex-9

Blood Test Results for Lead Concentrations

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၁	၁	ဦးသူရဇော်	Purchaser	Planning	၄၃	၁၀ နှစ် ၃ လ	17.9 µg/dl
၂	၂	ဦးဇော်လင်းထိုက်	Supervisor	Production	၃၇	၁၅ နှစ် ၃ လ	9.9 µg/dl
၃	၃	ဒေါ်ညီညီထွန်း	Admin Manager	Admin	၅၁	၄ နှစ် ၁လ	9.9 µg/dl
၄	၄	ဦးတာက်လူမင်းအောင်	Assistant Supervisor	Production	၄၁	၁၂ နှစ် ၁ လ	12.7 µg/dl
၅	၅	ဦးမျိုးလင်းထွန်း	Assistant Supervisor	Production	၄၁	၁၄ နှစ် ၇ လ	17.9 µg/dl
၆	၆	ဦးထွန်းထွန်းနိုင်	Supervisor	QC	၃၁	၅ နှစ် ၁ လ	8.3 µg/dl
၇	၇	ဦးသူရအောင်	Supervisor	Production	၃၅	၁ နှစ် ၁၀ လ	7.2 µg/dl
၈	၈	ဦးဝင်းကိုကိုဦး	Senior Supervisor	QA	၄၁	၁ နှစ် ၉ လ	6.5 µg/dl
၉	၉	ဦးမျိုးဇင်ဦး	Helper	Production	၃၂	၃ နှစ် ၄ လ	8.3 µg/dl
၁၀	၁၀	ဦးမြဝင်းနိုင်	Helper	Production	၂၅	၄ နှစ် ၂ လ	7.2 µg/dl
၁၁	၁၁	ဒေါ်သန္တာဖြိုး	Assistant Manager	Finance	၃၇	၁၄ နှစ် ၇ လ	8.2 µg/dl
၁၂	၁၂	ဒေါ်အေမီကျော်	Assistant Manager	Finance	၄၃	၁၃ နှစ် ၃ လ	10.5 µg/dl
၁၃	၁၃	ဒေါ်သန်းသန်းမော်	Manager	Finance	၄၄	၁၇ နှစ် ၄ လ	8.0 µg/dl
၁၄	၁၄	ဦးခင်မိုးဦး	Driver	Admin	၃၈	၂ နှစ် ၄ လ	7.8 µg/dl
၁၅	၁၅	ဦးမျိုးသူနိုင်	Helper	Production	၂၇	၈ နှစ် ၈ လ	7.3 µg/dl
၁၆	၁၆	ဦးရန်ဝိုင်ဖြိုး	Helper	Production	၂၅	၄ နှစ် ၈ လ	10.9 µg/dl
၁၇	၁၇	ဦးဇင်ဘိုဘို	In charge	Production	၂၉	၁၀ နှစ် ၆ လ	15.9 µg/dl
၁၈	၁၈	ဦးသက်ရွှေ	Helper	Production	၃၂	၅ နှစ် ၇ လ	8.5 µg/dl
၁၉	၁၉	ဦးသက်ဝေ	In charge	Production	၃၁	၁၂ နှစ် ၂ လ	19.2 µg/dl
၂၀	၂၀	ဦးမိုးသက်ကို	Helper	Production	၂၆	၅ နှစ် ၇ လ	9.1 µg/dl
၂၁	၂၁	ဦးသန့်ကျော်စိုး	Helper	Production	၂၃	၂ လ	7.4 µg/dl
၂၂	၂၂	ဦးသန့်ဇင်မောင်ထွေး	GI	Production	၂၅	၄ နှစ် ၇ လ	7.6 µg/dl
၂၃	၂၃	ဦးအောင်ကိုလတ်	Forklift Driver	Production	၃၂	၂ နှစ် ၆ လ	6.5 µg/dl
၂၄	၂၄	ဒေါ်အေးအေးမြိုင်	Helper	Admin	၆၃	၁၅ နှစ် ၁၀ လ	8.8 µg/dl
၂၅	၂၅	ဦးဝင်းထွေး	Helper	Production	၂၅	၃ နှစ် ၆ လ	11.9 µg/dl
၂၆	၂၆	ဦးနိုင်လင်းဖြိုး	Helper	Production	၁၉	၂ လ	10.9 µg/dl
၂၇	၂၇	ဦးမျိုးအေး	Supervisor	Production	၃၅	၁၄ နှစ် ၃ လ	8.2 µg/dl
၂၈	၂၈	ဦးစံလင်း	Helper	Production	၂၀	၃ လ	13.2 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၂၉	၂၉	ဦးသိန်းဇော်ဦး(၂)	GI	Production	၂၄	၄ နှစ် ၇ လ	7.5 µg/dl
၃၀	၃၀	ဦးအောင်ဇော်လင်း	Helper	Engineering	၃၉	၁၀ လ	8.5 µg/dl
၁၁	၁၁	ဦးနိုင်ဝေအောင်	In charge	Production	၃၇	၁၁ နှစ် ၃ လ	15.9 µg/dl
၂၂	၂၂	ဦးရဲထက်	Helper	Production	၂၇	၈ နှစ် ၁၁ လ	8.1 µg/dl
၁၄	၁၄	ဒေါ်တူးမာအောင်	Supervisor	Admin	၃၂	၈ နှစ်	10.2 µg/dl
၂၄	၂၄	ဦးအောင်မျိုးသူ	GII	Production	၃၂	၅ နှစ် ၇ လ	12.2 µg/dl
၂၅	၂၅	ဒေါ်သန္ဓာဝင်းပြည့်	GII	Admin	၂၈	၆ လ	5.9 µg/dl
၂၆	၂၆	ဦးအောင်ဖြိုးဦး	GI	Production	၂၄	၄ နှစ် ၃ လ	14.9 µg/dl
၂၇	၂၇	ဦးမျိုးမြင့်အောင်	Helper	Production	၃၀	၉ နှစ်	8.8 µg/dl
၃၈	၃၈	ဦးဇော်မင်းသူ	Assistant Manager	Production	၄၉	၅ နှစ်	8.2 µg/dl
၃၉	၃၉	ဦးမျိုးဇော်အောင်	Helper	Production	၂၄	၃ နှစ် ၆ လ	9.2 µg/dl
၄၀	၄၀	ဦးမျိုးမင်းထွန်း	Manager	Production	၄၃	၁၈ နှစ် ၉ လ	13.9 µg/dl
၄၁	၄၁	ဦးမင်းကြည်	Senior Supervisor	Admin	၃၈	၂ လ	7.5 µg/dl
၄၂	၄၂	ဦးမိုးကျော်သူ	Assistant Manager	QC	၃၇	၁၆ နှစ် ၃ လ	13.2 µg/dl
၄၃	၄၃	ဦးကျော်သီဟနိုင်	GI	Production	၂၉	၉ နှစ်	10.0 µg/dl
၄၄	၄၄	ဦးဖြိုးပြည့်စုံ	GII	QC	၂၈	၅ နှစ် ၄ လ	10.6 µg/dl
၄၅	၄၅	ဦးအောင်မျိုးခန့်	Helper	QC	၂၄	၁ နှစ် ၂ လ	10.8 µg/dl
၄၆	၄၆	ဦးရန်နိုင်စိုး	Helper	Production	၂၄	၃ နှစ် ၆ လ	8.1 µg/dl
၄၇	၄၇	ဦးရဲလင်းထွန်း	Assistant Supervisor	Engineering	၃၄	၄ နှစ် ၇ လ	7.2 µg/dl
၄၈	၄၈	ဦးလွှမ်းမုန်	Forklift Driver	Engineering	၅၃	၁၀ နှစ် ၁၁ လ	11.5 µg/dl
၄၉	၄၉	ဒေါ်ဝင်းယုနိုင်	GII	QC	၂၇	၆ နှစ် ၆ လ	6.0 µg/dl
၅၀	၅၀	ဒေါ်သန်းသန်းနု	Laboratory Officer	QC	၆၈	၆ နှစ် ၈ လ	10.1 µg/dl
၅၁	၅၁	ဒေါ်သီတာလွင်	Assistant Supervisor	Production	၅၂	၁၅ နှစ် ၄ လ	13.6 µg/dl
၅၂	၅၂	ဦးစောညွှန့်ဝင်း	GII	Engineering	၃၉	၁ နှစ် ၄ လ	6.1 µg/dl
၅၃	၅၃	ဒေါ်မိုးသက်နိုင်	GII	Finance	၂၇	၄ နှစ် ၂ လ	8.4 µg/dl
၅၄	၅၄	ဒေါ်ဆိမ့်သန္ဓာလွင်	Assistant Accountant	Finance	၂၇	၆ နှစ် ၉ လ	7.1 µg/dl
၅၅	၅၅	ဒေါ်သီရိလွင်	GII	Finance	၂၇	၂ နှစ် ၆ လ	6.1 µg/dl
၅၆	၅၆	ဒေါ်မိုးမြင့်မြင့်စံ	Cashier	Finance	၂၆	၈ လ	6.1 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆီဝိစစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၅၇	၅၇	ခေါ်ဖြူဖြူဇင်	GII	Finance	၂၇	၄ နှစ် ၂ လ	7.9 µg/dl
၅၈	၅၈	ခေါ်ကေခိုင်သင်း	GII	Finance	၂၆	၃ နှစ် ၁၁ လ	6.3 µg/dl
၅၉	၅၉	ဦးထွန်းထွန်း	Helper	Production	၂၀	၆ လ	6.8 µg/dl
၆၀	၆၀	ဦးဝိုင်းချစ်	Helper	Production	၂၈	၄ နှစ် ၁၁ လ	8.9 µg/dl
၆၁	၆၁	ဦးထွန်းအောင်	Helper	Production	၂၂	၁ နှစ် ၁၀ လ	7.8 µg/dl
၆၂	၆၂	ခေါ်အေးအေးမွန်(၂)	Assistant Accountant	Finance	၃၃	၅ နှစ် ၉ လ	7.9 µg/dl
၆၃	၆၃	ဦးသီဟအောင်	Helper	QC	၂၂	၈ လ	7.1 µg/dl
၆၄	၆၄	ဦးရဲဝင်းဌေး	Helper	Production	၂၂	၃ နှစ် ၆ လ	10.5 µg/dl
၆၅	၆၅	ဦးလွင်မိုးဦး	GI	Production	၄၃	၁၂ နှစ် ၁ လ	11.3 µg/dl
၆၆	၆၆	ဦးဇော်မျိုးထက်	Helper	Production	၂၀	၃ လ	6.8 µg/dl
၆၇	၆၇	ဦးရွှိုင်းထက်အောင်	In charge	Production	၃၀	၁၂ နှစ် ၂ လ	9.1 µg/dl
၆၈	၆၈	ဦးရှင်းသန့်ကို	Helper	Production	၂၃	၃ နှစ် ၆ လ	8.3 µg/dl
၆၉	၆၉	ဦးသီဟဇော်(၂)	Helper	Production	၂၂	၃ လ	10.4 µg/dl
၇၀	၇၀	ဦးသူရရဲမိုင်မိုး	Assistant Manager	Production	၄၄	၁၈ နှစ် ၁၁ လ	16.5 µg/dl
၇၁	၇၁	ဦးခွန်မြတ်ဇော်မိုး	Helper	Com; (YGN)	၂၇	၃ နှစ် ၁ လ	8.0 µg/dl
၇၂	၇၂	ဦးပြည့်ဖြိုးကျော်	Helper	Com; (YGN)	၂၂	၁၀ လ	8.2 µg/dl
၇၃	၇၃	ဦးဇင်မင်းအောင်	Helper	Com; (YGN)	၃၄	၇ နှစ် ၂ လ	10.1 µg/dl
၇၄	၇၄	ဦးဝင်းဇော်ဦး	Forklift Driver	Production	၃၅	၁၂ နှစ် ၄ လ	8.8 µg/dl
၇၅	၇၅	ဦးရဲဝင်းနိုင်	Assistant Supervisor	Production	၃၈	၁၄ နှစ် ၄ လ	17.9 µg/dl
၇၆	၇၆	ဦးချစ်ရင်ထူး	GII	Production	၂၄	၄ နှစ် ၁၀ လ	7.8 µg/dl
၇၇	၇၇	ဦးအောင်မျိုးဦး	In charge	Production	၂၉	၁၃ နှစ် ၃ လ	8.8 µg/dl
၇၈	၇၈	ဦးနိုင်ဇိုလ်ဇိုလ်	Helper	Production	၃၂	၄ နှစ် ၁၁ လ	8.0 µg/dl
၇၉	၇၉	ဦးသီဟဇော်	Helper	Production	၂၇	၁ နှစ် ၁၀ လ	7.9 µg/dl
၈၀	၈၀	ဦးထွန်းမင်းလတ်	In charge	Production	၃၅	၁၂ နှစ်	18.1µg/dl
၈၁	၈၁	ဦးရဲစာနည်အောင်	Helper	Production	၂၄	၃ နှစ် ၆ လ	8.8 µg/dl
၈၂	၈၂	ခေါ်အေးချစ်မေ	Assistant Supervisor	Engineering	၂၉	၆ နှစ် ၆ လ	8.5 µg/dl
၈၃	၈၃	ခေါ်ကေဇင်နင်း	GI	Engineering	၂၃	၈ လ	6.2 µg/dl
၈၄	၈၄	ဦးကျော်ကိုကို	Helper	Admin	၂၇	၆ နှစ် ၁ လ	8.7 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၈၅	၈၅	ဦးအောင်ဇော်မြင့်	In charge	Production	၃၁	၁၀ နှစ် ၈ လ	18.4 µg/dl
၈၆	၈၆	ဦးဝင်းမြင့်အောင်	Driver	Planning	၄၈	၉ နှစ် ၈ လ	13.5 µg/dl
၈၇	၈၇	ဦးကျော်သူဌေး	IT Tech;	Admin	၃၉	၃ နှစ် ၁၁ လ	8.0 µg/dl
၈၈	၈၈	ဦးမျိုးဝေအောင်	Driver	Admin	၃၄	၃ နှစ် ၃ လ	7.9 µg/dl
၈၉	၈၉	ဦးမျိုးဇော်ထွေး	Helper	Admin	၂၅	-	7.8 µg/dl
၉၀	၉၀	ဦးမိုးဇော်ထွန်း	GI	Production	၄၄	၂ နှစ်	7.8 µg/dl
၉၁	၉၁	ဦးသိန်းဇော်ထွန်း	Driver	Admin	၃၂	၉ နှစ် ၄ လ	12.9 µg/dl
၉၂	၉၂	ဦးချစ်မင်းနိုင်	Helper	Planning	၂၃	၅ လ	6.7 µg/dl
၉၃	၉၃	ဦးထက်ဝိုင်စိုး	Helper	Planning	၂၀	၁၀ လ	7.0 µg/dl
၉၄	၉၄	ဦးသင်းကိုကိုမောင်	Senior Supervisor	Production	၃၉	၁၆ နှစ် ၃ လ	9.9 µg/dl
၉၅	၉၅	ဦးကိုကိုလွင်	Assistant Supervisor	Production	၃၅	၁၂ နှစ် ၂ လ	7.2 µg/dl
၉၆	၉၆	ဦးနေထက်နိုင်	Helper	Production	၂၅	၁၁ လ	7.6 µg/dl
၉၇	၉၇	ဦးနိုင်အောင်လင်း	Helper	Admin	၂၅	၂ လ	6.9 µg/dl
၉၈	၉၈	ဦးရာဇာထွန်း	Helper	Admin	၂၆	၁၀ လ	6.6 µg/dl
၉၉	၉၉	ဦးဇော်ကိုကို	Helper	Planning	၂၀	၁ နှစ်	8.2 µg/dl
၁၀၀	၁၀၀	ဦးမျိုးဇော်ဦး	Helper	Planning	၂၉	၈ လ	7.2 µg/dl
၁၀၁	၁၀၁	ဦးနေအောကာစိုး	Assistant Supervisor	Planning	၂၈	၉ နှစ် ၄ လ	13.5 µg/dl
၁၀၂	၁၀၂	ဦးလှဌေး	Forklift In charge	Engineering	၅၇	၅ နှစ် ၇ လ	16.6 µg/dl
၁၀၃	၁၀၃	ဦးသဲမောင်မောင်	Helper	Production	၂၉	၁၁ နှစ် ၆ လ	10.1 µg/dl
၁၀၄	၁၀၄	ဦးနိုင်သူရ	GII	Production	၄၉	၅ နှစ် ၇ လ	10.0 µg/dl
၁၀၅	၁၀၅	ဦးနိုင်မင်းထက်	Helper	Engineering	၂၆	၆ နှစ် ၁ လ	6.2 µg/dl
၁၀၆	၁၀၆	ဦးထွန်းသန်း၀င်း	Assistant Supervisor	Engineering	၄၅	၁၀ နှစ် ၅ လ	11.9 µg/dl
၁၀၇	၁၀၇	ဦးအောင်ချမ်းမြိမ်း	GII	Engineering	၃၀	၄ လ	7.5 µg/dl
၁၀၈	၁၀၈	ဦးညီညီအောင်	Assistant Manager	HR	၄၁	၁၁ နှစ်	13.7 µg/dl
၁၀၉	၁၀၉	ဦးသိန်းဇော်၀င်းနိုင်	In charge	Production	၂၉	၁၁ နှစ် ၇ လ	17.3 µg/dl
၁၁၀	၁၁၀	ဦးဟိန်းထက်နိုင်	Helper	Production	၁၉	၃ လ	8.2 µg/dl
၁၁၁	၁၁၁	ဦးသန့်ဇင်မိုး	Helper	Admin	၂၉	၄ နှစ် ၁၀ လ	15.2 µg/dl
၁၁၂	၁၁၂	ဦးကိုကိုနိုင်	Helper	Admin	၂၂	၁ နှစ် ၃ လ	6.3 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၁၁၃	၁၁၃	မြဲးအောင်မိုးနိုင်	Helper	Production	၃၀	၅ နှစ် ၁၁ လ	10.8 µg/dl
၁၁၄	၁၁၄	မြဲးသိန်းနိုင်ဝင်း	GII	Production	၂၉	၈ နှစ် ၁ လ	10.6 µg/dl
၁၁၅	၁၁၅	မြဲးဝေဝေအောင်	Supervisor	Planning	၃၅	၁၀ နှစ် ၃ လ	9.5 µg/dl
၁၁၆	၁၁၆	မြဲးကျော်ထူး	Asst; Factory Manager	Admin	၅၄	၅ နှစ် ၆ လ	8.2 µg/dl
၁၁၇	၁၁၇	မြဲးခင်အောင်	Assistant Supervisor	Admin	၅၉	၃ နှစ် ၆ လ	7.9 µg/dl
၁၁၈	၁၁၈	မြဲးချမ်းမြိမ်းအောင်	GI	Admin	၃၀	၅ နှစ် ၁ လ	9.1 µg/dl
၁၁၉	၁၁၉	မြဲးထက်ကိုကို	Assistant Supervisor	Engineering	၃၀	၉ နှစ် ၂ လ	12.8 µg/dl
၁၂၀	၁၂၀	မြဲးမြိုင်းဝဏ္ဏအောင်	Assistant Supervisor	Engineering	၂၆	၃ လ	7.3 µg/dl
၁၂၁	၁၂၁	မြဲးလှမျိုး	GII	Engineering	၃၅	၁၁ နှစ် ၃ လ	17.3 µg/dl
၁၂၂	၁၂၂	မြဲးဗြုံးသူ	GI	Engineering	၄၁	၁ နှစ် ၄ လ	6.8 µg/dl
၁၂၃	၁၂၃	မြဲးဆန်းလွိုင်	Forklift Driver	Planning	၃၂	၁၁ နှစ် ၁ လ	11.5 µg/dl
၁၂၄	၁၂၄	မြဲးသက်ပိုင်မင်း	Assistant Supervisor	Planning	၃၂	၅ နှစ်	8.5 µg/dl
၁၂၅	၁၂၅	မြဲးချစ်နိုင်	Assistant Manager	Planning	၃၃	၂ လ	9.1 µg/dl
၁၂၆	၁၂၆	မြဲးမင်းသန့်ထူး	GI	Planning	၂၅	၄ နှစ် ၆ လ	10.3 µg/dl
၁၂၇	၁၂၇	မြဲးအောင်မြသိန်း	Helper	Planning	၂၅	၄ လ	9.1 µg/dl
၁၂၈	၁၂၈	မြဲးအောင်သူမင်း	Helper	Planning	၁၉	၄ လ	6.3 µg/dl
၁၂၉	၁၂၉	မြဲးခင်ဆန်း	Assistant Supervisor	Planning	၃၈	၁၃ နှစ် ၂ လ	11.9 µg/dl
၁၃၀	၁၃၀	မြဲးအောင်စည်သူ	Assistant Manager	Engineering	၃၅	၁ လ	6.8 µg/dl
၁၃၁	၁၃၁	မြဲးနေလင်းသူ	Forklift Driver	Planning	၂၄	၄ နှစ် ၈ လ	13.8 µg/dl
၁၃၂	၁၃၂	ဒေါ်အေးအေးမွန်	Helper	Admin	၄၄	၁၀ နှစ် ၂ လ	9.1 µg/dl
၁၃၃	၁၃၃	မြဲးရန်နိုင်မြဲ	GII	Production	၃၂	၁၁ နှစ် ၆ လ	17.2 µg/dl
၁၃၄	၁၃၄	မြဲးသက်ဝေအောင်	GI	Planning	၂၃	၁ နှစ် ၁ လ	6.2 µg/dl
၁၃၅	၁၃၅	မြဲးတင်အောင်ထွေး	Helper	Admin	၄၇	၉ နှစ် ၂ လ	9.5 µg/dl
၁၃၆	၁၃၆	မြဲးနိုင်လင်းဝေ	Supervisor	Production	၃၃	၁၄ နှစ် ၅ လ	15.2 µg/dl
၁၃၇	၁၃၇	မြဲးဇော်ဇော်အောင်	GII	Planning	၃၇	၁၅ နှစ်	16.3 µg/dl
၁၃၈	၁၃၈	မြဲးဝေလင်းကျော်	Helper	Production	၂၃	၂ နှစ် ၈ လ	8.1 µg/dl
၁၃၉	၁၃၉	မြဲးအောင်သုတ	Helper	Production	၂၁	၁ နှစ် ၉ လ	6.3 µg/dl
၁၄၀	၁၄၀	မြဲးစန်းဝင်းနိုင်	In charge	Production	၃၁	၁၃ နှစ် ၁ လ	11.9 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၁၄၁	၁၄၁	ဦးသက်လှိုင်စိုး	Supervisor	Production	၄၃	၁၈ နှစ်	18.4 µg/dl
၁၄၂	၁၄၂	ဦးအောင်ကျော်စိုး	GI	Production	၂၈	၉ နှစ် ၈ လ	9.1 µg/dl
၁၄၃	၁၄၃	ဦးမျိုးဆန်းအောင်	Helper	Planning	၂၃	၁၀ လ	7.3 µg/dl
၁၄၄	၁၄၄	ဦးဇေယျာမျိုးအောင်	QMR				10.3 µg/dl
၁၄၅	၁၄၅	ခေါ်နွေးနွေးလှိုင်	Senior HR Executive	HR	၃၉	၁ နှစ် ၁ လ	6.5 µg/dl
၁၄၆	၁၄၆	ခေါ်သိမ့်သိမ့်ကျော်	Asst; HR Executive	HR	၂၄	၁၀ လ	6.4 µg/dl
၁၄၇	၁၄၇	ဦးကျော်ခိုင်စိုး	Site Engineer				7.9 µg/dl
၁၄၈	၁၄၈	ဦးနိုင်မျိုးဝင်း	Supervisor	QC	၄၁	၁၉ နှစ် ၆ လ	10.8 µg/dl
၁၄၉	၁၄၉	ဦးကျော်ဇေယျ	GI	Planning	၃၄	၆ နှစ် ၁၀ လ	8.8 µg/dl
၁၅၀	၁၅၀	ဦးကျော်လင်းမိုး	Senior Supervisor	Engineering	၃၁	၁ လ	7.5 µg/dl
၁၅၁	၁၅၁	ဦးသိန်းလွင်	Helper	Admin	၄၉	၁၀ နှစ် ၉ လ	17.6 µg/dl
၁၅၂	၁၅၂	ဦးကျော်လင်းအောင်	Helper	Production	၂၅	၅ နှစ် ၇ လ	16.6 µg/dl
၁၅၃	၁၅၃	ဦးအောင်မျိုးထက်	GI	Production	၂၆	၈ နှစ် ၈ လ	8.5 µg/dl
၁၅၄	၁၅၄	ဦးစန်းမောင်	Assistant Manager	Engineering	၄၄	၁၈ နှစ် ၁၁ လ	17.3 µg/dl
၁၅၅	၁၅၅	ဦးသိပ္ပံမောင်	Assistant Supervisor	Admin	၄၄	၁၅ နှစ် ၁၀ လ	13.5 µg/dl
၁၅၆	၁၅၆	ဦးဇေယျာလင်း	GII	Engineering	၃၁	၈ နှစ် ၆ လ	7.0 µg/dl
၁၅၇	၁၅၇	ဦးစိုးမင်းအောင်	GII	Production	၃၂	၁၁ နှစ်	10.8 µg/dl
၁၅၈	၁၅၈	ဦးသိန်းဇော်ဦး	GII	Planning	၂၉	၆ နှစ် ၁၀ လ	7.8 µg/dl
၁၅၉	၁၅၉	ဦးရဲသီဟဖုန်းဇော်	Helper	QC	၂၉	၇ နှစ် ၁၁ လ	12.1 µg/dl
၁၆၀	၁၆၀	ဦးရဲလင်းအောင်	GII	QC	၂၉	၅ နှစ် ၇ လ	8.7 µg/dl
၁၆၁	၁၆၁	ဦးနိုင်သူဝင်း	GI	Engineering	၃၄	၄ နှစ် ၇ လ	8.9 µg/dl
၁၆၂	၁၆၂	ဦးချစ်ဖြိုးဇော်	Helper	Production	၂၄	၄ နှစ် ၃ လ	9.9 µg/dl
၁၆၃	၁၆၃	ဦးမျိုးအောင်	Driver	Admin	၄၈	၂ နှစ်	9.1 µg/dl
၁၆၄	၁၆၄	ဦးမိုးနိုးထက်နိုင်	Helper	Planning	၂၂	၁ နှစ် ၇ လ	7.4 µg/dl
၁၆၅	၁၆၅	ဦးထက်နိုင်ဝင်း	Helper	Planning	၂၂	၁ နှစ် ၃ လ	8.5 µg/dl
၁၆၆	၁၆၆	ဦးအောင်ဖြိုးဦး(၂)	GII	Planning	၃၂	၄ လ	16.4 µg/dl
၁၆၇	၁၆၇	ဦးထက်ညီညီ	Helper	QC	၂၁	၁ လ	6.8 µg/dl
၁၆၈	၁၆၈	ဦးအောင်မျိုးထက်	GI	Production	၂၆	၈ နှစ် ၈ လ	8.6 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၁၆၉	၁၆၉	ဦးရဲမင်းနိုင်	Driver	Com; (YGN)	၂၈	၈ နှစ် ၈ လ	8.1 µg/dl
၁၇၀	၁၇၀	ဦးနိုင်မျိုးအောင်	Driver	Com; (YGN)	၃၁	၁၂ နှစ်	10.5 µg/dl
၁၇၁	၁၇၁	ဦးမိုးသူရထွန်း	Driver	Com; (YGN)	၃၀	၉ နှစ် ၄ လ	13.9 µg/dl
၁၇၂	၁၇၂	ဦးနေဝင်းနိုင်	Helper	Com; (YGN)	၂၉	၄ နှစ် ၁၁ လ	8.1 µg/dl
၁၇၃	၁၇၃	ဦးကျော်မိုးသိန်း	Supervisor	Com; (YGN)	၄၄	၁၇ နှစ် ၁ လ	8.3 µg/dl
၁၇၄	၁၇၄	ဦးငြိမ်းလတ်မင်းခင်	Manager	Com; (YGN)	၄၄	၁၉ နှစ် ၈ လ	11.5 µg/dl
၁၇၅	၁၇၅	ဒေါ်ဖြူဖြူဝင်း	Supervisor	Com; (YGN)	၂၉	၁၁ လ	7.8 µg/dl
၁၇၆	၁၇၆	ဦးပြည့်ဖြိုး	Driver	Com; (YGN)	၃၂	၇ နှစ် ၂ လ	8.5 µg/dl
၁၈၀	၁၈၀	ဦးရဲမင်း	Senior Supervisor	Com; (YGN)	၅၅	၃ နှစ် ၁ လ	8.7 µg/dl
၁၈၁	၁၈၁	ဦးမင်းမင်း	Helper	Com; (YGN)	၃၄	၃ နှစ် ၁ လ	8.5 µg/dl
၁၈၂	၁၈၂	ဦးစော်လင်းကျော်	Helper	Com; (YGN)	၅၇	၉ နှစ် ၂ လ	13.8 µg/dl
၁၈၃	၁၈၃	ဦးသိန်းစော်	Security In Charge	Com; (YGN)	၆၉	၁၂ နှစ် ၈ လ	11.1 µg/dl
၁၈၄	၁၈၄	ဦးအောင်သိန်းဦး	Supervisor	Com; (YGN)	၅၁	၇ နှစ် ၁ လ	9.5 µg/dl
၁၈၅	၁၈၅	ဦးကျော်မိုးမိုး	Driver	Com; (YGN)	၃၉	၃ နှစ် ၆ လ	8.3 µg/dl
၁၈၆	၁၈၆	ဦးမင်းနိုင်	Assistant Supervisor	Com; (YGN)	၄၇	၈ နှစ် ၆ လ	9.1 µg/dl
၁၈၇	၁၈၇	ဦးဝင်းထူးအောင်	Helper	Com; (YGN)	၅၈	၁၁ နှစ် ၆ လ	9.1 µg/dl
၁၈၈	၁၈၈	ဦးမင်းနိုင်ဦး	Helper	Com; (YGN)	၂၈	၁၀ လ	7.6 µg/dl
၁၈၉	၁၈၉	ဦးမိုးဇင်ယု	Helper	Com; (YGN)	၃၆	၇ နှစ် ၂ လ	8.4 µg/dl
၁၉၀	၁၉၀	ဦးအောင်စိုး	Helper	Com; (YGN)	၃၅	၂ နှစ် ၁၁ လ	10.5 µg/dl
၁၉၁	၁၉၁	ဦးစော်ထိုက်	Driver	Com; (YGN)	၄၆	၁ နှစ် ၆ လ	7.1 µg/dl
၁၉၂	၁၉၂	ဦးမင်းစိုးအောင်	Helper	Com; (YGN)	၃၂	၅ နှစ် ၁၀ လ	7.2 µg/dl
၁၉၃	၁၉၃	ဦးရဲဝင်းနိုင်(၂)	Helper	Com; (YGN)	၂၇	၃ နှစ် ၃ လ	16.5 µg/dl
၁၉၄	၁၉၄	ဦးသိန်းထိုက်အောင်	Helper	Com; (YGN)	၃၁	၈ နှစ် ၁၀ လ	8.0 µg/dl
၁၉၅	၁၉၅	ဦးဆွေဝင်မောင်မောင်	GII	Com; (YGN)	၃၆	၁၄ နှစ် ၁ လ	15.9 µg/dl
၁၉၆	၁၉၆	ဦးစော်စော်အောင် (၃)	Spare	Com; (YGN)	၃၁	၁၀ နှစ် ၅ လ	15.8 µg/dl
၁၉၇	၁၉၇	ဦးကျော်ရဲအောင်	Driver	Com; (YGN)	၂၅	၁၀ နှစ် ၅ လ	9.7 µg/dl
၁၉၈	၁၉၈	ဦးကောင်းမြတ်ရှင်း	GII	Com; (YGN)	၄၁	၈ နှစ်	13.8 µg/dl
၁၉၉	၁၉၉	ဦးဆန်းလင်း	Helper	Com; (YGN)	၃၂	၈ နှစ် ၇ လ	13.8 µg/dl

(၂၀၂၄) ခုနှစ်အတွက် ဝန်ထမ်းများ ခဲဆိပ်စစ်ဆေးခြင်း (၁၃.၀၁.၂၀၂၄)

စဉ်	Test No.	အမည်	ရာထူး	ဌာန	အသက်	လုပ်သက်	Result
၂၀၀	၂၀၀	ဦးအေးမင်းထွေး	Helper	Com; (YGN)	၂၄	၂ လ	10.9 µg/dl
၂၀၁	၂၀၁	ဦးလွင်မိုးနိုင်	GI	Com; (YGN)	၃၂	၆ နှစ် ၁၀ လ	8.8 µg/dl
၂၀၂	၂၀၂	ဦးဟန်ထိုက်စော	Helper	Com; (YGN)	၂၄	၄ နှစ် ၂ လ	7.9 µg/dl
၂၀၃	၂၀၃	ဦးသောင်းနိုင်ဌေး	Helper	Com; (YGN)	၂၃	၄ နှစ် ၃ လ	9.6 µg/dl

Annex-10

YMI Water Quality Analysis

Analysis Report

THE REPUBLIC OF THE UNION OF MYANMAR
DEPARTMENT OF RESEARCH AND INNOVATION
National Analytical Laboratory
No. (6) KABA AYE PAGODA ROAD, YANKIN,YANGON

Customer's Information: YANGON METAL INDUSTRY CO., LTD

Sample Description: စက်ရုံရှေ့ ရေမြောင်း

Sample No: J-9675 to J-9680 /2024-2025

Date of Received: 19-09-2024

Date of Analysis: 19-09-2024 to 24-09-2024

Parameters	Results	Unit	Method
Biochemical Oxygen Demand (B.O.D)	17.50	mg/L	5 day BOD Test
Chemical Oxygen Demand (C.O.D)	48.00	mg/L	Closed reflux, Titrimetric Method
Total Suspended Solids	23.00	mg/L	Total Suspended Solids dried at 103-105˚C
Copper as Cu	0.009	mg/L	Direct Air-Acetylene Flame Method
Lead as Pb	0.113	mg/L	Direct Air-Acetylene Flame Method
Iron as Fe	0.625	mg/L	Direct Air-Acetylene Flame Method

Remark: *Results valid for the received sample only.*

Not a certificate of conformance
စံချိန်စံညွှန်းကိုက်ညီကြောင်းထောက်ခံချက်မဟုတ်ပါ။

Method/Equipment used: Standard Method for the Examination of Water and Waste Water, 22nd,2012

Approved by:

Dr. Tun Tun Moe
Deputy Director General

Date of Issue : 30.9.2024.

Analysis Report

THE REPUBLIC OF THE UNION OF MYANMAR
DEPARTMENT OF RESEARCH AND INNOVATION
National Analytical Laboratory
No. (6) KABA AYE PAGODA ROAD, YANKIN,YANGON

Customer's Information: YANGON METAL INDUSTRY CO., LTD

Sample Description: စက်ရုံရေစုကန်

Sample No: J-9669 to J-9674 /2024-2025

Date of Received: 19-09-2024

Date of Analysis: 19-09-2024 to 24-09-2024

Parameters	Results	Unit	Method
Biochemical Oxygen Demand (B.O.D)	1.14	mg/L	5 day BOD Test
Chemical Oxygen Demand (C.O.D)	16.00	mg/L	Closed reflux, Titrimetric Method
Total Suspended Solids	16.00	mg/L	Total Suspended Solids dried at 103-105˚C
Copper as Cu	0.160	mg/L	Direct Air-Acetylene Flame Method
Lead as Pb	0.100	mg/L	Direct Air-Acetylene Flame Method
Iron as Fe	0.455	mg/L	Direct Air-Acetylene Flame Method

Not a certificate of conformance
စံချိန်စံညွှန်းကိုက်ညီကြောင်းထောက်ခံချက်မဟုတ်ပါ။

Remark: *Results valid for the received sample only.*

Method/Equipment used: Standard Method for the Examination of Water and Waste Water, 22nd,2012

Approved by:

Dr. Tun Tun Moe
Deputy Director General

Date of Issue : 30.9.2024